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# BERKELEY TECHNOLOGY LAW JOURNAL

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# A TRANSACTIONAL VIEW OF PROPERTY RIGHTS

By Robert P. Merges<sup>†</sup>

## ABSTRACT

Property rights and contract law are two of our most basic legal categories. Many legal scholars describe what makes them different; this Article describes how they work together to promote economic exchange. Incorporating the insights of both “transaction cost” and “new property rights” economics, it identifies two crucial contributions that property rights make to real-world contracting: (1) precontractual liability, or protection for disclosure of sensitive information in the period leading up to contract formation; and (2) enforcement flexibility after a contract is executed, in the form of many subtle but important advantages that accrue to a contracting party who also holds a property right. This Article argues that property’s “transactional” role is growing in importance, as the “new economy” ushers in a more transaction-intensive industrial structure featuring greater numbers of smaller, more specialized firms.

I think you can often learn more about how the economic system works by reading law books and cases in law books than you can by reading economics books because you do get descriptions of actual business practices which are difficult to explain.

—Ronald Coase<sup>1</sup>

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† Wilson Sonsini Professor of Law and Technology UC Berkeley. Special thanks to Ashish Arora and Paul Heald for comments, and to the editors at BTLJ for their suggestions. The usual disclaimer applies.

1. Quoted in *The Fire of Truth: A Remembrance of Law and Economics at Chicago, 1932-1970*, 26 J.L. & ECON. 163, 193 (Edmund W. Kitch ed., 1983).

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## I. INTRODUCTION

Property rights and contracts are two of our most fundamental legal concepts. They are usually thought of as freestanding, if not contrasting, legal categories. Theorists often invoke the limitations of contracts to illuminate the essential features of property rights.<sup>2</sup> From this approach a rich and influential literature has emerged. The “legal entitlements” literature, for example, highlights the significance of differing default remedies—money damages in contracts, injunctions in property. Other writings emphasize the rationale for the limited categories of property entitlements, in comparison with the ability of contracting parties, to create almost limitless obligations. With some exceptions, commentators continue to analyze and discuss property and contract as opposing concepts and quite distinct legal categories.<sup>3</sup>

This Article is different. I am interested in an aspect of property rights mostly neglected by legal theorists: how they facilitate contracting. This “transactional” view is more in line with the views of economists who study property rights. These scholars write generally about the role of property rights in structuring bilateral exchange, describing how property rights solve transactional problems that contracts cannot. But the economics literature remains quite sketchy on exactly how property rights function to facilitate transactions. That is the unique domain of this Article. Here I describe how specific aspects of property law encourage the making of real-world deals. To this end, I bring a lawyer’s eye for detail (sharpened by close attention to the intricate facts of actual transactions) to the economists’ models of contracting in the presence of property rights.

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2. See, e.g., Thomas W. Merrill & Henry E. Smith, *The Property/Contract Interface*, 101 COLUM. L. REV. 773 (2001); Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1 (2000) [hereinafter Merrill & Smith, *Optimal Standardization*].

3. For a stimulating exception, see Paul J. Heald, *A Transaction Cost Theory of Patent Law*, 66 OHIO ST. L.J. 473 (2005). Heald argues that patents lower the costs of transferring information assets, lower the costs of producing information assets by resolving problems of team production, and facilitate production and long-term business planning by embodying information in an asset distinct from the claims and interests of its creators or transferors, or their creditors or successors—a feature known as “asset partitioning.”

### A. Brief Review of the Relevant Legal and Economics Literature

The literature on property rights is approximately as old as law itself. One may say the same for contracts. The *relationship* between them, however, is another story. Though even early commentators recognized fundamental differences, not until the pioneering work of Wesley Hohfeld<sup>4</sup> did we have a sophisticated understanding of how these basic legal categories compared. Hohfeld gave us an analytically sound framework that laid bare the essential features of property, contract, and indeed all legal entitlements. This served tolerably well until the 1970s, when a more rigorous application of economic principles swept through legal theory. The path-breaking conceptual taxonomy of Calabresi and Melamed's article on *Property Rules, Liability Rules and Inalienability*<sup>5</sup> opened our eyes to a number of fresh problems, primarily the question of who is best qualified to place a value on legal entitlements.

Meanwhile, parallel lines of development were underway in economics. Although early economic writings evince an understanding of property's importance in economic activity, in-depth analysis of the law of property and its economic implications did not begin until the twentieth century. A sociologically-informed group of researchers known as the institutionalists showed interest first. But most economists recognize Ronald Coase as the scholar who revolutionized our thinking about the role of legal entitlements—including property rights—in economic exchange. Beyond question, Coase made foundational contributions in the early days of law and economics, for which he received a Nobel Prize in 1994. Yet the very generality of Coase's vision left open a number of important issues. Coase, for example, understood that property rights were essential to the structuring of transactions. He recognized that prospective parties to a transaction must be able to recognize who has which rights prior to the exchange.<sup>6</sup> He also famously postulated that, with zero transaction costs, it

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4. Wesley Newcomb Hohfeld, *Fundamental Legal Conceptions as Applied in Judicial Reasoning*, 26 YALE L.J. 710 (1917) [hereinafter Hohfeld, *Fundamental Legal Conceptions*].

5. Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972) [hereinafter Calabresi & Melamed, *Property Rules*].

6. R.H. Coase, *The Federal Communications Commission*, 2 J.L. & ECON. 1, 14 (1959):

[I]f no property rights were created in land, so that everyone could use a tract of land, it is clear that there would be considerable confusion and that the price mechanism could not work because there would not be any property rights that could be acquired. If one person could use a piece of land for growing a crop, and then another person could come

did not matter who held which rights; parties would bargain to an efficient outcome regardless.<sup>7</sup> But he was largely silent on the detailed ways that parties come together to bargain and write contracts in these exchange relationships. For Coase, all of this “private ordering” took place in the shadow of property rights endowments, to be sure. Nonetheless, exactly *how* this private ordering took place, and how the details of property rights affected the resulting contracts, did not concern him.

In the 1960s and 1970s, economists began to look more closely at property rights, with particular attention to specification issues.<sup>8</sup> Why, they asked, do property rights extend to some activities but not others? Why do the contours of property rights change over time? The general idea that came from this approach was what might be termed a *progressive model* of the development of property rights: when economic assets become more valuable, society more tightly specifies property rights. Harold Demsetz wrote the canonical case study in this literature, when he described the effects of an increase in the value of beaver pelts in early colonial Quebec and Labrador.<sup>9</sup> Native peoples in that region, who had traditionally ranged freely to hunt beavers, instigated a system of proto-property rights in response to the overhunting that followed from an increase in the value of pelts. Demsetz described property rights as a solution to the costs of the older communal regime, which had been in place before beaver pelts became more valuable. Put another way, Demsetz said that the increased costs of a private property regime—which entails marking and enforcing boundaries, among other things—became worthwhile only after the value of the hunted animals went up.

Many scholars have applied Demsetz’ theory. Some work retrospectively to explain changes over time, while others employ the progressive

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along and build a house on the land used for the crop, and then another could come along, tear down the house, and use the space as a parking lot, it would no doubt be accurate to describe the resulting situation as chaos. But it would be wrong to blame this on private enterprise and the competitive system. A private-enterprise system cannot function unless property rights are created in resources, and, when this is done, someone wishing to use a resource has to pay the owner to obtain it. Chaos disappears; and so does the government except that a legal system to define property rights and to arbitrate disputes is, of course, necessary.

7. Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

8. For a retrospective, see PROPERTY RIGHTS: COOPERATION, CONFLICT, AND LAW (Terry L. Anderson & Fred S. McChesney eds., 2003) [hereinafter Anderson & McChesney, PROPERTY RIGHTS].

9. Harold Demsetz, *Toward a Theory of Property Rights*, 57 AM. ECON. REV. (PAPERS & PROC.) 347, 351-53 (1967).

model to analyze contemporary policy problems.<sup>10</sup> Though the applications vary widely, they share a common vision: property rights change dynamically with changes in the economy, typically expanding as the benefits of greater individual control come to outweigh higher specification and enforcement costs.

Absent from this vision, however, is a detailed discussion of how property rights facilitate contracting. As with writings descended from Coase, the Demsetzian literature addresses transactional issues on a high level of abstraction. Most of the attention focuses on the initial definition and grant of property rights, typically by a government. There is some sense of post-grant private ordering, in that resources covered by property rights are assumed to move toward their natural (highest value) use. But no attention is paid to the transactions themselves; rather, scholars see them as a series of frictionless resource transfers—routine, inevitable, unremarkable.

It was precisely this view of transactions that Oliver Williamson sought to overthrow. Far from taking for granted that assets move automatically to their highest-valued use, Williamson (and now many others) placed transactions at the center of his economic theory. Transaction cost economics (TCE), the field pioneered by Williamson, takes as its primary concern the problem of costs and hazards in the transfer of resources from one economic unit to another.<sup>11</sup> One well-studied hazard arises when a contracting party must invest considerable amounts of money in things that do not have much value outside a particular contracting relationship—what Williamson calls “asset specialization.” When this occurs, the beneficiary of the specialized investment gains considerable bargaining leverage over the investing party. Economic actors, according to TCE, are not shy about using this leverage. Indeed, the theory assumes widespread “opportunism,” defined as calculated advantage-taking within the context of an exchange.

A now-standard finding of the TCE literature, both theoretical and empirical, is that in situations where opportunism is common, contracting parties typically do one of two things: they either construct “contractual

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10. There are examples of both in Anderson & McChesney, PROPERTY RIGHTS, *supra* note 8.

11. OLIVER E. WILLIAMSON, THE MECHANISMS OF GOVERNANCE 3 (1996) [hereinafter WILLIAMSON, MECHANISMS OF GOVERNANCE] (“The identification, explication, and mitigation of contractual hazards—which take many forms, many of which long went unremarked—are central to the exercise [of TCE].”); *see also* OLIVER E. WILLIAMSON, THE ECONOMIC INSTITUTIONS OF CAPITALISM 175 (1985); OLIVER E. WILLIAMSON, MARKETS AND HIERARCHIES: ANALYSIS AND ANTITRUST IMPLICATIONS (1975).

safeguards” to protect against the risk of being taken advantage of (discussed *infra* in Section II.A); or they forego contracts altogether and bring high-opportunism exchange “in house” by integrating the two transacting parties in a single firm. (In the TCE parlance, integration substitutes managerial “hierarchy” for arm’s-length contracting.) TCE scholars see integration as a solution to pervasive opportunism in exchange relationships, explaining, for example, why a maker of auto bodies was subsumed into General Motors in the early days of the auto industry.

But integration has its costs, most notably, the lassitude that comes over a formerly hard-working company when it suddenly finds itself absorbed into a large bureaucracy.<sup>12</sup> Sometimes this is the only way to get things done given the presence of serious transactional hazards; but in other cases, parties can preserve the benefits of contracting by building in contractual safeguards to overcome the threat of opportunism. For example, one party to an exchange can surrender a “hostage,” something of value, to the other.<sup>13</sup> If the first party reneges on the deal, the second can keep the hostage.<sup>14</sup> This arrangement makes performance of the original deal more likely. One example is a performance bond, such as in a construction contract. A building contractor has all sorts of ways to delay, cheat, or otherwise trouble a client who wants a new building. So the client requires the contractor to post a fixed amount of money in the form of a bond, which the client can seize if the contractor acts opportunistically.<sup>15</sup> Hostages can take many forms besides a bond<sup>16</sup> and contracting parties use many other mechanisms as well. But what ties them all together, in the eyes of TCE theory, is a common concern for reducing the risk of opportunism.

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12. In TCE lingo, this is translated as “the loss of high-powered incentives” that are typically associated with arm’s-length contracting. See WILLIAMSON, *MECHANISMS OF GOVERNANCE*, *supra* note 11, at 43.

13. See WILLIAMSON, *MECHANISMS OF GOVERNANCE*, *supra* note 11, at 120; Oliver E. Williamson, *Credible Commitments: Using Hostages to Support Exchange*, 73 AM. ECON. REV. 519 (1983).

14. The issue is treated theoretically in WILLIAMSON, *MECHANISMS OF GOVERNANCE*, *supra* note 11, at 129.

15. See Gerald Garvey, *Money Transfers Versus Hostages as Guarantors of Contractual Performance*, 14 INT’L REV. L. & ECON. 245, 245 (1994) (citing international construction contracts as a classic example of a hostage situation).

16. See Howard A. Shelanski & Peter G. Klein, *Empirical Research in Transaction Cost Economics: A Review and Assessment*, 11 J.L. ECON. & ORG. 335, 345 (1995) (discussing the mutual specific investments required in many franchising contracts as an example of a hostage).

The richly detailed case studies in this Article (Parts II and III) show convincingly that property rights can significantly reduce the risk of opportunism. Yet property rights play a distinctly minor role in TCE. Williamson includes the “hazards that accrue to weak property rights” in the list of “hazards with which transaction cost economics is concerned.”<sup>17</sup> Some other TCE researchers explain how property rights affect economic activity.<sup>18</sup> But TCE theorists do not attend to the specific ways that contracting parties use property rights to guard against opportunism.

One newer branch of economics that does take property rights seriously is the “new property rights” (NPR) branch pioneered by Oliver Hart, Sanford J. Grossman, and John Moore.<sup>19</sup> NPR takes as its starting point that many contracts are difficult to enforce—an aspect of what is known as “contractual incompleteness.”<sup>20</sup> A prime example is where contractual compliance is very difficult for a court to assess. Consider, for example, a contract where a “technology buyer” agrees to pay another firm (the “R&D” firm) for research and development work. The contract can call on the R&D firm to “work very hard” or the like, but it will be difficult for a court to determine later if the firm has lived up to its obligation. For ex-

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17. WILLIAMSON, MECHANISMS OF GOVERNANCE, *supra* note 11, at 14.

18. David Teece, for example, has written of the importance of “appropriability” in firm organization. A leading article describes how the absence of effective intellectual property protection for some aspects of a business leads to strategic firm choices, such as (1) greater integration and (2) embedding weakly protected information in complementary assets that are themselves hard to duplicate. David Teece, *Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy*, 15 RES. POL’Y 285 (1986). And TCE economist Joanne Oxley finds in a series of studies that in economies with weak intellectual property protection, transactions are more often integrated in a firm or firm-like organization, because arm’s-length contracting is more risky in the absence of reliable property rights. Joanne E. Oxley, *Institutional Environment and the Mechanisms of Governance: The Impact of Intellectual Property Protection on the Structure of Inter-Firm Alliances*, 38 J. ECON. BEHAV. & ORG. 283 (1999); Joanne E. Oxley, *Appropriability Hazards and Governance in Strategic Alliances: A Transaction Cost Approach*, 13 J.L. ECON. ORG. 387 (1997).

19. See Sanford J. Grossman & Oliver D. Hart, *The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration*, 94 J. POL. ECON. 691 (1986) [hereinafter Grossman & Hart, *Ownership*]; Oliver Hart & John Moore, *Property Rights and the Nature of the Firm*, 98 J. POL. ECON. 1119 (1990). A good overview of NPR theory is OLIVER HART, FIRMS, CONTRACTS AND FINANCIAL STRUCTURE (1995) [hereinafter HART, FIRMS AND CONTRACTS]. For an in-depth application of NPR theory to intellectual property rights, see Robert P. Merges, *Intellectual Property Rights, Input Markets, and the Value of Intangible Assets* (Feb. 9, 1999) (unpublished manuscript), <http://www.law.berkeley.edu/institutes/bclt/pubs/merges/iprights.pdf>.

20. This means, generally speaking, that parties to a contract cannot specify all the possible outcomes in advance. For a rigorous treatment, see Oliver Hart & John Moore, *Foundations of Incomplete Contracts*, 66 REV. ECON. STUD. 115 (1999).

ample, a judge or jury with no knowledge of a complex technology could mistakenly conclude that an R&D firm had been lax in its efforts. This might permit a technology buyer to gain the benefits of the R&D firm's work without having to pay full price. Knowing it cannot rely on contract enforcement, the R&D firm may be leery of entering into a contract in the first place. To solve the dilemma, the parties may rely on a legal device that operates effectively even when contracts are difficult to enforce: property rights. Giving the R&D firm a property right in the results of its work permits it to make money even if the technology buyer reneges on the deal. In the parlance of NPR theory, a property right increases the R&D firm's "outside option."<sup>21</sup> More generally, NPR models show that transactors can work around contractual incompleteness by assigning a property right before entering into a contract.

Economists have brought NPR theory to bear on a wide range of problems. For example, they have employed it to describe why firms contracting for R&D services often assign any resulting patents to the R&D firm.<sup>22</sup> (This is basically the scenario used in the example in the prior paragraph.) Economist Ashish Arora and I apply NPR theory to show that property rights can enhance the viability of independent sellers in some situations. This permits some specialty goods to be sold by freestanding, independent firms, instead of being supplied by another division of a single, integrated firm.<sup>23</sup>

Despite its contributions, NPR theory has also been criticized.<sup>24</sup> The key weakness of the theory stems from the formal models on which it stands. Insightful critiques point out the sensitivity of these models to cer-

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21. In NPR models, the outside option is synonymous with the "no-trade payoff," the payoff from an investment in the event that a contemplated post-investment trade does not in fact take place. See HART, FIRMS AND CONTRACTS, *supra* note 19, at 43.

22. See Philippe Aghion & Jean Tirole, *The Management of Innovation*, 109 Q.J. ECON. 1185 (1994) [hereinafter Aghion & Tirole, *The Management of Innovation*].

23. See Ashish Arora & Robert P. Merges, *Specialized Supply Firms, Property Rights and Firm Boundaries*, 13 INDUS. & CORP. CHANGE 451 (2004); see also Notes and Comments, 14 INDUS. & CORP. CHANGE No. 6 (forthcoming 2005) (four commentaries on Arora & Merges, *supra*); Notes and Comments, 16 INDUS. & CORP. CHANGE No. 1 (forthcoming 2006) (responses by Arora and Merges).

24. See, e.g., Aghion & Tirole, *The Management of Innovation*, *supra* note 22 (applying NPR theory to R&D contracts); Georg Noldeke & Klaus M. Schmidt, *Sequential Investments and Options to Own*, 29 RAND J. ECON. 633 (1998) (criticizing and extending original NPR theory); Raghuram G. Rajan & Luigi Zingales, *Power in a Theory of the Firm*, 113 Q.J. ECON. 387 (1998) (criticizing and extending original NPR theory). A small empirical literature reports tests of NPR theory. See, e.g., Josh Lerner & Robert P. Merges, *The Control of Technology Alliances: An Empirical Analysis of the Biotechnology Industry*, 46 J. INDUS. ECON. 125 (1998).

tain limiting assumptions.<sup>25</sup> I do not intend to engage these debates here. My point is simply this: the somewhat brittle structure of the models that form the basis of NPR theory has led commentators to dismiss it too quickly. Property rights can be extremely effective in structuring certain transactions. Beyond the narrow and technical conditions of formal NPR theory, there are many real-world transactions in which comprehensive contracts are difficult to specify, write, and enforce. The deep legal default rights that accompany property ownership come strongly into play here. They make it safe for parties to enter contracts when virtually no other form of transactional safeguard would work as well. In other words, NPR's central contribution is its *transactional* approach to property rights.

From the point of view of transaction cost economics (TCE), described earlier, NPR's main insight can be stated this way: that property rights act as contractual safeguards. They are uniquely valuable in solving some problems of contractual incompleteness. This Article applies a joint NPR/TCE perspective to a detailed review of real-world contracting, making two important findings: (1) property rights facilitate the initial approach of potential bargaining partners, by providing "precontractual protection"; and (2) property rights substantially enhance the enforcement options of contracting parties, through a collection of discrete rules and doctrines.

## **B. Exploring the Property-Contract Interface by Studying Patent Licensing Cases**

In analyzing the property-contract interface I have chosen to study intellectual property (IP) licensing cases, primarily those involving patents. In the past, this would have seemed a highly unorthodox move; before the 1990s, virtually all property theorizing was based on examples from *real* property.<sup>26</sup> But in recent years, legal theorists have discovered that IP is an equally fertile<sup>27</sup>—and in some cases, superior<sup>28</sup>—source of insights.

On a practical level, case reports often provide extremely fine-grained information about negotiations and contract performance. Licensing cases are an ideal population to study because of the large volume of contracting

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25. See, e.g., Bengt Holmstrom & John Roberts, *The Theory of the Firm Revisited*, 12 J. ECON. PERSP. 73, 79 (1998).

26. See, e.g., Calabresi & Melamed, *Property Rules*, *supra* note 5; Hohfeld, *Fundamental Legal Conceptions*, *supra* note 4.

27. See, e.g., Merrill & Smith, *Optimal Standardization*, *supra* note 2; Carol M. Rose, *Romans, Roads and Romantic Creators: Traditions of Public Property in the Information Age*, 66 LAW & CONTEMP. PROB. 89 (2003).

28. See, e.g., Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 SCIENCE 698 (1998).

involving IP. This steady flow of legal disputes yields a rich sample to study. By my very rough count, approximately 4% of the 3,627 reported patent infringement decisions in one database were the result of failed negotiations or an alleged breach of an existing licensing agreement.<sup>29</sup> Of course, reported cases may not be representative of all cases for a number of reasons. But, even if it is a very loose approximation, the 4% figure tells us we are discussing a substantial subset of cases. Further, the cases matter for reasons beyond their numbers because they tell us something important about the role of property rights in contract negotiation and enforcement.

Finally, IP licensing is an intrinsically important area of the law. As more and more assets come to be covered by IP rights, and the volume of licensing transactions continues to grow (see *infra* Part IV), this body of law will grow in importance in the coming years.

### C. Property's Transactional Role

Many rules, doctrines, and what I would call “basic legal attitudes” shape the interaction between property rights and contracting in the IP area. I have organized this vast and somewhat amorphous body of law into two major themes, in keeping with my primary interest in how law shapes economic exchange:

***Precontractual Liability***: ways in which property rights encourage disclosure of sensitive information during the negotiations leading up to a formal contract; and

***Enforcement Flexibility***: enhancements in the enforcement options available to contracting parties when their contracts center around property rights.

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29. Here is my decidedly unscientific methodology: I used the district court (dct) database in Westlaw. I searched for the 2004 cases with “patent infringement” in the headnotes. There were 161. I then repeated the search, looking for an additional phrase indicative of a failed negotiation or breached licensing agreement—“trade secret,” “misappropriation,” “breach,” and the like. There were 21 of these in 2004. I went through those 21 cases and found 7 that met my criteria: failed negotiations or a breached license agreement. I repeated the “patent infringement” search on the entire database (1944- February 2005), and found a total of 3,627 cases, and then searched again for cases with “patent infringement” and also “trade secret,” “misappropriation,” and the like. There were 403. On the (unsupported!) assumption that the same ratio that held for 2004 holds for the entire sample, I assumed that 1/3 of these 403 were of the type I was searching for. That number is 134, which is a bit less than 4% of 3627. Q.E.D. (!!)

The first topic, precontractual liability, is well understood in the contracts literature. Contracts typically do not become binding until final, formal assent is given to their terms by all parties to the bargain. But in the period leading up to the “closing of the deal,” much valuable information may be exchanged on both sides. When a deal falls apart before consummation, aggrieved parties have used a number of legal theories to seek recovery for the value of information exchanged during negotiations. These lawsuits have had decidedly mixed results. Yet, a careful reading of patent infringement cases reveals that the contracts literature has overlooked the most effective form of precontractual liability: property rights. Again and again, I have found cases involving patent infringement where the facts reveal an earlier attempt at licensing. Often a misappropriation of trade secrets cause of action is added to these cases, but by far the most effective theory of recovery is that of patent infringement. Even when a misappropriation claim succeeds, a patent or patent application usually appears in the background, again demonstrating the important role of property rights in facilitating economic exchange. This broad assortment of cases demonstrates conclusively the crucial role that property rights play in creating incentives to make precontractual disclosures, and hence, in structuring economic exchange generally.

To the second major topic I have attached the label “enforcement flexibility.” This phrase pulls together under one heading a disparate collection of rules, doctrines, and scattered cases that collectively enhance the position of property holders when contractual disputes break out. For example, patent licensors can usually choose to enforce their bargains either by bringing a state law action sounding in contract or a federal action for patent infringement. This sometimes translates into a choice between state and federal courts—a choice worth having for a number of practical reasons. State courts are far more expert in the application of contract law, given their much larger caseload in this area. But federal patent infringement actions can bring superior remedial options, including the possibility of treble damages and attorney fees. The freedom to choose among fora and causes of action also carries a host of additional advantages, ranging from a longer statute of limitations in patent actions to the fact that a state court action does not put the validity of a patent at risk.

Through a host of sometimes minor doctrines, both substantive and procedural, patent holders are given significant advantages in the enforcement of contractual bargains. These advantages add up. They enhance the bargaining power and post-breach options of a contracting party. Taken together, they represent an important additional reason why property rights facilitate contracting. By increasing the strategic options of a

contracting party, they encourage bargaining and exchange. Just as in the case of precontractual liability, these features of property rights foster transactions—the backbone of economic activity.

## **II. PROPERTY RIGHTS AND PRECONTRACTUAL LIABILITY**

### **A. The Limitations of Contractual Safeguards Against Opportunism**

Contract law is founded upon mutual agreement. Unless and until parties mutually agree, there is no contract—and, hence, no basis for legal liability. This fact is the mainspring of legal “assent”: an offer without acceptance gives the offeror nothing and a purported acceptance with no valid offer gives the offeree nothing. Indeed, the fabric of contract law—from consideration to remedies—is shot through with indications of the importance of assent.

Assent has proven to be a durable mechanism for determining when legal liability attaches. Although there are of course gray areas, it is generally a useful bright line rule. But like many such rules, it comes at a cost. In cases where parties must exchange valuable information in order to *achieve* assent, liability under breach of contract principles may attach too late in the process to encourage the optimal amount of disclosure.

Sometimes negotiating parties do not have to share much information to strike a deal. A “spot market” purchase of some standard commodity—wheat or corn, for instance—works like that. Other cases are different. Potential transactors must sometimes relate a good deal of information during the course of contract negotiations. This is especially true where the seller is selling a complex asset whose features and qualities are difficult for the buyer to ascertain. The seller must explain the features of the asset, often by disclosing information about how it is made, how it performs under various tests, and so on. Likewise, where the buyer is purchasing an input that is to be used as part of a larger assembly or process, the buyer must disclose some details about its overall operation so the seller can be sure the asset in question will work for its intended purpose.

Time and again in intellectual property cases there is evidence that, during negotiations to sell a business, license a patent, or the like, the parties have exchanged valuable information. Sellers or licensors in particular often must disclose details concerning a new technology in order to interest a buyer and in order to justify the price and other terms requested by the seller. A seller who does not disclose at least some information is ask-

ing the buyer to purchase “a pig in a poke.” This has not been lost on economists. Most pertinent is the work of economics Nobelist Kenneth Arrow. Over forty years ago, Arrow posited what has since come to be known as Arrow’s information paradox:<sup>30</sup> information cannot be evaluated by a buyer until it is disclosed, but then the buyer has no reason to pay for it because he or she already has it.<sup>31</sup> (Arrow made this observation in the context of a discussion of the economics of patents—anticipating at the broad theoretical level the discussion of Part II below.)

Courts have not been blind to this; in response, they have developed an amorphous body of law known as “precontractual liability.” Courts have applied various doctrines under this heading to find liability of one sort or another before a formal contract is signed. But as we shall see, none of these doctrines provide reliable protection during precontractual negotiations.<sup>32</sup> That is where property rights come in—as we shall see in Section II.B below.

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30. See Kenneth J. Arrow, *Economic Welfare and the Allocation of Resources for Invention*, in *THE RATE AND DIRECTION OF INVENTIVE ACTIVITY: ECONOMIC AND SOCIAL FACTORS* 609, 615 (Richard R. Nelson, Nat’l Bureau of Econ. Research ed., 1962). It is *not* referred to as “Arrow’s paradox,” because then it might be confused with another of Arrow’s pathbreaking concepts—his “voting paradox,” also known as “vote cycling.” See JOSEPHINE T. ANDREWS, *WHEN MAJORITIES FAIL: THE RUSSIAN PARLIAMENT, 1990-1993* 70-73 (2002).

31. See *Micro Data Base Sys., Inc. v. Dharma Sys., Inc.*, 148 F.3d 649, 657 (7th Cir. 1998) in which a software developer released copies of its program design to a project partner as part of an overall effort to sell software to a large customer, Unisys. Writing for the court, Judge Posner explained:

[A] commercial secret rarely has value if it is known only to one person. Others must be let in on the secret and the remaining secrecy preserved by contracts forbidding disclosure to still others who might exploit it commercially to the harm of the secret holder. The [software] could not be sold without giving the ultimate buyer, Unisys, a chance to inspect it.

*Id.*

32. The classic contribution here is E. Allen Farnsworth, *Precontractual Liability and Preliminary Agreements: Fair Dealing and Fair Negotiations*, 87 COLUM. L. REV. 217 (1987) [hereinafter Farnsworth, *Precontractual Liability*]. Some recent contracts scholarship aspires to overthrow the traditional “mutual assent” benchmark, and install a more nuanced regime of legal liability that would slowly bind parties over time during negotiations; but courts have not yet caught wind of this. See Lucian Arye Bebchuk & Omri Ben-Shahar, *Precontractual Reliance*, 30 J. LEGAL STUD. 423 (2001); Omri Ben-Shahar, *Contracts Without Consent: Exploring a New Basis for Contractual Liability*, 152 U. PA. L. REV. 1829 (2004); see also Symposium, *Freedom from Contract*, 2004 WIS. L. REV. 261 (2004). *But see* Ronald J. Mann, *Contracts—Only With Consent*, 152 U. PA. L. REV. 1873 (2004) (criticizing these proposals on pragmatic, doctrinal grounds).

Most of the theories of precontractual liability are rooted in either promissory estoppel or some form of restitution. Promissory estoppel can be avoided by the simple expedient of not making any promises. Alternatively, where the parties have disclosed valuable information in the course of negotiations which later collapse, restitution has been an effective ground of recovery in some cases.<sup>33</sup> Yet as the cases show, restitution suffers from a number of defects. The bulk of authority provides that, for a disclosure to be compensable, the disclosing party must have made the disclosure with the expectation of compensation. This foundational principle of restitution finds expression in the body of law most usually applied to these circumstances: trade secrecy, via the requirement of a “confidential relationship.” When the facts indicate that a disclosure was not made in confidence, which they often do, there is no recovery for misappropriation of trade secrets.<sup>34</sup>

A series of cases concerning sale-of-business disclosures highlights the problematical features of conventional precontractual liability. One line of authority holds that negotiations in this setting are assumed to be conducted under a veil of confidentiality; hence disclosures are protected by trade secret law.<sup>35</sup> Another, including some more recent cases, disagrees. These authorities find either no confidential relationship or no proof that the information disclosed was used in a way proscribed by trade secret law.<sup>36</sup> Even cases which recognize confidentiality as a general rule often

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33. Farnsworth, *Precontractual Liability*, *supra* note 32, at 223-24 (discussing the exemplary case of *Earhart v. William Low Co.*, 25 Cal. 3d 503 (1979)).

34. For example, many cases hold that no confidential relationship is established when negotiating a distributorship agreement, even though valuable information may be disclosed in this setting. *See, e.g., In re Dippin' Dots Patent Litig.*, 249 F. Supp. 2d 1346, 1377 (N.D. Ga. 2003).

35. *See* *Cloud v. Standard Packaging Corp.*, 376 F.2d 384 (7th Cir. 1967); *Hoeltke v. C.M. Kemp Mfg. Co.*, 80 F.2d 912, 922-23 (4th Cir. 1936) (restitution theory); *Booth v. Stutz Motor Car Co. of Am.*, 56 F.2d 962 (7th Cir. 1932). *Cf.* *Lucini Italia Co. v. Grappolini*, No. 01 C 6405, 2003 WL 1989605 (N.D. Ill. 2003) (finding liability against consultant who misappropriated business opportunity offered by plaintiff).

36. *See* *Omnitech Int'l, Inc. v. Clorox Co.*, 11 F.3d 1316 (5th Cir. 1994) (unsuccessful suit by seller of line of business against potential buyer who later bought competitor); *Besly-Welles Corp. v. Balax, Inc.*, 291 F. Supp. 328, 346 (E.D. Wis. 1968) (discussing disclosures to potential investor or buyer of business: “The plaintiffs have failed to demonstrate that a confidential relationship existed or was contemplated by the parties. Therefore, the plaintiffs have not sustained their burden of proof that the defendants appropriated trade secrets.”), *aff'd in rel. part sub nom* *Bendix Corp. v. Balax, Inc.*, 421 F.2d 809, 818 (7th Cir. 1970); *see also* *Expansion Plus Inc. v. Brown-Forman Corp.*, 132 F.3d 1083 (5th Cir. 1998) (finding no ongoing confidential relationship arose from negotiations between software development company and another company that was interested in potentially acquiring rights in the software and promoting it commercially); *In re*

find no confidential relationship under the facts presented.<sup>37</sup> In any event, this issue is often a very close question.<sup>38</sup> The upshot is that, despite the occasional upwelling of a restitutionary impulse, a rational person cannot rely on trade secret law to protect sensitive disclosures made at the precontractual stage of negotiations.

Even if a disclosing party can establish the presence of a confidential relationship, he or she must clear other hurdles to recovery. For one, the recipient of the disclosure may prove that the parties expressly agreed not to be bound by any undertaking short of a final, formal contract.<sup>39</sup> In ef-

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*Dippin' Dots*, 249 F. Supp. 2d at 1377 (stating that Uniform Trade Secrets Act, promulgated in 1995 and now adopted in twenty states, categorically excludes cases based on "implied duty of confidentiality").

37. See, e.g., *Cloud*, 376 F.2d at 384.

Where the facts show that a disclosure is made in order to further a particular relationship, a relationship of confidence may be implied, e.g. disclosure to a prospective purchaser to enable him to appraise the value of the secret, disclosure to a prospective lender to assure him of the prospects of the borrower's business, disclosure to agent, partner, or joint adventurer. Here, however, no relationship between the parties existed prior to or at the time of the disclosure, and although [the parties] had several discussions at later dates, of the problems involved, we find no dealing from which a relationship of confidence is reasonably to be implied.

*Id.* at 388-89 (footnote omitted); see also *Pachmayr Gun Works, Inc. v. Olin Mathieson Chem. Corp.* Winchester W. Div., 502 F.2d 802, 808 (9th Cir. 1974) ("[T]he courts will consider the factual circumstances of each case on an individual basis, to determine whether a confidential relationship may reasonably be implied.").

38. Cf. *Burten v. Milton Bradley Co.*, 763 F.2d 461, 464 (1st Cir. 1985) (noting existence of confidential relationship is "so close a question in this case," ultimately reversing trial judge's grant of JNOV motion after jury verdict in favor of plaintiff, and therefore imposing liability for breach of confidence).

39. See Farnsworth, *Precontractual Liability*, *supra* note 32, at 257. *Kearns* also noted:

It is, quite simply, incredible that on the basis of two contacts three days apart [that plaintiff] . . . formed with a mammoth, multi-national corporation a relationship of trust and confidence completely contrary to the plain language of a waiver [prohibiting reliance on a confidential relationship] he admits to having voluntarily signed . . . . Even assuming, arguendo, that such a relationship had come into being in the three days before the first waiver was signed, the Court cannot but conclude that plaintiff's right to rely thereon was effectively terminated when the waiver form was first presented to him, for at that point he was put on notice of defendant's position and could have taken appropriate action. This the plaintiff did not do; instead, he signed the first waiver then and similar ones on two subsequent occasions.

fect, parties can (and do) contract out of precontractual liability. In addition, the recipient of the information may be able to show the absence of other elements necessary to establish recovery for misappropriation of trade secrets—that the disclosing party did not take reasonable precautions to protect against widespread dissemination of the information, for example,<sup>40</sup> that the information in question was never actually disclosed,<sup>41</sup> or that the “disclosee” did not make use of the information in a way that violated trade secret law.<sup>42</sup> The lesson from the cases is this: the parties may transmit a good deal of useful information during negotiations, but many uses of the information are not *actionable*.

A case in point is *Omnitech International, Inc. v. Clorox Co.*<sup>43</sup> Omnitech was trying to sell its insecticide line of business to Clorox. During preliminary negotiations, Omnitech claimed that it disclosed much useful information to Clorox, about both the details of its products and the insecticide business generally. Clorox signed a nondisclosure agreement and an option to purchase Omnitech, but later acquired one of Omnitech’s competitors instead. The Fifth Circuit upheld dismissal of Omnitech’s claim for misappropriation of trade secrets. The court acknowledged that there

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Kearns v. Ford Motor Co., 203 U.S.P.Q. 884, 888 (E.D. Mich. 1978) (footnote omitted); *see also* Cargill, Inc. v. Sears Petroleum & Transp. Corp., 334 F. Supp. 2d 197, 245 (N.D.N.Y. 2004) (rejecting summary judgment in favor of disclosee, but noting that disclosee sent a letter prior to the meeting in which the disclosure occurred providing: “Our agreement to meet with you is contingent on your acknowledgment that no confidential information or otherwise proprietary information shall be exchanged.”); *cf.* Hirsch-Chemie, Ltd. v. Johns Hopkins Univ., 36 U.S.P.Q.2d 1395, 1398 (4th Cir. 1985) (unpublished) (finding preliminary negotiations, including an exchange of letters, did not create a binding license agreement nor even an implied-in-fact contract); Pleatmaster, Inc., v. Consol. Trimming Corp., 111 U.S.P.Q. 124 (N.Y. Sup. Ct. 1956) (finding that defendant has valid defense to contract suit for royalties where defendant informed patentee/licensor it would not pay royalties until a contract was signed).

40. It is the court’s opinion that the plaintiffs should have regarded [defendant’s agent] as a potential competitor. The plaintiffs did not take reasonable precautions which would prevent him from becoming a competitor if a satisfactory arrangement could not be worked out with [plaintiffs]. Viewing [defendant’s agent] as a potential competitor, the plaintiffs should have taken steps to insure the confidentiality of the information given to him.

*Besly-Welles*, 291 F. Supp. at 346.

41. *See* Heyman v. AR. Winarick, Inc., 325 F.2d 584, 588-90 (2d Cir. 1963) (finding that although confidential relationship existed during negotiations over the sale of a business, plaintiff never disclosed secret product formula or ingredients to defendant).

42. *Id.* at 590-91 (holding customer information given to prospective buyer of business during negotiations qualified for trade secret protection, but defendant made no actionable use of the information).

43. 11 F.3d 1316 (5th Cir. 1994).

may well have been a confidential relationship between the prospective buyer and seller in this case due to the nondisclosure agreement, but emphasized that Omnitech had not proven that Clorox used or disclosed Omnitech's information. Omnitech witnesses testified that Clorox must have made "use" of the Omnitech information in evaluating its bid for the competitor insecticide company. But the court stated that "to sustain a trade secrets action under the 'use' prong of the statutory definition of 'misappropriation,' a plaintiff must necessarily demonstrate that the defendant received some sort of unfair trade advantage."<sup>44</sup> Thus, although the education that Omnitech provided was no doubt valuable, simply making Clorox smarter about the market for insecticides was not enough to trigger liability under trade secret law.<sup>45</sup> The same pattern holds in related areas of the law as well.<sup>46</sup>

A case involving an invention in the aluminum processing industry provides another example of the limitations of pre-contractual liability theories. In *Howell v. ALCOA*,<sup>47</sup> two inventors had developed an improved version of a common tool used in the aluminum industry. Representatives of ALCOA visited one of the inventors in his workshop to view a prototype and discuss a potential supply arrangement. The ALCOA officials were noncommittal, however. When a suspiciously similar design later turned up in use at ALCOA's factory, the inventors sued for precontractual liability under various theories. Unfortunately for them, the court held (partly on the basis of tape recordings made at the time of the meeting) that the officials involved clearly signaled their unwillingness and inability to enter into a formal contract or to commit ALCOA in any way. According to the court:

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44. *Id.* at 1325.

45. Two years later the Eighth Circuit followed *Omnitech* in a case involving essentially identical facts. *Sip-Top, Inc. v. Ekco Group, Inc.*, 86 F.3d 827 (8th Cir. 1996).

46. Speaking of the closely analogous situation where an independent contractor is hired to assist in the work of a corporate employer, a treatise writer states:

Where independent contractors are employed, a duty of nondisclosure may be inadequate protection for the trade secret holder. It is often difficult to establish that unauthorized use occurred even if the contractor subsequently engages in competitive activity. Presumably, a contractor is selected because of its capability, especially in reference to design or production work. During the course of the contract, this capability may be enhanced by accumulated experience. Following termination of the original contract, the independent contractor will seek to use these capabilities and experience for its own purposes.

RAYMOND T. NIMMER, *THE LAW OF COMPUTER TECHNOLOGY* § 3:28 (2004).

47. 8 F. Supp. 2d 1012 (E.D. Tenn. 1997).

[The ALCOA official] made it evident to [plaintiff-inventor] that he . . . did not have the authority to enter into the contract which [the inventor] sought. [The official] discussed with [the inventor] the process of reaching some agreement with ALCOA in terms of “steps,” one being determining whether the purchasing department would be willing to contract out for [the invention], and another being the obtaining of a price quotation from [the inventor] for consideration. . . . It is clear that [the official] contemplated that there would not be any binding agreement between [the inventor] and ALCOA until there was a written contract signed by the parties.<sup>48</sup>

*ALCOA* illustrates well the problems that potential suppliers, such as the inventors in this case, face when beginning the process of disclosing and negotiating with a potential buyer. The inventors did not know that the ALCOA employee they were dealing with did not have authority to bind the company—a classic agency problem in contracting. Even if he could have, he signaled that no binding agreement was as yet contemplated. These obstacles proved fatal to the various contract-based theories of recovery that the two inventors had relied on. Without a property right, in a situation where preliminary negotiations did not produce a contract, the seller was left without any legal recourse.

#### **B. The Role of Property Rights in Precontractual Disclosures**

If precontractual disclosures were rare, the uncertainty in this area would not amount to much. But the truth is quite the opposite. In many cases, in particular where something new and untried is the subject of contract negotiations, much of value is disclosed. So how does a disclosing party cope? In this Section we see one effective solution: by owning property rights.

Property rights are often characterized by their effect on “strangers”; they are conventionally spoken of as being “good against the world.”<sup>49</sup> This is without doubt one of their most distinctive features. It flows from the *in rem* nature of property rights: legal relations follow from the *res*, the thing, and not from any preexisting relationship between parties. In fact, property rights in a sense *create* a legal relationship. This distinguishes them immediately from contracts, which as we have seen, bind only the specific parties that assent to their terms.

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48. *Id.* at 1015.

49. *See, e.g.,* Thomas W. Merrill & Henry E. Smith, *The Property/Contract Interface*, 101 COLUM. L. REV. 773 (2001).

But the emphasis on universality—on being good against all comers—obscures the role of property rights in the structuring of bilateral exchange. In the negotiation period leading up to the signing of a contract, property rights play an absolutely crucial role. Case after case mentions the disclosure of sensitive information during the precontractual stage, often under the protective cloak of a patent or other property right. So while property rights are indeed good against the world, I want to emphasize one crucial slice of the world—negotiating partners—which has been overlooked.

The case law demonstrates what I mean. In *Celeritas Techs., Ltd. v. Rockwell Int'l Corp.*,<sup>50</sup> for example, plaintiff Celeritas, having developed an advanced technique for correcting errors in modem transmissions, entered into negotiations with Rockwell, the dominant manufacturer of modems. After seven months of negotiations, the parties failed to conclude a formal joint business arrangement.<sup>51</sup> Rockwell later began selling a product based on similar technology.<sup>52</sup> Akin to *Celeritas* is *Medtronic, Inc. v. Mine Safety Appliances Co.*<sup>53</sup> There, the sales agent for a subsidiary of Mine Safety disclosed technical information to medical pacemaker manufacturer Medtronic, an important buyer of Mine Safety's lithium/iodine (Li/I) batteries. The parties engaged in "technology exchanges in furtherance of developing Li/I cells for pacemaker use,"<sup>54</sup> which eventually resulted in a joint research and development agreement, and, ultimately an attempt by Medtronic to make the batteries itself, cutting Mine Safety out of the picture.<sup>55</sup> A final example comes from *Monolith Portland Midwest Co. v. Kaiser Aluminum & Chemical Corp.*,<sup>56</sup> a case involving technology for treating high-temperature brick kilns. The opinion in the case provides particularly rich details regarding the sorts of routine technical disclosures made in advance of a licensing transaction. The court recites numerous detailed disclosures regarding technical features of kiln construction, in particular techniques for attaching the kiln lining to the outer section of the kiln. Detailed testimony relates in-depth conversations the parties had to solve problems in kiln operation. After licensing negotiations broke down,

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50. 150 F.3d 1354 (Fed. Cir. 1998).

51. *Id.* at 1356-57.

52. Celeritas had obtained a patent on its technology. Although the patent was later invalidated, Rockwell was found liable for violation of a written nondisclosure agreement entered into at the beginning of negotiations. This general phenomenon—disclosures made under the protection of a patent or patent application—is discussed *infra* at Section III.A.2.

53. 468 F. Supp. 1132 (D. Minn. 1979).

54. *Id.* at 1136.

55. *Id.*

56. 152 U.S.P.Q. 380 (C.D. Cal. 1967).

Midwest later sued for both misappropriation of trade secrets and patent infringement.<sup>57</sup>

Many other cases reveal the same pattern of disclosures on the way to a final contract.<sup>58</sup> Often, the parties agree to an interim contract designed to cover only the disclosure and negotiation period. (Because these contracts are perfunctory and incomplete, and designed merely to foster negotiation of the “real” contract, I treat them as part of the “precontractual” period.) These temporary contracts are of two types. One, usually written by a large company that wants to foreclose liability as much as possible, expressly rules out *any* form of precontractual liability. A recent case involving Lexmark, the computer printer company, falls into this category.<sup>59</sup> Obviously if the parties agree that a final contract is required for any sort of contractual liability, a disclosing party has no way to recover if no such contract is ever signed. (That became painfully obvious to BDT Products, Inc., the other party in the *Lexmark* case.)

There is another type of interim contract, the nondisclosure agreement (NDA). These temporary contracts sometimes better protect the disclosing party. The parties typically sign an NDA at the outset of negotiations. It is designed to protect against disclosure, and sometimes use, of information disclosed during the negotiations—typically, information the negotiators consider trade secrets. NDAs are not intended to be final, binding con-

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57. *Id.* at 424. Illustrating some of the shortcomings of relying on trade secret theories in this context, the court found that none of the plaintiff’s disclosures amounted to trade secrets (for example, because they were based on the opinion of plaintiff’s technical expert, and not backed up with hard data). *See id.* at 401. The court also found that the negotiations were not in any event conducted in an “atmosphere of trust and confidence.” *Id.* at 420.

58. For a sampling of very recent cases, see for example, *Kara Tech., Inc. v. Stamps.com Inc.*, No. 04 Civ. 8364(LMM), 2005 WL 323749, at \*1 (S.D.N.Y. Feb. 8, 2005) (adjudicating a motion to transfer in case where patentee disclosed online stamp business technology to defendant in context of licensing negotiation where defendant broke off negotiations and later entered the market); *Medtronic Vascular, Inc. v. Advanced Cardiovascular Sys.*, No. Civ. 98-80-SLR, 2005 WL 46553, at \*2 (D. Del. Jan. 5, 2005) (including allegations regarding disclosure of intricate details of new post-surgical vascular “stent” in context of effort to “look[] for a partner to develop [plaintiff’s] technology”); *On-Line Techs., Inc. v. Bodenseewerk Perkin-Elmer GMBH*, 386 F.3d 1133, 1135 (Fed. Cir. 2004) (“[Plaintiff On-Line Technologies asserted that] it had revealed its gas cell design to Perkin-Elmer scientists in anticipation of a possible business arrangement between the companies relating to On-Line’s device.”); *cf. Ultra-Precision Mfg., Ltd. v. Ford Motor Co.*, 411 F.3d 1369, 1379-81 (Fed. Cir. 2005) (rejecting suit by consultant for restitution or joinder to buyer’s patents, where consultant could not show that information disclosed to buyer was different from or more valuable than information in consultant’s previously-issued and published patents).

59. *BDT Prods., Inc. v. Lexmark Int’l Inc.*, 274 F. Supp. 2d 880 (E.D. Ky. 2003).

tracts. They are usually limited in ways that hurt a disclosing party's chances of recovery later. For one thing, some sophisticated parties refuse to sign them.<sup>60</sup> For another, they often excuse a "disclosee" from liability where the disclosed information is available elsewhere at the time of disclosure. This can provide a robust defense for the disclosee, who need only show that the information disclosed during the negotiations could have been acquired from some public domain source. Furthermore, enforcing these agreements is a highly fact-intensive exercise. To recover, the disclosing party must prove that certain *specific* information was disclosed, typically at a certain meeting, which may have happened some years before a deposition or trial. In short, NDAs involve nontrivial problems of proof. For these reasons, they are far less effective than final, formal agreements. Most business people know this; they know that even with a signed NDA, precontractual disclosures can be risky for the disclosing party.<sup>61</sup> As we will see in the next Section, this explains why disclosing parties so often seek property rights.

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60. John G. Petrovich, *Funding a Computer Technology Startup*, 547 P.L.I./PAT 769, 771 (1999) ("Most venture capitalists outright refuse, or resist strenuously, signing a confidentiality or nondisclosure agreement, claiming that it invites legal problems.").

61. See, e.g., Christopher D. David, Note, *When a Promise is Not a Promise: Georgia's Law on Noncompete Agreements, as Interpreted by the Eleventh Circuit in Keener v. Convergys Corporation, Gives Rise to Comity and Federalism Concerns*, 11 J. INTELL. PROP. L. 395, 396 (2004) ("Thus, the express non-disclosure agreement is, at best, an incomplete protection against disclosure."). Another commentator states:

The problem with confidentiality agreements is that they are not always available to new or smaller firms, which have only limited access to legal counseling. . . . There is also the problem of trying to protect the unknown—it may be impossible to define the trade secret at the outset of the . . . relationship, because the underlying research and development has not yet been done. Scientists and engineers who understand the mercurial nature of the technology industry are reluctant to sign confidentiality agreements because they do not want to sacrifice their future mobility.

Miles J. Feldman, Comment, *Toward a Clearer Standard of Protectable Information: Trade Secrets and the Employment Relationship*, 9 HIGH TECH. L.J. 151, 181 (1994).

1. *The Precontractual “Field Effect” of Property Rights*

Property rights are often said to be good against the world. The owner of a property right need not show any special relationship with a third party in order to have legal rights against that party. This is one of the sharpest points of contrast between contracts and property rights. One easy way to envision this aspect of property rights is to see them as creating a “field of legal protection” around an asset.<sup>62</sup> Anyone who comes within a certain distance of the field is subject to it, even though he or she has not yet made actual contact with the asset’s owner. The field protects the asset; it is this feature that makes the asset owner more confident about allowing the asset “out into the world,” where it can be inspected by those who might want to contract with the asset’s owner.

There is a natural contrast here with exchange based strictly on contract rights or exchange in the absence of property rights. A contract is a direct legal relationship between two discrete economic actors—much like a direct connection between two “nodes” on a network. Until the direct link is established, the two nodes remain independent; they have no legal duties toward one another. Generally speaking, the legal duties created by contract come into being only as a result of the contractual relationship. As a consequence, an asset that is to be transferred strictly by contract occupies a precarious position in the period leading up to the contract. Until the direct relationship is firmly established, the asset is at risk. Knowing this, asset owners will have to be much more careful about who has access to it, and under what circumstances. It is precisely these limitations on the pre-contractual dealings between parties that property rights overcome so effectively. The figures that follow illustrate these concepts.

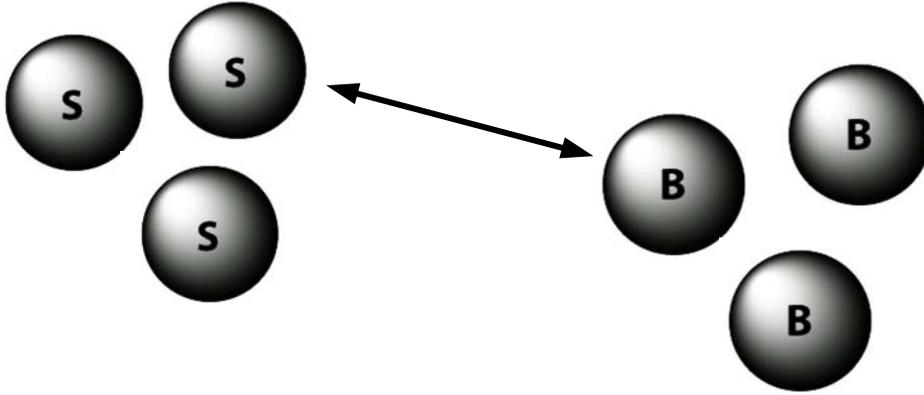
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62. Others have suggested that property rights may be viewed this way. For example, Merrill and Smith state:

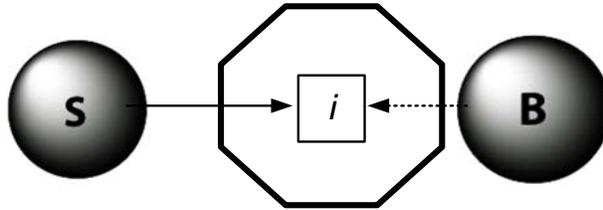
When we encounter a thing that is marked in the conventional manner as being owned, we know that we are subject to certain negative duties of abstention with respect to that thing—not to enter upon it, not to use it, not to take it, etc. And we know all this without having any idea who the owner of the thing actually is. In effect, these universal duties are broadcast to the world from the thing itself.

Thomas W. Merrill & Henry E. Smith, *What Happened to Property in Law and Economics?*, 111 YALE L.J. 357, 359 (2001).

A Contract Represents a Direct  
“Node to Node” Connection  
Between Seller (S) and Buyer (B)



Property Rights Create a Legal “Field”  
Around an Information Asset (*i*), Protecting  
Seller (S) During Buyer’s (B)  
Precontractual Evaluation



2. *What Disclosures do Property Rights Encourage? Evidence from the Case Law*

The case law shows that property rights—again, primarily patents—facilitate disclosure of three types of information: (1) information contained in patent applications, which are kept secret for a substantial time after filing; (2) details related to an invention that are not disclosed in a patent or patent application; and (3) valuable but unpatented information beyond the boundaries of the patent.

In the world of R&D, timing is often crucial. This is evident from trade secret cases, where a common remedy is an injunction preventing a party from using misappropriated information for a certain period. This “headstart” period rightfully belongs to the trade secret’s owner. By the same token, early receipt of information that will later be published in an issued patent (or, these days, a published patent application) may also be quite valuable. The cases reflect the importance of timing. Courts have, for instance, found liability for misappropriation of trade secret information later made public in an issued patent or other later-published information. The cases stress the advantage of early knowledge—information known by a party ahead of the general public.<sup>63</sup>

An issued patent usually does not disclose everything of value about an invention and the surrounding technology. Patent specifications are not “production handbooks”; much in the way of practical detail may lawfully be left out. And much of what is left out may be valuable. We know from detailed case studies of the development of specific technologies that the aggregate value of all the “minor” improvements, tweaks, and accumulated operational wisdom often exceeds the value of the basic invention itself.<sup>64</sup> This explains why so many patent license agreements also include a provision for the licensing of ancillary trade secrets and know-how.<sup>65</sup> Indeed, some instructive articles from the economics literature suggest that the *primary* purpose of patents is to spearhead the transfer of the really valuable stuff—the associated unpatented information.<sup>66</sup>

There is also a broad category of information that is related, but ancillary, to the main disclosures of the patent. These data do not include details of the patented invention and its implementation but rather information about the business setting in which the technology may be employed, potential customers and their needs, and the like. This may grow out of market research done in connection with the actual R&D, or it may come

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63. See generally D. Kirk Jamieson, *Just Deserts: A Model to Harmonize Trade Secret Injunctions*, 72 NEB. L. REV. 515, 533-34 (1993) (collecting cases).

64. See, e.g., SAMUEL HOLLANDER, *THE SOURCES OF INCREASED EFFICIENCY: A STUDY OF DU PONT RAYON PLANTS* (1965) (describing the primary importance of incremental process innovations in overall productivity improvement in nylon production technology).

65. See Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265 (1977), reprinted in *FOUNDATIONS OF INTELLECTUAL PROPERTY* 140 (Robert P. Merges & Jane C. Ginsburg eds., 2004).

66. See ASHISH ARORA, ANDREA FOSFURI & ALFONSO GAMBARDELLA, *MARKETS FOR TECHNOLOGY: THE ECONOMICS OF INNOVATION AND CORPORATE STRATEGY* (2001); Ashish Arora, *Contracting for Tacit Knowledge: The Provision of Technical Services in Technology Licensing Contracts*, 50 J. DEV. ECON. 233, 246 (1996).

from the experience of the R&D firm itself. This can be very valuable information, whatever its form.

### 3. *Patents as Precontractual Protection*

As a case study, consider *On-Line Technologies, Inc. v. Bodenseewerk Perkin-Elmer GMBH*.<sup>67</sup> A small company, On-Line, executed an agreement under which it disclosed details about its proprietary gas chromatograph technology to defendant Bodenseewerk Perkin Elmer (BPE), a potential customer and joint venture partner. The disclosing party, On-Line, was clearly expert in the technology area in question,<sup>68</sup> and there are indications that BPE learned some valuable information.<sup>69</sup> Yet the court ruled that On-Line had not proven that BPE misappropriated any trade secrets. Much of the court's discussion centers on a "battle of expert reports," which typifies this area of law. In the end, BPE's expert was more persuasive than On-Line's.<sup>70</sup> Although the court held that On-Line had disclosed

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67. 386 F.3d 1135, 1138 (Fed. Cir. 2004).

68. The *On-Line Technologies* case centered on U.S. Patent No. 5,440,143. One of the co-inventors listed on this patent, Robert M. Carangelo, is listed on numerous other patents and publications in this area. See, e.g., U.S. Patent No. RE35,872 (Aug. 18, 1998); Steven C. Bates et al., *Fourier Transform Infrared Hadamard Tomography of Sooting Flames*, 64 REV. SCI. INSTRUMENTS 1213 (1993). Carangelo also received an award from *R&D Magazine* as a participant in one of the top 100 R&D projects of 1994. See Reed Business Information Science Group, R&D 100 Awards Archive: 1994, <http://www.rdmag.com/rd100ach/RD100SearchResults.aspx?&intYear=1994&Type=Y> (listing Benchtop Emissometer Model 205 WB, produced by Advanced Fuel Research, Inc. and On-Line Technologies, Inc.).

69. For example, the Federal Circuit opinion states:

[T]he district court concluded that undisputed evidence showed that Perkin-Elmer did not begin to incorporate the features of On-Line's gas cell into its own product until 1996, after the issuance of [On-line's] patent. Although On-Line referred to evidence regarding Perkin-Elmer's conduct before the issuance of the ...patent, the district court held that none of that evidence was probative of misappropriation because the conduct in question all constituted legitimate evaluation of On-Line's product pursuant to the nondisclosure agreement entered into by On-Line and Perkin-Elmer in 1994.

*On-Line Techs.*, 386 F.3d at 1141. It is evident from this that BPE probably learned much about On-Line's technology during the negotiations; BPE simply did not *incorporate* this information into a useful product until after On-Line's patent issued. It seems unlikely that BPE "unlearned" the lessons it acquired from On-Line while "evaluating" the On-Line technology and then "re-learned" them by reading On-Line's patent when it later issued. The real point seems to be, once again, the elusive nature of trade secret misappropriation claims, which made it difficult for On-Line to carry its burden of proof regarding exactly how BPE *used* what it learned from On-Line in 1994.

70. See, e.g., *id.* at 1142 ("[BPE's expert] averred that he had learned nothing useful about On-Line's gas cell [when he visited the On-Line site during preliminary negotia-

detailed information, much of the information was eventually disclosed in On-Line's patent when it issued<sup>71</sup> or in a patent to a third party.<sup>72</sup> In addition, BPE was engaged in "legitimate evaluation of On-Line's product pursuant to the nondisclosure agreement entered into by On-Line and Perkin-Elmer."<sup>73</sup>

This aspect of the *On-Line Technologies* case demonstrates the weaknesses of trade secret law in protecting sensitive information. Fortunately for On-Line, it had another leg to stand on—patent infringement. While On-Line was negotiating with BPE, it was also pursuing a patent application, which issued as U.S. Patent No. 5,440,143 ("the '143 patent"), in 1995.<sup>74</sup> The patent covered the very technology that On-Line was trying to license to BPE, namely, a method for increasing the length of the light path in a spectrometer gas cell. This patent made a major difference in the case. The Federal Circuit held that the patent claim at issue covered the products BPE sold after On-Line made its disclosures and the deal fell through.<sup>75</sup> This gave On-Line an opportunity to recover against defendant BPE, notwithstanding its failure to prove that BPE misappropriated any On-Line trade secrets.

Patents give firms like On-Line an important weapon when precontractual negotiations break down. Knowing this, such a firm is more likely to pursue deals, making necessary disclosures along the way. Whatever the vagaries of proving a trade secret claim, if a negotiating partner such as BPE later enters the market with similar technology, the patent gives a firm like On-Line a chance to stop them, or at least to obtain some compensation. A patent in these circumstances thus undoubtedly makes it a bit easier for a firm like On-Line to enter into preliminary negotiations in the first place, and thus, a bit more likely that it will do so.

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tions] that was not already evident from On-Line's nonconfidential marketing brochure. On-Line did not offer evidence to contradict [this] representation."); *Id.* at 1144 ("On-Line failed to address the assertions in [BPE's expert's] affidavit that the mirror array in the source assembly was "text-book". . . Although On-Line argues that the earlier device did not use a ceramic igniter as the energy source, there was no evidence before the district court that the difference in the energy source rendered On-Line's source assembly sufficiently distinct to constitute a protectable trade secret.").

71. *Id.* at 1141.

72. *Id.* at 1143.

73. *Id.*

74. The patent shows a filing date of February 25, 1994 and the *On-Line* case notes that the NDA was signed with BPE "in 1994." *Id.* at 1141.

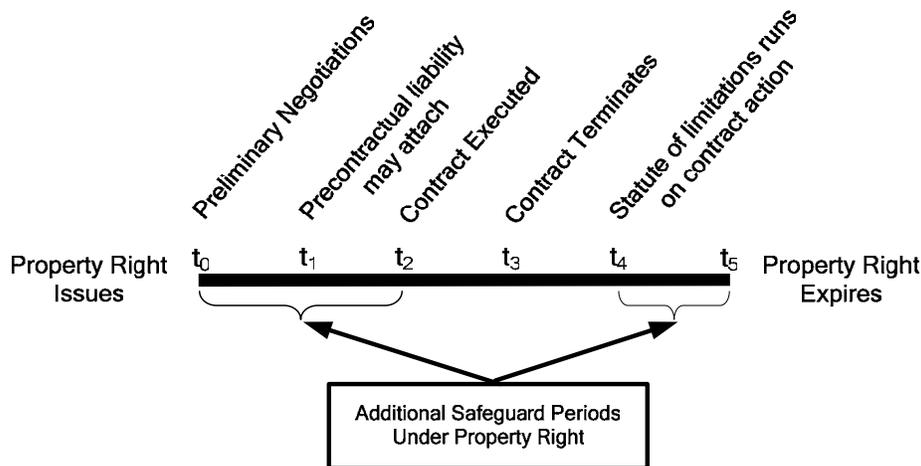
75. *Id.* at 1140 (reversing district court claim construction, which had been basis of summary judgment of no infringement and remanding for further proceedings).

Many other cases support this. Taken together, they show definitively that when a disclosing party has a patent, it has a much better chance of legal relief in the event his or her disclosure results in unauthorized market entry. The lesson, once again, is simple but important: property rights serve a crucial transactional role.

### III. PROPERTY RIGHTS AND ENFORCEMENT FLEXIBILITY

A contracting party with a property right has far more options than one without. He or she can often bring suit for breach of contract or for infringement; before or after termination of a licensing contract; for contract or infringement damages, whichever is higher; in state or federal court; against parties or non-parties to the contract; and under a shorter (contracts) or longer (patent law) statute of limitations. Collectively, these advantages give a great deal of enforcement flexibility to property holders who have entered into contracts.

Notice that several of these advantages have a temporal dimension. These features are combined with the precontractual liability analysis of Part II, and depicted in the following figure, which compares the protections afforded sellers under contract with those made available by a property right:



In this Part, we take up those advantages not primarily connected to the precontractual period: those that accrue from contract execution ( $t_2$  in Figure 5) to the running of the statute of limitations ( $t_5$ ).

### A. Breach versus Infringement Suits: Strategic and Practical Advantages of Increased Flexibility

Many of the enforcement options that come with property rights stem from the ability to sue for either breach of contract or infringement.<sup>76</sup> (Without a property right, obviously, the only enforcement option is for breach of contract.<sup>77</sup>) Courts may require that the contracting party choose one or the other cause of action in a given lawsuit,<sup>78</sup> but there is support for a party's right to pursue *both* types of cases in separate forums.<sup>79</sup> The only requirement for federal jurisdiction is that the patentee must normally terminate the licensing agreement before filing suit.<sup>80</sup>

To see the practical advantages of this increased flexibility, it is best to consider some actual situations where parties chose one option over the other.

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76. See *Henry v. A.B. Dick Co.*, 224 U.S. 1 (1912); *Dow v. United States*, 36 Fed. Cl. 15 (1996).

77. See, e.g., *Beghin-Say Int'l, Inc. v. Ole-Bendt Rasmussen*, 733 F.2d 1568 (Fed. Cir. 1984) (finding that, where a firm that had commissioned research from a contract researcher sought to establish the enforceability of pre-invention assignment agreements, state contract law was its only recourse because with no federal property rights yet in existence, there was no federal court jurisdiction).

78. See, e.g., *De Cew v. Union Bag & Paper Corp.*, 57 F. Supp. 388 (D.N.J. 1944). Some cases speak in terms of an "election principle," as in "waive the tort, sue in assumpsit." *Sims v. Jadin*, 135 F. Supp. 917, 918 (E.D. Wis. 1955). This is usually applied to limit the plaintiff to one species of damage claim, however. See *York v. Stromman*, 105 Cal. App. 2d 586 (Ct. App. 1951). Despite this usage, there is no true "election" rule that applies in these cases. See *Applera Corp. v. Illumina, Inc.*, 282 F. Supp. 2d 1120 (N.D. Cal. 2003) (denying defendant's motion to stay federal court action pending outcome of state contract lawsuit); cf. *Del Ricchio v. Photochart*, 124 Cal. App. 2d 301 (Ct. App. 1954) (holding that a suit under a patent license agreement does not automatically terminate the agreement, an event which would cut off right to sue for breach and trigger standing to sue for patent infringement).

79. See, e.g., *Applera*, 282 F. Supp. 2d at 1126 (refusing concurrent state and federal jurisdiction is "a rare occurrence").

80. *Air Prods. & Chems., Inc. v. Reichhold Chems., Inc.*, 755 F.2d 1559, 1562 (Fed. Cir. 1985); see also *Gen-Probe, Inc. v. Vysis, Inc.*, 359 F.3d 1376 (Fed. Cir. 2004) (holding federal court does not have jurisdiction as long as licensing agreement is still in effect); *Metabolite Labs, Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354 (Fed. Cir. 2004) (same); cf. *Krantz v. Van Dette*, 165 F. Supp. 776 (N.D. Ohio 1958) (holding post-termination events can only sound in patent law where licensor terminates the license itself).

1. *Infringement Over Breach of Contract: Strategy and Sample Cases*

Sometimes, patent infringement litigation may have a higher expected payoff as compared to suit under a contract. A successful infringement suit may lead to higher damages for one of three reasons. Infringement damages, assessed after the termination of a licensing agreement, may exceed what the corresponding damages would have been in a suit for breach of contract. Second, a patentee can collect up to treble damages if there is proof that the infringement was willful.<sup>81</sup> Finally, a successful patent infringement plaintiff may collect attorney fees in an “exceptional” case,<sup>82</sup> while attorney fees are rarely awarded in contracts suits.

The situation in *Wisconsin Alumni Research Foundation v. General Electric Co.*<sup>83</sup> illustrates the point. WARF sued GE under two separate theories: breach of a licensing agreement and patent infringement for the period after WARF terminated the agreement.<sup>84</sup> The district court awarded damages for breach of contract at the contract royalty rate of 2%, but awarded infringement damages based on a 3.5% royalty rate.<sup>85</sup> The upshot was that WARF benefited from advantageous patent law rules to obtain higher damages than it would have if it had sued only under the contract.

As the *WARF* case shows, there can be affirmative reasons to file suit for infringement rather than breach of contract. Beyond increased damages, another reason is that a plaintiff may face obstacles in mounting a breach of contract suit. There may be a lack of contractual privity with one or more of the defendants, for example, or the statute of limitations may bar a breach of contract suit. The issues are complex enough to merit a brief summary.

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81. See 35 U.S.C. § 284 (2000).

82. See 35 U.S.C. § 285 (2000).

83. 880 F. Supp. 1266 (E.D. Wis. 1995).

84. The option to terminate a licensing agreement is an important aspect of the licensor's enforcement flexibility, because termination confers standing to sue for infringement. With an agreement still in effect, there can be only breach, and not infringement. See *Gen-Probe*, 359 F.3d at 1376. Sometimes specific contract language allows a licensor to terminate under certain circumstances. See, e.g., *Nat'l Rejectors, Inc. v. A.B.T. Mfg. Corp.*, 184 F.2d 612 (7th Cir. 1950) (holding a patent licensing agreement provided for a right to terminate at the end of a specified period to cure inadequate performance under the agreement). In any event, material breach by the licensee justifies termination. See, e.g., *Metabolite Labs*, 370 F.3d at 1370.

85. *WARF*, 880 F. Supp. at 1274, 1276.

## a) Contractual Privity

Privity issues arise frequently in licensing cases. This issue is partly a result of the fact that many licensing negotiations involve more than two parties.<sup>86</sup> These negotiations can be complex, with parties coming in and out of the picture over time. Any agreement that is finally reached may leave out one or more of the parties who were involved along the way. Firms may also participate in the development of a technology without ever intending to enter into a contract, typically by assisting one of the firms that is a party to the contract.<sup>87</sup> Other cases grow out of distribution or supply chain arrangements in which one firm takes a product through one stage of production, and then hands it off to another firm further down the chain.<sup>88</sup> This way of making things exposes each firm's technology to the risk of misappropriation by other firms down the chain—possibly including firms with whom they have no contract. Thus, in a production scenario where A hands off to B who hands off to C, A and B may have a contract, as well as B and C, but perhaps not A and C. Although there may be extensive dealings between A and C, direct or indirect, there is no formal contractual relationship on which to base a legal claim. Patent infringement—a cause of action grounded in property rights—is the only option.<sup>89</sup>

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86. *See, e.g.*, *Lisle Corp. v. Edwards*, 777 F.2d 693 (Fed. Cir. 1985) (involving three parties: designer/patentee, licensee, and licensee's customer); *Ellison Educ. Equip., Inc. v. Chen*, No. SACV02-1184-JVS(ANX), 2004 WL 3154592 (C.D. Cal. Dec. 21, 2004) (involving four primary parties: plaintiff, alleged co-inventor of technology growing out of a preliminary negotiation with eventual patentees/individual defendants; partner of patentees/individual defendants; and two companies with whom patentees/individual defendants had been doing business); *Vapor Corp. v. Westcode Inc.*, 12 U.S.P.Q.2d 1218 (E.D. Pa. 1989) (involving three parties: trade secret owner, customer to whom it made disclosures, and competitor with whom customer allegedly shared disclosures).

87. *See, e.g.*, *Water Techs. Corp. v. Calco Ltd.*, 850 F.2d 660 (Fed. Cir. 1988) (regarding industry consultant representing potential licensee, who negotiated with patent owner and its licensee); *Mixing Equip. Co., Inc. v. Innova-Tech, Inc.*, 9 U.S.P.Q.2d 1057 (E.D. Pa. 1988) (regarding patent licensor involved in multiple negotiations/disclosures with licensee and sub-licensee, where licensee makes allegations of trade secret disclosure by licensor to sub-licensee, and court dismissed trade secret cause of action by licensee against licensor and sub-licensee).

88. *See, e.g.*, *Key West Hand Print Fabrics, Inc. v. Serbin, Inc.*, 269 F. Supp. 605, 612 (S.D. Fla. 1966) (regarding a copyright case where the plaintiff fabric design firm sues a dress manufacturer for copyright infringement and unfair competition, but the unfair competition claim was dismissed because designer was not in privity with, and had no confidential relationship with, dress manufacturer).

89. *Cf. RustEvader Corp. v. Cowatch*, 842 F. Supp. 171, 172-73 (W.D. Pa. 1993), where the court, in a breach of contract case based on misappropriation of technology, observed:

A case in point is *Water Technologies Corp. v. Calco Ltd.*<sup>90</sup> A company called Aqua-Chem held rights in certain patents on resins used for water purification. Aqua-Chem granted an exclusive license to Water Technologies Corporation (“WTC”). An industry consultant named Gartner, acting on behalf of another company, approached Aqua-Chem to negotiate a license. Those negotiations broke off. Gartner then developed an alternative technology which he in turn licensed to a company called Calco. When Calco introduced a product that competed with WTC’s, WTC brought suit for patent infringement (against Calco and Gartner) and misappropriation of trade secrets (against Calco, Gartner and WTC’s licensor, Aqua-Chem). A district court found for the plaintiff on all counts. The Federal Circuit affirmed on the patent infringement claim, but reversed with respect to misappropriation, stating that “the facts here do not establish a claim by [WTC] distinct from its patent infringement claim . . . .”<sup>91</sup> The problem was that Gartner was never party to the Aqua-Chem/WTC license, nor was Gartner ever in a direct confidential relationship with WTC. Thus, even though Gartner learned of WTC’s technology from a party with whom WTC was in a contractual relationship (Aqua-Chem), WTC had no contractual privity with Gartner himself. The advantage of a property right in this context is manifest: without a patent, WTC would have had no tenable cause of action against Gartner and his licensee, Calco.

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[Plaintiffs] fail to explain how this case arises solely out of a contract when one of the defendants, Cowatch Sr., is not a party to the contract in question. Plaintiffs have not cited any authority for such a proposition and have failed to address, in any way, defendant Cowatch Sr.’s presence in this action. In fact, plaintiffs do not assert anywhere in their complaint that Cowatch Sr. breached any contractual provision.

. . . . [And thus] the plaintiffs are seeking relief against . . . a party not in privity with plaintiffs . . . .

90. 850 F.2d 660 (Fed. Cir. 1988).

91. We must agree with Calco and Gartner, therefore, that the district court erred in holding them liable to [WTC] for unfair competition [for example, misappropriation of trade secrets]. The only claim established by appellees against appellants is patent infringement under 35 U.S.C. §§ 271(a) and (b) (1982). Although a distinct cause of action for unfair competition may arise in a factual context which also gives rise to a patent infringement claim, the facts here do not establish a claim by [WTC] distinct from its patent infringement claim, which in itself is not a state unfair competition claim. Accordingly, we reverse the district court on this issue and remand with instructions to vacate the judgment to the extent that it upholds [WTC]’s unfair competition claim and includes an award of damages thereon.

*Id.* at 671 (footnote omitted).

b) Statute of Limitations

Privity issues show that, compared to rights under contract, property rights are robust. Another doctrine demonstrates the same thing: the statute of limitations. Patent law's property-derived limitations period is quite long compared to the typical statute of limitations applied to contracts disputes. As with the other issues discussed earlier, this adds another small degree of flexibility to the property right holder engaged in a contract-related dispute.

Contracts cases are usually subject to general civil suit limitations periods, which typically range from three to five years.<sup>92</sup> Where a patent licensing dispute is cast as a contracts action, the contract statute of limitations applies. Misappropriation of trade secrets usually has a similarly short limitations period.<sup>93</sup> While in many cases this is clearly an adequate period in which to bring a claim, sometimes a patentee-licensor shows more patience. Patent law indulges this option with a much longer limitations period, which the patentee can use to advantage simply by terminating the licensing agreement and bringing an action for patent infringement.

Properly speaking, there is no statute of limitations in the Patent Act. There is, however, a six year limit for collection of damages. The patentee must file suit within six years of the infringing activity in order to collect damages; otherwise, he or she can only get an injunction.<sup>94</sup> The six year period also creates a presumption of laches. Plaintiffs who wait more than six years must introduce evidence to justify the long delay in filing suit; if they fail to persuade that delay was reasonable, their claim will be barred.<sup>95</sup> On the other hand, ongoing licensing negotiations can provide a justification for delay, thus overcoming the presumption of laches.<sup>96</sup> So in the context of interest to us—licensing situations—there can be a very

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92. *See, e.g.*, *Studiengesellschaft Kohle mbH v. Hercules Inc.*, 18 U.S.P.Q.2d 1773, 1777 (D. Del. 1990) (citing Delaware's three year statute of limitations for contract actions, in context of patent licensing dispute).

93. *See, e.g.*, *Dual, Inc. v. Lockheed Martin Corp.*, 857 A.2d 1095, 1098, 1103-04 (Md. 2004) (citing three year limitations period for trade secret action in Maryland and discussing various tolling theories).

94. 35 U.S.C. § 286 (2000).

95. *See A.C. Aukerman Co. v. R.L. Chaides Constr. Co.*, 960 F.2d 1020, 1028-32 (Fed. Cir. 1992) (en banc).

96. *See id.* at 1033 (listing "negotiations with the accused [infringer]" as one factor to be considered in reasonableness of delay); *cf. Gasser Chair Co. v. Infanti Chair Mfg. Corp.*, 60 F.3d 770, 774 (Fed. Cir. 1995) (describing negotiation of possible "settlement"/license as one factor in holding patentee's delay in bringing suit was not unreasonably long).

long effective limitations period. This of course makes patent infringement attractive in cases where the plaintiff has delayed filing suit for an appreciable period of time.

*Dataq, Inc. v. Tokheim Corp.*<sup>97</sup> is such a case. Dataq was a small company developing electronically-controlled gas pumps for filling stations. When a larger company called Tokheim expressed an interest in possibly acquiring Dataq, the two companies signed a confidentiality agreement. Dataq and Tokheim negotiated for two years, all the while exchanging information in the manner described in Part II above. Tokheim eventually backed out of the acquisition, however, and the nondisclosure agreement expired. When Tokheim introduced a product incorporating many of the features Dataq had invented and disclosed, Dataq filed suit for breach of contract and patent infringement.

Under the Oklahoma statute that applied to the case, a plaintiff has five years within which to file a contract claim. The nondisclosure agreement signed by Dataq and Tokheim expired by its terms in 1971, and the contract action was filed in 1978. Although Dataq argued that the statute should be tolled in this case for various reasons, the Tenth Circuit upheld the trial court's grant of defendant's directed verdict motion on the contracts claim. "The evidence produced at trial," the court wrote, "and any inferences drawn from it clearly supports the trial court's findings that the plaintiff was aware that 'something may have been amiss concerning the Defendant's obligations under the confidentiality agreement' by November of 1972."<sup>98</sup> Thus, even with tolling, plaintiff would have had to file the contract action by 1977 to stay inside the limitations period.

The patent infringement action survived. Indeed, the Tenth Circuit reversed the district court's directed verdict for defendant on the infringement issue.<sup>99</sup> The case was remanded for full consideration of the plaintiff's arguments regarding patent validity. For our purposes, the key point is simply that the plaintiff's infringement action gave it additional ammunition in pursuing relief from the violation of its contract with the defendant.<sup>100</sup>

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97. 736 F.2d 601 (10th Cir. 1984).

98. *Id.* at 604 (quoting trial record).

99. *Id.* at 604-05.

100. The same is true where a contract existed, but has been fully performed (or, presumably, terminated without breach). *See, e.g., Cipes v. Mikasa, Inc.*, 379 F. Supp. 2d 84 (D. Mass. 2005) (affirming copyright infringement finding where jury may have found that licensing agreement had run its course prior to infringement).

## 2. *Breach of Contract Over Infringement: Strategy and Sample Cases*

Given the virtues of infringement suits, it might seem puzzling that anyone with a patent would prefer to sue for breach of contract. But contract suits have their advantages—two in particular. The most important is that a patent cannot be invalidated in contract litigation, whereas this is always a risk in a suit for patent infringement. A second advantage is that, assuming a plaintiff has decided to bring a contract cause of action, state courts may be preferred because they have much more experience with contracts issues. Research shows that 96% of all contracts cases are heard in state courts.<sup>101</sup> Thus, a plaintiff may well seek out the higher contracts-related expertise of a state court tribunal, rather than bring suit in federal court. Whatever their motivations, patentees sometimes choose to litigate in state courts. Federal courts by and large cooperate: defendants who attempt to remove these actions to a federal forum usually lose, as long as the plaintiff crafts the complaint so as to avoid direct consideration of patent validity or infringement.

*In re Oximetrix*<sup>102</sup> is a case in point. A company called Shaw Associates (Shaw) had exclusively licensed its intravenous equipment technology—including “patented and unpatented inventions, prototypes, plans, trade secrets, know-how, and other information”—to Oximetrix.<sup>103</sup> After eight years of working within the agreement, Oximetrix informed Shaw

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101. See Marc Galanter, *Contract in Court; or Almost Everything You May or May Not Want to Know About Contract Litigation*, 2001 WIS. L. REV. 577, 585 (showing data regarding state and federal contracts filings where, as of 1998, state court filings numbered roughly 200,000 and federal court diversity filings roughly 8,000); see also NAT'L CTR. FOR STATE COURTS, 2003 EXAMINING THE WORK OF STATE COURTS 23, 25 (examining recent trends in contracts case filings in state courts and showing contracts filings totaled more than 350,000 in the seventeen states whose data through 2002 are collected in the statistics), available at [http://www.ncsconline.org/d\\_research/csp/2003\\_files/2003\\_subcivil-TORTCON.pdf](http://www.ncsconline.org/d_research/csp/2003_files/2003_subcivil-TORTCON.pdf); cf. Lawrence Gene Sager, *Insular Majorities Unabated: Warth v. Seldin and City of Eastlake v. Forest City Enterprises, Inc.*, 91 HARV. L. REV. 1373, 1424 (1978) (“[T]he comparative advantages of state courts as forums for the resolution of zoning disputes.”). Sager also describes:

[T]he federal courts, after all, are inexperienced in land use litigation; they lack familiarity with local zoning processes, and with the infrastructure of state court zoning decisions, state enabling legislation, and state constitutional constraints, which in combination produce a package of zoning law and practice which may vary considerably from state to state.

Sager, *supra* at 1424.

102. 748 F.2d 637 (Fed. Cir. 1984).

103. *Id.* at 639.

that it would no longer pay royalties.<sup>104</sup> Shaw then sued for breach of contract in California state court. After a three month trial, the state trial court found Oximetrix to be in breach of the agreement and ordered it to pay damages to Shaw. Oximetrix asked for removal to federal district court on the ground that the suit involved issues of patent law appropriate only for the federal forum. The Federal Circuit upheld the district court's denial of the Oximetrix removal motion, pointing out that "the complaint [filed by Shaw] spoke only of contract claims. It said not a word about patent infringement."<sup>105</sup>

*Oximetrix* also exhibits another favorable feature of state court actions for patentees. The court there enjoined Oximetrix from "using the patented *inventions* of the agreement, whatever may eventually be the fate of the patents."<sup>106</sup> Because the license in *Oximetrix* covered patented and unpatented technology, the state court crafted a remedy that effectively compensated Shaw for the misuse of both—without, of course, Shaw having to put its patents at risk of being invalidated. Other cases show that when patent and contract issues intertwine, patentee-licensors sometimes find state courts to be a very favorable forum. This was true in the California case of *Seagren v. Smith*,<sup>107</sup> where a state court ordered relief for post-termination violations of a licensing agreement. (Normally, termination of a licensing agreement ends the contractual relationship, and with it any basis for prospective relief.) The court found the defendant liable "upon the theory of implied contract based upon the well-recognized and settled principle that a person shall not be permitted to enrich himself unjustly at the expense of another."<sup>108</sup> This prospective injunction against violation of its now-terminated agreement bears a striking resemblance to a state court injunction against patent infringement.

State courts in contract cases can occasionally do even more. At times they can help plaintiffs more than a federal court, with the help of careful contract drafting. A license agreement drafted before a patent application has issued may, for instance, give an inventor the right to royalties even if the application is rejected by the Patent Office.<sup>109</sup> The same goes for a

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104. To be precise, Oximetrix said it would only pay royalties on *patented* Shaw technology that Oximetrix was currently using—which, Oximetrix concluded, was 5% of their sales. *Id.*

105. *Id.* at 642.

106. *Id.* at 641(emphasis in original).

107. 63 Cal. App. 2d 733 (Ct. App. 1944).

108. *Id.* at 741.

109. *Beattie v. Prod. Design & Eng'g, Inc.*, 198 N.W.2d 139, 141 (Minn. 1972) (holding issuance of patent was not a condition precedent to payment of royalties under an agreement for payment of 3% royalty "of the product or products covered by the

well-drafted contract covering an application that ripens into a patent later found to be invalid.<sup>110</sup> Notice that in such cases the patent becomes largely irrelevant after serving a “matchmaking” function. The parties are drawn into negotiations, under the penumbra of (potential) patent protection; once the parties reach an agreement, the ultimate validity of the property right becomes almost irrelevant. These “disappearing patents” lay bare the contract-facilitating face of patent law better than anything else.

#### **B. Summary: Enforcement Flexibility is in the Details**

The table below summarizes the respective advantages of patent infringement and breach of contract actions.

<b>Patent Infringement</b>	<b>Breach of Contract</b>
Higher Damages (sometimes)	Expertise of State Courts
Attorney Fees (sometimes)	Patent Validity not at Risk
No Privity Required	Recovery Despite Abandoned or Invalidated Patent (sometimes)

#### **IV. WHY SHOULD WE CARE ABOUT ALL THIS? THE TRANSACTION-INTENSIVE LANDSCAPE OF THE NEW ECONOMY**

All this matters because in the new economy, commentators expect the volume of transactions to increase dramatically.<sup>111</sup> Headlines proclaim the

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claims of the patent application”); *Sunday v. Novi Equip. Co.*, 287 N.W. 909 (Mich. 1939) (holding that whether the patent finally issued was immaterial in an action for royalties under license contract).

110. See *Heltra, Inc. v. Richen-Gemco, Inc.*, 395 F. Supp. 346, 351 (D.S.C. 1975) (interpreting South Carolina law and finding that parties intended royalties to be paid so long as “the basic concept of the . . . apparatus purchased was used in producing the defendant’s . . . machines regardless of whether a patent covering the device subsequently issued or not.”); see also *Eno v. Prime Mfg. Co.*, 50 N.E.2d 401, 407 (Mass. 1943), and cases cited therein.

111. See Robert Pitofsky, *Antitrust and Intellectual Property: Unresolved Issues at the Heart of the New Economy*, 16 BERKELEY TECH. L.J. 535 (2001). Pitofsky writes:

The essential feature that is new about the “New Economy” is its increased dependence on products and services that are the embodiment of ideas. . . . In each of these areas, the “product” or “service” is a piece of intellectual property such as a line of computer code, a new connect-

era of outsourcing, downsizing, and “nimble firms.” Theorists talk about the end of the twentieth century production model where most industries were dominated by a small handful of massive, fully integrated firms.<sup>112</sup> In the new “modular” economy that some see emerging, many independent firms sell specialized goods and services that can be assembled and configured in different ways to meet the needs of various markets. Gone is the large, vertically integrated firm that gathered all the resources—physical, intellectual, and human—needed to produce a given item.<sup>113</sup> This older type of firm was masterfully (and meticulously) described by Harvard’s Alfred Chandler, the business historian *par excellence*.<sup>114</sup> Thus the label given to the new, modular firms by a younger generation of scholars: Post-Chandlerian. As these theorists point out, these “dis-integrated” firms have replaced intra-firm coordination with firm-to-firm coordination. To revert to the language of Oliver Williamson, they replace centralized “hierarchies” with decentralized “markets.” While there is some debate over the exact *nature* of coordination in the new modular economy, all agree that this way of doing things demands more firm-to-firm interaction—broadly

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ing device to make routers and servers more efficient, or new knowledge about genetic profiling that facilitates the use of gene therapy products to treat disease.

*Id.* at 536.

112. See, e.g., Naomi R. Lamoreaux et al., *Beyond Markets and Hierarchies: Toward a New Synthesis of American Business History*, 108 AM. HIST. REV. 404 (2003); Richard N. Langlois, *Chandler in a Larger Frame: Markets, Transaction Costs, and Organizational Form in History*, 5 ENTERPRISE & SOC’Y 355 (2004); Richard N. Langlois, *The Vanishing Hand: The Changing Dynamics of Industrial Capitalism*, 12 INDUS. & CORP. CHANGE 351 (2003).

113. See, e.g., Luigi Zingales, *In Search of New Foundations*, 55 J. FIN. 1623 (2000). Zingales explains:

[T]he traditional business corporation, which emerged at the beginning of the twentieth century . . . is a very asset-intensive and highly vertically integrated firm, with a tight control over its employees—control that is concentrated at the top of the organizational pyramid . . . .

Not any more. The nature of the firm is changing. Large conglomerates have been broken up, and their units have been spun off as stand-alone companies. Vertically integrated manufacturers have relinquished direct control of their suppliers and moved toward looser forms of collaboration. Human capital is emerging as the most crucial asset. As a result of these changes, the boundaries of the firms are in constant flux . . . .

*Id.* at 1624.

114. See generally ALFRED D. CHANDLER, JR., *SCALE AND SCOPE: THE DYNAMICS OF INDUSTRIAL CAPITALISM* (1994); ALFRED D. CHANDLER, JR., *THE VISIBLE HAND: THE MANAGERIAL REVOLUTION IN AMERICAN BUSINESS* (1980).

speaking, more transactions. When production is broken up and parsed out among more separate firms, transactions of some kind are required to assemble the components into a final product.

Transactions are not quite the same as contracts, however. For instance, some products can be designed so that one firm's component simply plugs into another. This "hard-wired modularity" reduces transactions to a simple matter of interface protocols. Not all products work this way, of course. When coordination cannot be engineered into components, and must be actively arranged, it can sometimes be achieved informally without resort to legally enforceable contracts. The Japanese industrial groups, *keiretsu*, are comprised of individual firms that operate quite effectively together without formal legal bonds. A large body of "institutional" economics studies similar arrangements.<sup>115</sup> This research shows how rules emerge to govern interactions among economic actors who deal with each other repeatedly. These rules range from binding laws and contracts to informal norms; the only constant is that they provide effective governance and incentive systems for individual actors.

Thus, contracts are not necessarily required for firms to interact effectively; so too with property rights. In some settings, economic institutions take shape without the presence of formal property rights. De facto or informally recognized claims—what might be considered "quasi-property" rights—are enough to get things going. The standard example is municipal water districts, as described in the pioneering research of Elinor Ostrom.<sup>116</sup> Recently, several scholars have argued that medieval craft guilds exhibited some of the same characteristics, including a foundation in informally-recognized "trade secrets."<sup>117</sup> In other cases, property rights are essential to institutions. Patent pools and standard-setting organizations are good examples, as are "collective rights organizations" that assemble copyrights for blanket licensing to the radio and TV industries.

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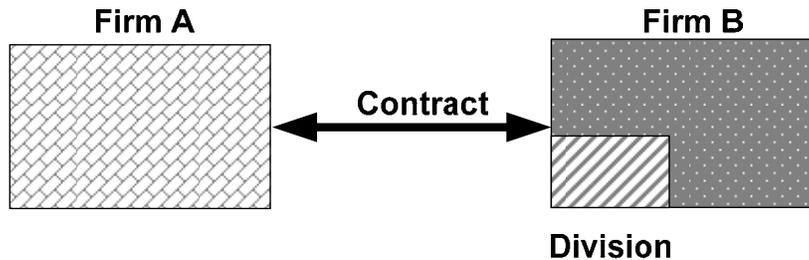
115. See, e.g., NETWORKS AND ORGANIZATIONS: STRUCTURE, FORM, AND ACTION (Nitin Nohria & Robert G. Eccles eds., 1993). On the *keiretsu*, see MICHAEL L. GERLACH, ALLIANCE CAPITALISM: THE SOCIAL ORGANIZATION OF JAPANESE BUSINESS (1997).

116. ELINOR OSTROM, GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION (1990).

117. See Stephan R. Epstein, *Property Rights to Technical Knowledge in Premodern Europe, 1300-1800*, 94 AM. ECON. REV. 382 (PAPERS & PROC.) (2004); Robert P. Merges, *From Medieval Guilds to Open Source Software: Informal Norms, Appropriability Institutions, and Innovation* (Nov. 13, 2004) (working paper), [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=661543](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=661543); see also S.R. Epstein, *Craft Guilds, Apprenticeship, and Technological Change in Preindustrial Europe*, 58 J. ECON. HIST. 684, 688-93 (1998).

This brief survey of institutions has one point: when it comes to harnessing the work of disparate firms, property rights and contracts are not the only games in town. Institutions emerge from all sorts of backgrounds. This has been true in the past, and will no doubt continue to be true as the new economy takes shape. Even so, *some* firms will handle the increased need for coordination with formal contracts.<sup>118</sup> And some of these will be helped along by formal property rights. In other words, these formal legal instruments are not the only way for firms to effectively interact; but they are tried and true ways. We can expect that they will be pressed into service with increasing frequency in the new economic landscape. Whether they will be the dominant form of “private ordering”—as some believe they were in the pre-Chandlerian era—is not for me to answer. I am confident that they will increase in importance. That is enough to justify my attention in this Article to the way they interact.

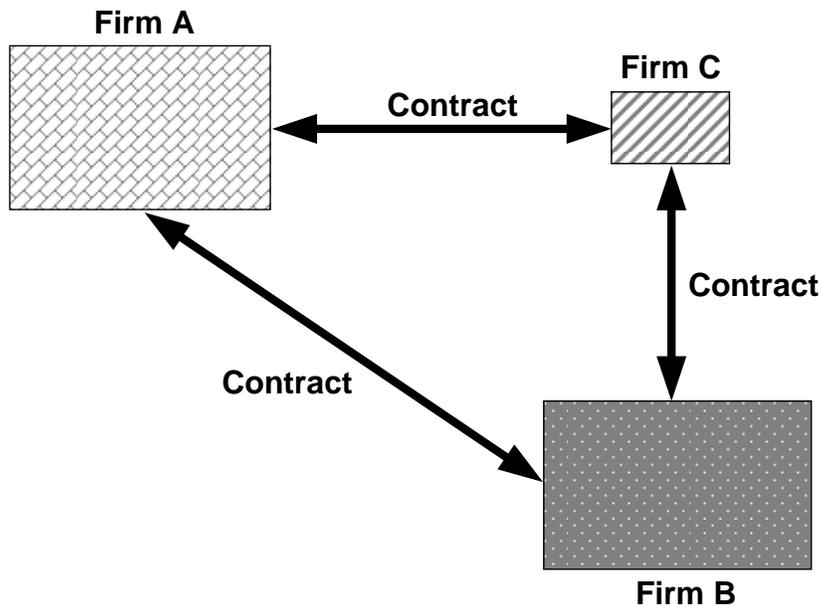
A few diagrams may help clarify the point. The figure below represents a typical “old economy” scenario, with Firm A buying something from Firm B. A wholly owned division of Firm B is assigned the task of adapting Firm B’s product to the needs of Firm A. (Think of Firm B as selling an assembly line component that must be integrated into Firm A’s complex assembly line.)




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118. These institutions typically take shape over time among firms that repeatedly interact with each other. They are therefore not available to non-repeat players, or to firms that are first beginning to do business together. Secondly, the norms and other “rules of the game” for these institutions are often fairly “soft” constraints. While they work at times under some circumstances, they are not always as reliable as contracts. Take the example of open source software, in many ways today’s most visible experiment in informal coordination. Open source has an uncertain future, despite the loyalty of many programmers who contribute their time and energy. The norms that hold these communities together are in some ways fragile. The entry of for-profit firms may affect the willingness of firms and individuals to continue their participation. Private firms do contribute to open source projects, but they have their own strategic reasons for doing so.

Now imagine that Firm B has “downsized,” by “spinning off” this division as a separate firm, Firm C. Firm B now “outsources” the work formerly done by its division to this new Firm C. Because Firm C will be privy to sensitive information about both Firm A’s assembly line and Firm B’s manufactured components, and because Firm C may consider its adaptation techniques and technologies proprietary, it will enter into agreements with both Firm A and Firm B. As the primary buyer and the primary seller, respectively, Firms A and B will probably still want to enter into a contract with each other. The upshot for our purposes is an additional set of transactions, as illustrated in the following figure.



This schematic illustration of what might be called the “disintegration” of production describes a reality playing out in scores of industries in the contemporary economy. An early pioneer in this regard was the microcomputer or PC industry, which progressed from old-style vertical integration to a market structure epitomized by Dell Computer. Though it is a large brand-name retail entity, Dell does not own many manufacturing assets. Rather, Dell buys and assembles components from dozens of specialty suppliers.<sup>119</sup> Some segments of the semiconductor in-

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119. For a pioneering study of these developments, see Richard N. Langlois & Paul L. Robertson, *Networks and Innovation in a Modular System: Lessons from the Microcomputer and Stereo Component Industries*, 21 RES. POL’Y 297 (1992), reprinted in *MANAGING IN THE MODULAR AGE: ARCHITECTURES, NETWORKS, AND ORGANIZATIONS* (G. Raghu et al. eds., 2002) (innovation in a modular system can lead to vertical and hori-

dustry have changed along these lines as well. What used to be a uniform landscape of large, integrated firms now looks quite different: some firms, so-called “foundries,” specialize in manufacturing and other firms, so-called “fabless” design firms, specialize in component and chip design.<sup>120</sup> Pharmaceutical research is a third example. Today large pharmaceutical companies contract with dozens of smaller research-intensive firms, many in the biotechnology industry, to develop specific products.<sup>121</sup> Some have argued that this industry is the harbinger of an entirely new mode of corporate organization—the “network firm.”<sup>122</sup> However one chooses to describe it, the industry is a far cry from the days when most research took place in centralized divisions wholly owned by the parent company.<sup>123</sup>

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zontal disintegration, as firms can often best appropriate the rents of innovation by opening their technology to an outside network of competing and cooperating firms). On Dell Computer Corporation, see Joan Magretta, *The Power of Virtual Integration: An Interview with Dell Computer's Michael Dell*, HARV. BUS. REV., Mar.-Apr. 1998, at 72-85, which describes Dell's “virtual integration” model—close working relationships between Dell and its many component suppliers that allow many of the benefits of the old vertical integration model without the “drag of ownership” that the old model entails.

120. “Fabless” refers to the absence of “wafer fabrication” (for example, semiconductor chip manufacturing) capabilities within these firms. See, e.g., Bronwyn H. Hall & Rosemarie Ham Ziedonis, *The Patent Paradox Revisited: An Empirical Study of Patenting in the U.S. Semiconductor Industry, 1979–1995*, 32 RAND J. ECON. 101, 107 (2001). The fabless portion of the semiconductor industry has undergone significant growth in recent years. See, e.g., GLOBAL-ELECTRONICS.NET, *Fabless Firms Take 17 Percent of Q2 [2005] Chip Market*, [http://www.global-electronics.net/id/23265/CMEntries\\_ID/105295](http://www.global-electronics.net/id/23265/CMEntries_ID/105295) (last visited Nov. 20, 2005) (trade publication describing industry trends). Also, see generally the website for the Fabless Semiconductor Association, an industry trade group, at <http://www.fsa.org> (last visited Dec. 2, 2005). For an example of how a foundry operates, see JIM TURLEY, *THE ESSENTIAL GUIDE TO SEMICONDUCTORS* 98 (2003) (describing the Taiwan Semiconductor Manufacturing Corporation (TSMC), a large foundry firm in Taiwan).

121. See, e.g., Josh Lerner & Robert P. Merges, *The Control of Technology Alliances: An Empirical Analysis of the Biotechnology Industry*, 46 J. INDUS. ECON. 125 (1998). The biotechnology industry generates so many inter-firm technology collaborations that a specialized firm called Recombinant Capital runs a successful business selling information about industry contracts. See [www.recap.com](http://www.recap.com) (last visited Dec. 9, 2005).

122. See, e.g., NETWORKS AND ORGANIZATIONS: STRUCTURE, FORM, AND ACTION (Nitin Nohria & Robert G. Eccles eds., 1993). On the complex patterns of the contemporary biotechnology industry network, see Walter W. Powell et al., *Network Dynamics and Field Evolution: The Growth of Interorganizational Collaboration in the Life Sciences*, 110 AM. J. SOC. 1132 (2005).

123. See Louis Galambos & Jeffrey L. Sturchio, *Pharmaceutical Firms and the Transition to Biotechnology: A Study in Strategic Innovation*, 72 BUS. HIST. REV. 250, 252 (1998) (“During the 1930s, 1940s, and 1950s, for example, it was large, vertically integrated companies that led the industry into the golden age of medicinal chemistry. The

For my purposes, this trend matters because it points to an increase in the number of arm's-length transactions. More and more firms that were divisions of other firms, or would have been under the old production model, are now independent. Stages of production that formerly were coordinated from within a single large firm are being broken up and spread across more firms. Interactions governed in the past by internal firm fiat are being replaced by arm's-length contracting. The new economy is simply much more transaction-intensive than the old one it is quickly replacing.

This suggests a larger role for property rights. For all the reasons documented in Parts II and III above, property rights play an important role in facilitating contracting. They make it easier for the welter of firms to approach one another and begin early-stage disclosure and negotiation. They provide more remedial options and more secure safeguards after a contract is signed. All of which eases the contracting process that is so crucial to economic activity in a more dis-integrated industrial landscape.

## V. CONCLUSION

In an economy where contracting is becoming more pervasive, property rights invest contractual exchange with an important dimension. At the initial stage, they facilitate precontractual negotiations. After parties sign a contract, property rights give contracting parties numerous additional enforcement options which, in the aggregate, confer considerable flexibility. In sum, they are valuable adjuncts at every stage of the contracting process.

After all this talk of hard-headed economic rationality, let me end with some observations on anonymity and intimacy. Property rights bring the power of the state to bear on relations between legal "strangers." By specifying a holder's rights "against the world," they create an off-the-rack, mandatory legal relationship between the right holder and everyone else. Contracts are completely different. A contract signifies a close, voluntary relationship between assenting parties—what one might call a legally "intimate" relationship. What I have been trying to do in this Article is to first describe how property works in the hinterland, the transition zone, between legal strangers and legal intimates. Next I have shown how, once parties cross the bridge between the anonymity of property and the intimacy of contract, property continues as an important presence in the relationship. Property ownership gives a contracting party many small addi-

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later transition into microbial biochemistry/enzymology followed a similar pattern.") (footnote omitted).

tional options that become collectively valuable if the contract goes bad—if enforcement becomes necessary. And so the power of the state-backed property right continues to exert influence even after legal actors are no longer strangers.

Viewed in this light, property and contract are no longer a dichotomous pair. They can be seen to work together toward a common end: the promotion of voluntary, bilateral contracting. Given the rising importance of contracts in the new economy taking shape around us, this harmony at the heart of two of our most basic legal categories seems an important discovery indeed.

# WORTHLESS PATENTS

By Kimberly A. Moore<sup>†</sup>

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Each year the United States Patent and Trademark Office (PTO) receives 350,000 patent applications<sup>1</sup> and grants approximately 180,000 patents.<sup>2</sup> Despite the large number of patent grants annually, patent holders

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1. Patent filings have risen dramatically in recent years. *See* PTO, U.S. PATENT STATISTICS, CALENDAR YEARS 1963-2004, [http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us\\_stat.pdf](http://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.pdf) (Aug. 2005) (demonstrating that the number of patent applications filed in the U.S. has nearly doubled in the last ten years).

2. Each year the number of patents issued rises substantially. *See id.* (showing that patent grant rates have increased by 80% in the last ten years). The PTO does not seem to be able to keep pace with the rise in application filings. *See* Victoria Slind-Flor, *Bar Reacts to Bezos Patent Reform Plan*, NAT'L L.J., Mar. 27, 2000, at A1 (quoting Representative Coble: "If everyone would keep their grubby hands off the PTO's fees, the agency could hire and retain even more examiners to ensure that only quality patents are is-

file only 3,000 patent lawsuits involving approximately 4,500 patents each year to enforce patents against infringers. What happens to the other 175,500 patents granted each year? Are unlitigated patents valuable or is the patent system a very expensive lottery?<sup>3</sup>

Litigated patents are not the only valuable patents: unlitigated patents may be valuable as defensive measures,<sup>4</sup> as deterrents to block others,<sup>5</sup> to

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sued.”). Alternatively, perhaps the lower grant rate reflects a PTO which has become more selective (stricter) in applying patent requirements.

3. “A patent is not unlike an expensive lottery ticket; you pay your money up front and hope for the big payoff.” Jonathan A. Barney, *A Study of Patent Mortality Rates: Using Statistical Survival Analysis to Rate and Value Patent Assets*, 30 AIPLA Q.J. 317, 328 n.30 (2002); see also JOHN JEWKES ET AL., *THE SOURCES OF INVENTION* 253 (1st ed. 1958) (finding the patent system is wasteful and lacking logic: “Its critics have described the patent right as merely ‘something which has to be defended in the courts’ and, because it may put the individual inventor at a disadvantage against the larger corporations, as ‘a lottery in which it is hardly worth while taking out a ticket.’”); F.M. Scherer, *The Innovation Lottery: The Empirical Case for Copyright and Patents*, in *EXPANDING THE BOUNDARIES OF INTELLECTUAL PROPERTY: INNOVATION POLICY FOR THE KNOWLEDGE SOCIETY* (Rochelle Cooper Dreyfuss et al. eds., 2001); A. Samuel Oddi, *The Tragicomedy of the Public Domain in Intellectual Property Law*, 25 HASTINGS COMM. & ENT. L.J. 1, 39 (2002) (analogizing the race to patent to a lottery); cf. Allan N. Littman, *Restoring the Balance of Our Patent System*, 37 IDEA 545, 564 (1997) (analogizing patent litigation to a lottery system).

4. See, e.g., John H. Barton, *Reforming the Patent System*, 287 SCI. 1933 (2000) (discussing defensive patenting practice); Mark A. Lemley, *Reconceiving Patents in the Age of Venture Capital*, 4 J. SMALL & EMERGING BUS. L. 137, 143 (2000) (“One of the major reasons that companies get patents is that they’re afraid that their competitors have them, and they don’t want to be the only one left who doesn’t have the ability to play in this game.”); Kimberly A. Moore, *Xenophobia in American Courts*, 97 NW. U. L. REV. 1497, 1532-33 (2003) (discussing defensive use of patents); William A. Tanenbaum, *Current Topics in Software Licensing*, 620 PLI/PAT 97, 111-12 (2000) (“If you are sued for patent infringement, and you have your own patent, you may be able to settle or head off the suit altogether by having the parties cross-license their patents to each other without paying any damages.”); Jean O. Lanjouw & Mark Schankerman, *An Empirical Analysis of the Enforcement of Patent Rights in the United States* (Feb. 4, 2002) (working paper), <http://www.nber.org/confer/2002/prods02/lanjouw.pdf> (“Patentees with a large portfolio of patents to trade . . . more successfully avoid court actions.”).

5. Blocking patents typically involve a pioneer or improver who refuses mutually beneficial development and cross-licensing. See John H. Barton, *Antitrust Treatment of Oligopolies with Mutually Blocking Patent Portfolios*, 69 ANTITRUST 851 (2002) (discussing blocking patents); Nicholas Groombridge & Sheryl Calabro, *Integra Lifescience v. Merck—Good Research or Just Good for Research Tool Owners*, 22 BIOTECH. L. REP. 462, 470 (2003) (defining blocking patents as “a refusal by a single patent holder to grant a license on acceptable terms [which] could stymie the entire line of research”); Robert Merges, *Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents*, 62 TENN. L. REV. 75, 79-82 (1994) (giving examples of blocking patents); Robert P. Merges, *A Brief Note on Blocking Patents and the Reverse Doctrine of Equiva-*

create a patent thicket,<sup>6</sup> for signaling purposes,<sup>7</sup> or to generate revenue solely through licensing.<sup>8</sup> Patent value may be an illusive concept because of the many differing ways that a patent can be valuable and the impossi-

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*lents in Biotechnology Cases*, 73 J. PAT. & TRADEMARK OFF. SOC'Y 878, 883 (1991); see also Bronwyn H. Hall & Rosemarie Ham Ziedonis, *The Patent Paradox Revisited: An Empirical Study of Patenting in the U.S. Semiconductor Industry, 1979-1995*, 32 RAND J. ECON. 101, 104 (2001) (finding that semiconductor manufacturers seem to be motivated to patent not by a desire to "win strong legal rights to a stand-alone technical prize" but rather they engage in "patent portfolio races" to avoid being held up by external patent owners).

6. Companies often seek patents not just on the products that they actually sell, but on every conceivable variation of the product in order to block competition more generally. The term "patent thicket" generally refers to the existence of overlap among patents which results in multiple parties being able to lay claim to the same invention. James Bessen, *Patent Thickets: Strategic Patenting of Complex Technologies* (Mar. 2003) (working paper), <http://www.researchoninnovation.org/thicket.pdf> (explaining patent thickets); Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting*, in 1 INNOVATION POLICY AND THE ECONOMY 119, 121 (Adam B. Jaffe et al. eds., 2001) (defining the term patent thickets).

7. ADAM B. JAFFE & JOSHUA LERNER, *INNOVATION AND ITS DISCONTENTS* 16 (2005) ("Patents, trademarks and other forms of intellectual property represent a 'currency' that is used increasingly to demonstrate to financial markets, suppliers, and customers that a firm is a strong player, and can be expected to achieve a dominant position."); Mark A. Lemley, *Reconceiving Patents in the Age of Venture Capital*, 4 J. SMALL & EMERGING BUS. L. 137, 144 (2000) (explaining use of patents to differentiate companies and products or to act as "internal yardsticks for progress in research and development"); Clarissa Long, *Patent Signals*, 69 U. CHI. L. REV. 625, 651-53 (2002) (discussing how patents may be useful mechanisms to convey information about the invention and the firm such as productivity, innovation activity and firm size, and to signal low future rent discounts). A recent study by Kortum and Lerner suggests that there is a strong positive relationship between venture capital financing and patenting. Samuel Kortum & Josh Lerner, *Does Venture Capital Spur Innovation?* (Nat'l Bureau of Econ. Research, Working Paper No. W6846, 1998), <http://papers.nber.org/papers/w6846> ("We find that the amount of venture capital activity in an industry significantly increases its rate of patenting.").

8. According to a recent report, "companies are more willing than ever before to buy rights to knowledge," and, in 1998 alone, "U.S. companies earned \$100 billion from licensing fees." Oren Bar-Gill & Gideon Parchomovsky, *The Value of Giving Away Secrets*, 89 VA. L. REV. 1857, 1867 (2003). For example, the Cohen-Boyer patent on gene splicing generated upwards of \$155 million in licensing revenue and is considered "one of the most valuable patents in history," yet it appears that this patent was never litigated. See *id.* at 1871. Once a company has shown its willingness to enforce its patents by bringing one litigation and winning, other competitors may license this and other patents more readily. See JAFFE & LERNER, *supra* note 7, at 57 (suggesting that Texas Instruments' \$800 million in licensing revenue annually (about 55% of its total net income) may be attributable to its willingness to enforce its patents in the early 1980s).

bility of obtaining sufficient empirical data on each.<sup>9</sup> Patent worthlessness, however, may be more easily quantified, which I endeavor to do in this Article.

Despite the high cost of patent acquisition,<sup>10</sup> there are a significant number of patents issued each year that are criticized for their absurdity.<sup>11</sup> There are websites<sup>12</sup> and magazine columns<sup>13</sup> devoted to chronicling such patents. For example, issued U.S. patents have claimed an animal toy which includes a tree branch,<sup>14</sup> a face mask to prevent a person from eating,<sup>15</sup> a bird diaper,<sup>16</sup> an apparatus for simulating a “high five,”<sup>17</sup> an air

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9. Obtaining a database of litigated patents in any given time period is possible, and in fact, I did just this for the 6,861 patents that were involved in litigation that terminated between 1999 and 2000. See John R. Allison et al., *Valuable Patents*, 92 GEO. L.J. 435 (2004) [hereinafter *Valuable Patents*]. Obtaining a database of all patents which are licensed or all patents which are used as signals, or all patents that companies think contribute to their defense, seems like an impossible task both because of the volume of licensing agreements and their secrecy.

10. Preparation and prosecution of a patent application by a patent attorney costs anywhere from \$5,000 for a simple invention to hundreds of thousands of dollars for complex inventions. See John R. Thomas, *Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties*, 2001 U. ILL. L. REV. 305, 345 (2001) (stating that attorneys charge several thousand dollars to prepare simple patent applications and considerably more for complex applications or applications involved in appeals or interferences); cf. Mark A. Lemley, *Reconceiving Patents in the Age of Venture Capital*, 4 J. SMALL & EMERGING BUS. L. 137, 138 (2000) (“[I]n the United States alone, the prosecution costs—what we’re paying patent prosecutors and the PTO—exceed \$5 billion a year.”). The fees to the PTO are a small portion of the overall cost. The PTO currently charges applicants \$1,000 to file a patent application and \$1,400 to issue a patent. PTO Fees and Payment of Money, 37 C.F.R. §§ 1.16(a), 1.18(a) (2004). These fees are cut in half for small entities—that is any individual, nonprofit corporation, or corporation which qualifies as a small business under the Small Business Act. *Id.*

11. See James Gleick, *Patently Absurd*, N.Y. TIMES, Mar. 12, 2000, Magazine, available at <http://www.around.com/patent.html>; Lawrence Lessig, *The Problem With Patents*, INDUS. STANDARD, Apr. 23, 1999, available at <http://www.thestandard.com/-article/0,1902,4296,00.html>.

12. See, e.g., Bizarre Patents, [http://www.patex.ca/bizarre\\_patents.html](http://www.patex.ca/bizarre_patents.html) (last visited Nov. 23, 2005); Crazy Patents, <http://www.crazypatents.com> (last visited Nov. 23, 2005); Delphion’s Gallery of Obscure Patents, <http://www.delphion.com/gallery> (last visited Nov. 23, 2005); Totally Absurd Inventions, <http://totallyabsurd.com/absurd.htm> (last visited Nov. 23, 2005).

13. For example, there is a column in Scientific American entitled *You Can Patent That?* which discusses patents issued each month that according to the author “transcend the mundane.” Gary Stix, *You Can Patent That?*, 289 SCIENTIFIC AM. 32 (2003).

14. U.S. Patent No. 6,360,693 (filed Dec. 2, 1999).

15. U.S. Patent No. 4,344,424 (filed Mar. 27, 1980).

16. U.S. Patent No. 5,934,226 (filed Oct. 15, 1997).

17. U.S. Patent No. 5,356,330 (filed Dec. 7, 1993).

conditioning unit for a shoe (to keep one's feet cool),<sup>18</sup> a method of swinging on a swing,<sup>19</sup> an electronic toilet queue,<sup>20</sup> a dust cover for a dog,<sup>21</sup> and a method of exercising a cat by using a laser pointer (like a flashlight) on the floor and moving the beam of light so the cat chases it.<sup>22</sup> At least the Federal Circuit recently affirmed the PTO's denial of patent claims to a crustless-peanut-butter-and-jelly sandwich.<sup>23</sup> Most lay people could, with little difficulty, conclude that these patents are worthless. Although these may qualify as worthless patents in the empirical study presented in this Article, worthlessness is not determined according to a subjective standard or impression of an invention's merit.

This Article uses a more objective and systematic way to identify worthless patents. After a patent issues, the fees to the PTO do not end. The patentee must pay maintenance fees at three intervals during the life of a patent.<sup>24</sup> Three and a half years after issuance, a patentee must pay \$900 or the patent will expire at the four year point. Seven and a half years after issuance, the patentee must pay \$2,300 or the patent will expire at the eight year point, and eleven and a half years after issuance, the patentee must pay \$3,800 or the patent will expire at the twelve year point.<sup>25</sup> Even though there is a uniform patent term for all patents (twenty years from the date of the application<sup>26</sup>), renewal fees create a de facto differentiation in

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18. U.S. Patent No. 5,375,430 (filed Oct. 5, 1993).

19. U.S. Patent No. 6,368,227 (filed Nov. 17, 2000).

20. U.S. Patent No. 6,329,919 (filed Aug. 14, 2000). Even large corporations like IBM, which filed this patent, seek patents with marginal economic value and social utility.

21. U.S. Patent No. 3,150,641 (filed Sept. 4, 1963).

22. U.S. Patent No. 5,443,036 (filed Nov. 2, 1993).

23. While an initial patent was awarded to Smuckers for the crustless PB&J sandwich, broader application claims to the process of making the PB&J sandwich were rejected by the PTO and affirmed by the Federal Circuit. *See* U.S. Patent No. 6,004,596 (filed Dec. 8, 1997).

24. In contrast to the U.S., where renewal fees are only paid three times over the life of the patent, most countries require annual renewal fees. Additionally, unlike most countries, the U.S. has reduced application and renewal fees for small entities. One consistency is that renewal fee structures always increase over the life of the patent. *Cf.* Joshua S. Gans et al., *Patent Renewal Fees and Self-Funding Patent Offices*, 4 TOPICS IN THEORETICAL ECON. 2 (2004), available at <http://www.bepress.com/bejte/topics/vol4/iss1/art6> ("Economists have found the rising fee structure to be a desirable feature of the patent renewal process.").

25. 37 C.F.R. §§ 1.20(e)-(g) (2004). The maintenance fees for small entities are halved. *Id.* If a patent expires due to nonpayment of maintenance fee, it can be "unexpired" if the patentee convinces the PTO that the late payment was either unavoidable or unintentional. *Id.* § 1.378.

26. 35 U.S.C. § 154(a)(2) (2000).

patent terms. It is hard to imagine that just four years after paying \$10,000-\$30,000 for preparation and prosecution of a patent application, the successful patentee would decide to let the patent expire rather than pay the \$900 maintenance fee. Nevertheless, this empirical study has found that 53.71% of all patentees do allow their patents to expire for failure to pay one of their maintenance fees.<sup>27</sup> Importantly, patents that expire for failure to pay maintenance fees share some common identifiable characteristics. No other empirical scholarship in the legal or economic literature has considered the characteristics of expired patents as a measure of the patents' innovative output.<sup>28</sup>

This Article provides a means of systematically identifying worthless patents.<sup>29</sup> The analysis here compliments my earlier work on identifying valuable patents,<sup>30</sup> giving a richer sense of how to measure a patent's worth. Part I of this Article details the empirical study, its compilation, the methodology used to analyze the data, and the results. Part II interprets and explains the results. It also considers the implications of these findings for evaluating the efficacy of Intellectual Property Rights policy and innovation incentives. Finally, Part III compares the findings of this study to my recent study on litigated patents. Many of the same patent characteristics that predict the likelihood that a patent will be maintained also predict the likelihood that a patent will be litigated. Renewal rate data is a better predictor of patent value than litigation data because it captures the many forms of private value that may be conferred by a patent: defensive, deterrent, signaling, and revenue generation.

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27. Patentees apparently understand the economic idea of sunk costs and are willing to cut their losses.

28. Economics literature has not entirely overlooked expiration data. There are studies examining U.S. and foreign renewal data for purposes of evaluating innovative output. *See, e.g.*, Gans et al., *supra* note 24, at 15 (finding that self-funding patent offices have incentive to distort patent application and renewal fees in ways that are detrimental to social welfare); Jean O. Lanjouw et al., *How to Count Patents and Value Intellectual Property: Uses of Patent Renewal and Application Data*, 46 J. INDUS. ECON. 405 (1998) (presenting a model using patent counts and renewal data as a measure of the extent of innovation).

29. I acknowledge that my definition of value in this paper corresponds to long term patent value. My definition necessarily assumes that the longer the patentee continues to maintain the patent the longer the patent is valuable and the more valuable the patent is. Of course, it must be acknowledged that for certain types of technology (fast moving fields), patent value may be realized very quickly. *See infra* Part II.

30. Allison, *Valuable Patents*, *supra* note 9.

## I. THE EMPIRICAL STUDY

### A. Data Collection

To quantify or qualify patent value, I collected an original dataset of all of the 96,713 utility patents issued by the PTO in 1991. Although 1991 seems like an odd or even outdated selection of year, 1991 is the most recent year of patent issuance for purposes of analyzing patents that expire for failure to pay maintenance fees.<sup>31</sup> Patents can expire for failure to pay maintenance fees four, eight, or twelve years after issuance.<sup>32</sup> Hence, looking at patents that issued in 1991 permits examination of whether these patents expire at the four year point (1995), eight year point (1999), or twelve year point (2003). Selecting a year of patent issuance more recent than 1991 would not permit examination of patent fee payments over their entire life. Nonetheless, I examined whether more recently issued patents shared the same characteristics at their four year points, and found my results replicated.

For each of the patents issued in 1991, I searched the weekly issues of the Patent Office Official Gazette for 1995, 1999, and 2003 to ascertain whether it expired due to the owner's failure to pay maintenance fees. I created a list of the 51,949 patents that did expire for failure to pay maintenance fees.<sup>33</sup> Table 1 below shows the breakdown of expired patents.

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31. Another nice feature of using patents issued in 1991 is that all of these patents have a patent term of seventeen years from their issuance date. 35 U.S.C. § 154 (1991). Patents filed after June 8, 1995, have a patent term of twenty years from their filing date. Uruguay Round Agreements Act, Pub. L. No. 103-465 (1994) (codified at 35 U.S.C. § 154(a)(2)). This amendment means a patent may not still be enforceable twelve years after issuance (if they were pending at the PTO for eight or more years). *Id.* Even if patents are enforceable at the twelve year point, if they have shorter remaining lifespans there may be less of an incentive to pay the twelve year maintenance fee. This issue does not exist with the patents issued in 1991.

32. *See supra* note 25 and accompanying text.

33. Actually a larger number of patents expired for failure to pay maintenance fees, but 988 of these patents were reinstated as of March 23, 2004. The PTO allows patent reinstatement if the failure to pay was due to an unavoidable or unintentional delay. 37 C.F.R. § 1.378 (2004). To show unintentional delay, the patentee has to file a reinstatement petition within twenty-four months after the six month grace period. *Id.* For unavoidable delay, the patentee has to promptly file a petition after receiving notice or becoming aware of expiration of patent. *Id.* Hence for the 988 patents that were reinstated, I treated them as if they had never expired. Since there is a two year window in which patents can be reinstated, there could be additional reinstated patents through 2005. There were also a number of corrections "errata" made by the PTO regarding the patent number of the expired patents. I adjusted the data to properly account for each of the reported corrections.

I also collected detailed characteristic information on the patents, the inventors, and the assignees. In particular, I collected data on patent grant date, patent filing date, whether the patent claims priority to other U.S. applications, the number of such claims to priority, and the earliest priority date claimed. I combined this original dataset with additional patent characteristic data, including the number of claims, number of forward and backward citations, number of inventors, whether the inventors are foreign or domestic, whether the patent is assigned at the time of issuance, whether the assignee is a U.S. corporation, foreign corporation, U.S. individual, foreign individual, the U.S. government or a foreign government, and general technology classifications (based on the PTO's technology classification system). This patent characteristic data was derived from the extensive empirical work of Bronwyn Hall, Adam Jaffe, and Manual Trajtenberg, and is available through the National Bureau of Economic Research.<sup>34</sup>

### **B. Statement of Hypothesis and Description of Empirical Model**

In order to determine whether there were any observable indicia of a patent's value or a patent's lack of value, I compared the expired and unexpired patents across a large number of variables. In particular, I examined the following characteristics to determine whether they influenced the likelihood that a patent owner would fail to pay maintenance fees: the number of claims (Claims), the number of prior art U.S. patents that were considered by the examiner before the patent was issued (Cites Made), the number of U.S. patents that issued after this patent and cited it as relevant prior art (Cites Received), the length of time a patent spent in prosecution from its filing date to its grant date (Application Time), the length of time a patent spent in prosecution from its earliest claim of priority to its grant date (Prosecution Time), the number of total applications in the chain that led to this one that issued (Number of Related Applications), the number of inventors listed on the patent (Inventors), the percentage of the inventorship entity that was foreign (Percent Foreign Investors), and whether the patent was unassigned at the time of issuance (Unassigned) or if assigned, whether it was assigned to a U.S. Corporation, Foreign Corporation, U.S. Individual, Foreign Individual, U.S. Government, or Foreign Government. The data were also broken down into seven different fields of technology: Chemicals, Communications and Computers, Drugs and Medical, Electrical and Electronics, Mechanical, and Other. Recognizing

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34. Bronwyn H. Hall et al., *The NBER Patent Citation Data File: Lessons, Insights and Methodological Tools* (Nat'l Bureau of Econ. Research, Working Paper No. 8498, 2001).

that there are shortcomings with such broad technology classifications, in a finer analysis I split technology classifications into thirty-six different technologies.<sup>35</sup>

I hypothesize that the inherent value of a patent is a function of certain observable characteristics.<sup>36</sup> To test my hypothesis, I present descriptive statistics on the various patent characteristics and comparisons of the means. However, since descriptive statistics do not account for the relationships among variables, I also formulated an ordered logit model which starts out by assuming that patent values are randomly distributed according to a normal distribution. Less valuable (or worthless) patents are more likely to expire earlier and valuable patents are more likely to be maintained to their full legal term.

My model then estimates three cutoff points<sup>37</sup> which divide the probability distribution into four regions such that patents with values less than the first cutoff point expire in four years, patents with values in between the first and second cutoff points expire in eight years, patents with values between the second and third cutoff points expire in twelve years, and patents with values greater than the third cutoff value are maintained to their full legal term of seventeen years.

To determine the relationship between patent characteristics and the value of the patent, I specified an ordered logit model. An ordered logit

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35. In addition to the problems inherent in broad technology classifications (for example, pharmaceutical and medical device patents are grouped together and may be very different in nature) there is another shortcoming of this classification system. This classification grouping is based on the PTO technology classification system. There are 400 different PTO technology classes. Commentators have observed that the PTO technology classes do not group all similar technology together and as a result, may not be ideal for distinguishing among technologies. See John R. Allison & Mark A. Lemley, *Who's Patenting What? An Empirical Exploration of Patent Prosecution*, 53 VAND. L. REV. 2099, 2114 (2000) (explaining the shortcomings of the PTO classification system for distinguishing among types of technologies); see also John R. Allison & Mark A. Lemley, *The Growing Complexity of the U.S. Patent System*, 82 B.U. L. REV. 77, 92 (2002); John R. Allison & Emerson H. Tiller, *The Business Method Patent Myth*, 18 BERKELEY TECH. L.J. 987, 1027-28 (2003) (criticizing the PTO and IPC classifications systems as not identifying technology areas, but instead functioning at a very low level of abstraction).

36. In my earlier work on patent characteristics, I discussed the characteristics that economists have used to predict patent value: claims, citations made, citations received, generality, originality, and IPC classifications. Allison, *Valuable Patents*, *supra* note 9. I found that the first three characteristics were unambiguously strong predictors of patent litigations, while the others were not. *Id.* at 451. See *infra* Part III for a more detailed comparison of patent characteristics in the *Valuable Patents* study and this study.

37. The cutoff points roughly correspond to the cutoff values of the patent. Since value is unobserved, the estimates are simply ordinal transforms of the actual unobserved value of the patent.

model is used when the dependent variable is unobserved but has an inherent ranking.<sup>38</sup> The logit model applies here because patents that expired within four years are less valuable than patents that expired in eight years, which are in turn are less valuable than patents that expired in twelve years. The dependent variable (value) is given a coded value of 1 if the patentee pays all the maintenance fees at the intervals specified by the PTO and the patent therefore remains unexpired until its full legal term. The variable takes the coded value of 2 if the patent expired at the end of twelve years, a coded value of 3 if the patent expired at the end of eight years, and a coded value of 4 if the patent expired at the end of four years. The nonlinear estimation technique used allows for estimation of cutoff values for each category and determines which patent characteristics are statistically significant predictors of patent value.

## II. EMPIRICAL RESULTS AND THEIR MEANING

### A. Descriptive Statistics

The data used in this study correspond to the population of 96,713 patents issued in 1991. Table 1 shows the mean patent characteristics by category. More than half (53.71%) of the patents issued in 1991 expired before their full term due to nonpayment of maintenance fees. The results indicate that:

- Expired patents had fewer claims than patents that were maintained to the full term. Patents that expired earlier (four years) had fewer claims than patents that expired later (eight years, twelve years).
- Expired patents cited fewer U.S. patent prior art references than unexpired patents.<sup>39</sup> Also, patents that expired earlier, in general, cited fewer U.S. patent prior art references than patents that expired later.
- Expired patents received fewer citations than patents that were maintained to the full term. The longer the patent was maintained, the greater the number of citations it received.
- Expired patents also listed fewer inventors than patents that were maintained.

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38. See W.H. GREENE, *ECONOMETRIC ANALYSIS* 926-28 (3d ed. 1997).

39. I refer to patents that were maintained to the full legal term as unexpired patents.

- Expired patents had fewer related applications than unexpired patents. Patents that expired earlier had fewer related applications than patents that expired later.

**Table 1: Patent characteristics by category**

Variable	All Un-expired Patents	Patents expired in 12 years	Patents expired in 8 years	Patents expired in 4 years	All Expired Patents
Total Number of Patents	44,764	16,095	20,340	15,514	51,949
Percent of Total	46.29%	16.64%	21.03%	16.04%	53.71%
Number of Claims	13.27	12.63	11.95	11.44	12.01
Percent Foreign Inventors	0.47	0.51	0.47	0.44	0.47
Number of Citations Made	7.79	7.52	7.54	7.39	7.49
Number of Citations Received	7.13	5.49	4.67	4.03	4.73
Number of Inventors	2.14	2.07	1.99	1.82	1.96
Number of Related Applications	0.38	0.33	0.29	0.27	0.30
Application Time (years)	1.75	1.69	1.69	1.71	1.70
Total Prosecution Time (years)	2.32	2.18	2.13	2.10	2.14

### 1. Characteristics of the Patent

The correlation between early patent expiration and lower number of claims, lower number of prior art references, lower number of related applications, and shorter prosecution time conforms to my intuition. Patents with more claims are more expensive to file and prosecute.<sup>40</sup> These patents would also be more intimidating to potential infringers as more claims may mean more chances that they infringe the patent<sup>41</sup> and the harder the

40. The patent application fee covers a total of twenty claims (three of which may be independent). An applicant who wishes to file more than twenty claims or more than three independent claims must pay an additional fee per claim. 37 C.F.R. §§ 1.16(h)-(i). Of course, the application fee is small compared to the expense of having an attorney draft and prosecute the claims. *See supra* note 10 and accompanying text.

41. Because claim construction is an amorphous concept with high reversal rates on appeal to the Federal Circuit, patent applicants have responded to the high reversal rate by finding multiple ways to claim the same invention. This practice makes it more likely

patent will be to invalidate.<sup>42</sup> Hence, patents with more claims are generally more valuable.

Patents that cite more U.S. patent prior art during prosecution are likely more expensive for the patentee to prosecute. A patent cites prior art if it is either found by the examiner during the examiner's own search or disclosed to the examiner by the inventor. In theory, the more prior art a patent cites, the more extensively the examiner reviewed the patent application, and thus the more difficult it would be to invalidate the patent.<sup>43</sup> The data support the notion that patents with more prior art are more valuable.<sup>44</sup>

The higher the number of related applications the more expensive the invention was for the inventor to protect. Additional application fees and prosecution expenses come with each new application, continuation, continuation-in-part, or divisional application.<sup>45</sup> I measure related applications in a limited and admittedly imperfect way. An application is considered related if it is cited in the priority chain on the front face of the patent. This means that parent and grandparent applications upon which an applicant may be relying for priority would count as related applications, but other original applications that the same inventor may have filed sepa-

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that a court will agree with the patentee that one of the claims is infringed. *See* Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 HARV. J.L. & TECH. 1, 1, 11-12 (2001) (finding that the Federal Circuit reversed 33% of district court claims constructions on appeal). More claims means more bites at the apple for the patentee. Of course, a patent with five claims is not necessarily broader than a patent with one claim. *See* Moore, *Xenophobia in American Courts*, *supra* note 4, at 1543-44.

42. Patents with more claims are likely harder to invalidate for two reasons. First, each additional dependent claim is narrower than the independent claim upon which it is based. The narrower the claim, the harder it will be to find prior art that discloses all of the same claim limitations. Second, even if the additional claims are not narrower, they will have a different scope and use different claim language, again making invalidation more difficult.

43. There is a presumption of validity for issued patents. 35 U.S.C. § 282 (2004). Judges and juries are reluctant to second guess the expert examiners at the PTO, and the more prior art the patent cites, the greater the reluctance.

44. The citation of a large number of U.S. patent prior art references means that the invention is likely not a pioneering invention, but rather an improvement in a crowded field. Intuitively, it would seem that patents that issue in a field where there are already many other patents are not likely to be as broad as patents on newer technology, and therefore less valuable in general. However, since few patents actually issue for truly pioneering inventions, most patents are improvements in a crowded art and among those patents it makes sense that the ones that have been more carefully vetted by the PTO would be more valuable.

45. A request for continuing examination is like filing a new application and incurs another \$770 fee. *See* 37 C.F.R. §§ 1.114, 1.17(e).

rately on the same or similar technology would not count.<sup>46</sup> Additionally, future applications that may rely on this patent for priority are likewise excluded. Consistent with my intuition, the larger the number of applications that the inventor already filed on the invention, the more likely the patent owner will be to pay their maintenance fees because the patent owner is more invested in the technology and its protection. A patent with many related applications may show the inventor's determination to patent the invention or show the inventor's desire to secure many patents on the same technology to block competition broadly. In either event, it signals the importance of the patent protection to the patentee.<sup>47</sup>

Finally, prosecution time and the number of related applications are correlated variables. Prosecution time is the total time an application and its relatives spent in the PTO before issuance. In particular, it is the time from the earliest claim of priority on an application to its grant date. Of course, the larger the number of related applications in the chain, the longer the prosecution time.<sup>48</sup> Hence, patents with longer prosecution time are more valuable to their owner because prosecution time is correlated with the number of related applications.

There is no correlation between application time (time from filing to issuance) and patent expiration. This result suggests that the number of years an application spends in the PTO is not itself an indicator of how valuable the patent is to its owner.

Although the value of patents correlates to both the number of claims and the quantity of citations to prior art, causation is not clear. More claims and more prior art citations may cause a patent to be more valuable.

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46. A patent portfolio race or a patent family is more than just a chain of applications. They generally include several chains that are not directly related, but are based on similar technologies. Future research needs to be done to develop a technique for identifying patent families. Such identification of patent families would improve the accuracy of the measure.

47. Large entities generally pay maintenance fees on portfolios of patents that are valuable as a portfolio even though patents in the portfolio may not be valuable individually. Studying both the number of related applications and the characteristics of the assignee mitigates this problem somewhat.

48. The relationship between the number of related applications and prosecution time is not necessarily linear. For example, when a patent claims priority to ninety-eight different related applications, it does not necessarily take ninety-eight times longer than an application with one claim to priority. Patentees can make priority claims in the alternative, by claiming that an application is a continuation-in-part of several different other applications. For example, U.S. Patent No. 5,714,566 (filed June 5, 1995) actually did claim priority to ninety-eight related applications. It was not, however, claiming priority to ninety-eight different applications in sequential order, but rather claiming priority to seventeen different possible application chains.

Conversely, a patentee may file more claims and cite more prior art when an invention and its protection are more important to the patentee.

Regardless of causation, however, differences exist between the kinds of patents that are likely to expire early and those that will be maintained. Many of the factors that signal a difference between these two types of patents are largely within the control of the inventor or patentee. The patentee decides how many claims to file, how exhaustively to search the prior art before filing, how many related applications to file and how long to continue prosecution. Each of these decisions affects the cost of the prosecution to the patentee.

There is one factor that may be beyond the patentee's control and impacts the likelihood that a patent will be maintained. Patents that are maintained receive a larger number of cites from other subsequently issued U.S. patents than patents that expire. The longer patents are maintained, the more cites they receive. Of course, a patent continues to exist as prior art whether it is expired or not, so expiration *per se* should not impact citations received. Citations received tend to indicate industry interest in a particular technology. If a patent receives a large number of cites by competitors' issued patents, this suggests that the technology is one that competitors also value and it seems unlikely in a competitive environment that the patentee would allow such a patent to expire early. On the other hand, if the large number of cites received come from the patentee (self-citation), this indicates that the technology is so important to the patentee that it is worth filing subsequent patents on the same technology. This again supports the conclusion that the patentee would be unlikely to allow such a patent to expire early.

## 2. *Characteristics of the Inventor and/or Patentee*

The larger the number of inventors, the more likely they are to maintain their patent. This result may be true for two reasons. First, with more inventors the chances that the patent continues to hold value for at least one of the inventors may be higher. Second, there is a correlation between the number of inventors and assignment. The larger the number of inventors, the more likely the patent is assigned to a corporation. Table 2 shows the percent of expired or unexpired patents that were either unassigned or were assigned to various entities. Results indicate that patents that are assigned to corporations are more likely to be maintained than unassigned patents or patents assigned to individuals or the government. This may reflect the differing purposes for which corporations and individuals patent. For example, corporations acquire patents for deterrent, defensive, or signaling purposes. Such purposes may warrant maintenance of a patent even

if it is not directly generating revenue. Alternatively, corporations may simply be better at the outset at identifying and prosecuting more valuable patents.<sup>49</sup> It may also be the case that individuals are more attune to cost control than corporations. In corporations, there may be a disconnect between those paying the maintenance fees (in-house attorneys) and those evaluating the innovation value of particular patents. Finally, the stability of large corporations versus individuals and sole proprietorships may explain differences in renewal rates. The large corporation is more likely to be a viable entity twelve years after the patent issues.

**Table 2: % of Patents That Expire By Class of Patentee/Assignee**

	Unexp. Patents	Patents expired in 12 yrs.	Patents expired in 8 yrs.	Patents expired in 4 yrs.	Expired Patents
Un-Assigned	31.9%	14.5%	24.8%	28.8%	68.1%
US Corporation	51.5%	16.2%	19.7%	12.7%	48.5%
Foreign Corporation	48.7%	18.3%	19.7%	13.3%	51.3%
US Individual	34.2%	13.8%	26.9%	25.1%	65.8%
Foreign Individual	29.8%	17.2%	26.2%	26.9%	70.2%
US Government	25.4%	13.6%	43.0%	18.1%	74.6%
Foreign Government	37.7%	15.9%	29.0%	17.4%	62.3%

### 3. *Characteristics of the Technology*

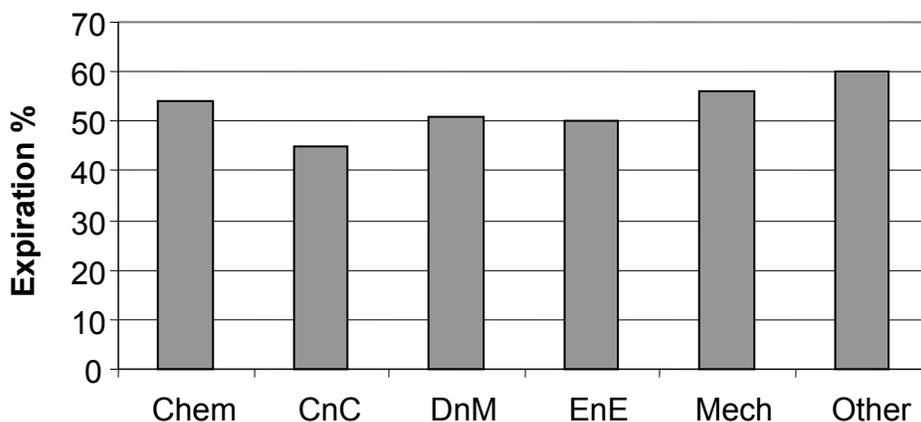
Table 3 illustrates the percentage of expired or unexpired patents in each particular industry. Figure 1 below shows what percent of patents in a given industry (technology) group expired. Payment of maintenance fees varies sharply across technology fields. Communications and computer, drug and medical, and electrical and electronics patents were all more likely to be maintained by their owners whereas mechanical patents and patents in the catch-all other category were more likely to expire. Chemical patents seemed to fall more towards the middle.

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49. This is the subject of further research by the author. Kimberly A. Moore, *Populism and Patents* (2005) (working paper, on file with author) (studying the difference between individual and corporate patenting and enforcement).

	All Unexpired Patents	Patents expired in 12 yrs.	Patents expired in 8 yrs.	Patents expired in 4 yrs.	All Expired Patents
Chemical industry	19	21	20	18	20
Communication and Computers	12	11	9	6	9
Drugs and Medical	9	8	9	9	8
Electrical and Electronics	19	18	17	15	16
Mechanical	22	23	23	24	24
Other	18	20	23	28	24

**Fig. 1: Expiration Rate by Broad Tech Class**



Patent protection is a significant source of return and the magnitude of the return varies by technology. The higher cost of research and development for pharmaceutical technology<sup>50</sup> may explain why pharmaceutical

50. Estimates of the average cost of drug development and testing range from \$10 million to \$800 million; the latter is the industry's figure. See Christine S. Paine, *Brand-Name Drug Manufacturers Risk Antitrust Violations By Slowing Generic Production Through Patent Layering*, 33 SETON HALL L. REV. 479, 483 (2003) ("Because of the high costs of research and development, the pharmaceutical industry views patents as an especially important form of motivation."); Thomas F. Cotter, *Introduction to IP Symposium*, 14 FLA. J. INT'L L. 147, 149 (2002) (noting that the patent incentive may be particularly important for pharmaceutical products because of the high costs of research and development). Compare Pharmaceutical Manufacturer's Association Intellectual Property Overview, <http://www.phrma.org/issues/intprop> (last visited Nov. 23, 2005), with Rx R&D Myths, <http://www.mindfully.org/Industry/Pharma-R&D-Myths.htm> (last visited Nov. 23, 2005).

patents are more likely to be maintained. Congress added most of the patent term extension provisions for the benefit of the pharmaceutical industry.<sup>51</sup> The greater maintenance of pharmaceutical patents may also be attributable to primarily corporate ownership, since corporations are more likely to maintain their patents.

## B. Regression Results

The results discussed so far, however, are simply descriptive statistics. They do not take into account the interrelationships of the various characteristics. Table 4 presents the regression results that estimate the effect of each particular characteristic while holding constant the effects of all other characteristics. The results indicate that the number of claims and citations received are statistically significant predictors of patent value as measured by the probability that a patent will be maintained. The positive coefficient on claims indicates that the greater the number of claims, the more likely the patent is to be maintained to the end of its legal term. Similarly, the positive coefficient on citations received indicates that this variable has a positive effect on the probability that the patent is maintained to the end of its term. Interestingly, the number of citations made on the patent is not a significant predictor of patent renewal. Another empirical study found that the number of citations made on the patent and the number of claims in a patent were highly correlated variables.<sup>52</sup> It seems logical that applicants who more highly value a particular patent would be likely to file more

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Recent studies estimate that the cost of bringing a new drug to market is nearly \$800 million. This high cost is mostly due to the fact that for every 5,000 chemicals tested in animals, only five go on to human clinical testing, and of this five, only one makes it to market. Thus, a pharmaceutical company must have the financial resources to develop and test thousands of compounds, knowing that very few of them will ever reach consumers or potentially reap a profit. Due to this lottery-like effect, when a company latches on to a "winner," they must gain enough profit from that drug to fuel the continuing research and development cycle.

Sarah E. Eurek, *Hatch-Waxman Reform and Accelerated Market Entry of Generic Drugs: Is Faster Necessarily Better?*, 2003 DUKE L. & TECH. REV. 18, 20 (2003).

51. See, e.g., 35 U.S.C. §§ 155A, 156 (2000) (special term extensions for pharmaceutical patents); Robert P. Merges, *One Hundred Years of Solicitude: Intellectual Property Law, 1900-2000*, 88 CALIF. L. REV. 2187, 2234 n.217 (2000) (discussing proposed extension for Claritin patent); Robert P. Merges & Glenn H. Reynolds, *The Proper Scope of the Copyright and Patent Power*, 37 HARV. J. LEGIS. 45, 50-56 (2000) (discussing efforts to extend copyright terms).

52. See Allison & Tiller, *supra* note 35, at 1055 (finding that in both a dataset of 1093 Internet business method patents and a dataset of 1000 general patents, citations made and number of claims were highly correlated).

claims and do a more thorough prior art search prior to filing. Hence, the larger the number of citations made, the more likely maintenance fees will be paid.

<b>Table 4: Logistic Regression Results<sup>53</sup></b>				
<b>Variable</b>	<b>Estimate <math>\beta</math></b>	<b>Standard Error</b>	<b>Significance p</b>	<b>Exp(<math>\beta</math>)</b>
Claims	0.006	0.001	<.0001	1.006
Chemical (Chem)	-0.058	0.019	0.002	0.944
Communications & Computers (CnC)	0.176	0.024	<.0001	1.192
Drugs & Medical (DnM)	-0.066	0.025	0.007	0.936
Electrical & Electronics (EnE)	0.110	0.019	<.0001	1.117
Other industries	-0.099	0.018	<.0001	0.906
Citations Made <sup>54</sup>	0.001	0.001	0.378	1.001
Citations Received	0.041	0.001	<.0001	1.042
Percent Foreign Inventorship	-0.123	0.023	<.0001	0.884
Number of Inventors	0.032	0.005	<.0001	1.032
US Corporation	0.717	0.018	<.0001	2.049
Foreign Corporation	0.840	0.024	<.0001	2.316
US Individual	-0.006	0.074	0.937	0.994
Foreign Individual	0.090	0.105	0.393	1.094
US Government	-0.123	0.055	0.026	0.884
Foreign Government	0.421	0.087	<.0001	1.523
Application time	-0.021	0.011	0.059	0.979
Priority time	0.038	0.009	<.0001	1.038
Related Applications	0.078	0.015	<.0001	1.082

53. The regression includes appropriate intercepts that are not reported here.

54. Removing the claims variable from the regression confirms that the number of citations made is then a significant predictor of likelihood of maintenance fee payment ( $p=.0010$ ).

The number of inventors, time in prosecution, and number of related applications also continue to play a significant role in patent maintenance. Most of the variables that appeared important in the descriptive statistics continue to be significant in the regression. With regard to assignment of patent rights and its impact on maintenance, I omitted unassigned patents. Hence, I compare each of the other categories to unassigned patents. It is not surprising that patents assigned to individuals are maintained at the same rate as patents that are unassigned, because unassigned patents are basically a patent still owned by individuals (the inventors). Hence, individual behavior regarding maintenance fees is the same regardless of whether the patent remains with the individual inventors or was assigned to another individual. Corporate patenting, however, is significantly different from unassigned patents. Both U.S. and foreign corporations are much more likely to maintain the patents assigned to them (possibly reflecting the different patenting strategies of individuals and corporations). In addition to an individual/corporation distinction in patent maintenance, there also is a domestic/foreign difference. Foreign corporations are more likely to maintain their patents than U.S. corporations, and foreign governments are more likely to maintain their patents than the U.S. government.<sup>55</sup>

This foreigner effect is likely due to the higher transaction costs for foreigners to obtain U.S. patents. Foreign parties are therefore less likely to file worthless patents; they are more selective in their patenting *ex ante*. Foreign parties have usually already put the invention through the patent system in their home country, and possibly others, before filing in the United States. Accordingly, the patents that they file in the U.S. are better vetted than the patents first filed in the U.S. The foreign patentees would have to disclose all of the prior art from the foreign prosecution, which the U.S. examiner would then have to review prior to U.S. allowance. Thus U.S. patents acquired by foreign patentees would be stronger than those acquired by their domestic counterparts by virtue of the additional independent review. It may also be that U.S. patents are a more important signaling mechanism for foreign parties than for U.S. parties. Another possibility is that U.S. corporations are increasingly implementing internal cost-control maintenance review systems for technical obsolescence which their foreign counterparts are not doing. U.S. corporations may be better at estimating the expected return from a given patent and therefore more adept at weeding out worthless patents via maintenance fee payments.

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55. The higher the percentage of foreign inventors, however, the less likely the patent is to be maintained. Inventorship domicile is correlated with assignee domicile. Most patents which issue assigned to a foreign corporation have foreign inventors.

With regard to technology, I used the mechanical group as the baseline for the regression shown in Table 4. Accordingly, each of the other categories is significant if it is sufficiently different from the mechanical group. Chemical, Drugs and Medical, and Other Industries are less likely to be maintained than mechanical patents. Electrical and Electronics and Communications and Computer patents are more likely to be maintained than mechanical patents. Given the differences in research and development costs, these results are surprising and initially seem to call into question the standard assumption that patent rights are more important in industries with high research and development costs.<sup>56</sup>

Intuition would have suggested that there are more random, and ultimately worthless, mechanical patents issued than biotech or pharmaceutical patents. Perhaps the pharmaceutical and biotech industries are more patent-happy.<sup>57</sup> It may be that these industries rush to patent new compounds and genes (and their methods of manufacture) before knowing whether those compounds have great utility or commercial viability.<sup>58</sup>

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56. See NANCY S. DORFMAN, INNOVATION AND MARKET STRUCTURE: LESSONS FROM THE COMPUTER AND SEMICONDUCTOR INDUSTRIES 235-39 (1987) (discussing the importance of lead-time in the computer and semiconductor industries); Allison, *Valuable Patents*, *supra* note 9 (discussing industry-specific patterns of patent value); Allison & Lemley, *supra* note 35, at 2146 (showing substantial variation by industry in the nature and importance of patents); Hall & Ziedonis, *supra* note 5, at 104 (noting the primarily defensive use of patents in the semiconductor industry); Richard C. Levin et al., *Appropriating the Returns from Industrial Research and Development*, 1987 BROOKINGS PAPERS ON ECON. ACTIVITY 783, 785-86 (finding differences across industries in patents granted per dollar of research and development expenditure); Edwin Mansfield, *Patents and Innovation: An Empirical Study*, 32 MGMT. SCI. 173, 176 (1986) (examining the extent to which various firms and industries rely on the patent system to protect their innovations); Mark Schankerman, *How Valuable is Patent Protection? Estimates By Technology Field*, 29 RAND J. OF ECON. 77, 92 (1998) (finding that the private value of patent rights in France differed by technology field); Ashish Arora et al., *R&D and the Patent Premium* 1, 33 (2002) (working paper, on file with author) (demonstrating that patents give greater returns in some industries than others); Wesley M. Cohen et al., *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not)* (Nat'l Bureau of Econ. Research, Working Paper No. W7552, 2000) (finding differences across industries in the use of patents relative to other methods of protecting intellectual property).

57. See Brief for Biotechnology Industry Organization as Amici Curae at 4, *Knorr-Bremse Systeme Fuer Nutzfahrzeuge GMBH v. Dana Corp.*, 383 F.3d 1337 (2004) ("Typical biotechnology drug development periods exceed a decade and only one in every 10,000 potential drugs that enters pre-clinical testing will receive U.S. Food and Drug Administration approval as a novel medicine.")

58. See, e.g., Michael J. Meurer, *Business Method Patents and Patent Floods*, 8 WASH. U. J.L. & POL'Y 309, 319 (2002) (noting that the "development of efficient gene

Recognizing that the technology categories controlled for in the regression above may be overly broad, I subdivided the technology categories into thirty-six subcategories.<sup>59</sup> The substantive results are the same with respect to all other characteristics (the number of claims, citations received, inventors, and assignments continue to be significant). The regression results for the technology subcategories are listed below. I used biotech as the comparison point.<sup>60</sup> The results show that patents related to communications and computer technology are more likely to be maintained than biotech patents. Patents on semiconductors and electrical devices also are more likely to be maintained than biotech patents. But biotech patents are more likely to be maintained than drug patents and agricultural and organic compounds patents. Biotech patents also are more likely to be maintained than patents granted on simple devices (not as technically complex), which may be less expensive in terms of R&D. Simple devices include amusement devices, furniture or house fixtures, apparel and textile, and receptacles. It appears that biotech patents are more likely to be maintained than most mechanical inventions, suggesting that the initial breakdown of all technology into six categories was too broad. The optics group is the only subgroup of mechanical that is in fact more likely to be maintained than biotech. It appears than this subgroup may have been driving the earlier results.

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sequencing technology and the Human Genome Project provided the impetus for a flood of gene discoveries and patents”).

59. The sub-category definitions are from Hall et al., *supra* note 34, at 41-42.

60. In a regression with qualitative explanatory variables as I have here, I create and use dummy variables to measure the impact of each category of the qualitative variable. Here, for instance, I have thirty-six different dummy variables, one to represent each tech sub-category. The dummy variable takes a value of one if the patent belongs to the particular sub-category and is given a value of zero otherwise. When the regression includes an intercept term such as here, one of the dummy variables has to be dropped to avoid perfect colinearity with the intercept term. The omitted category then becomes a base or benchmark for all other categories. The dummy variable coefficients on the remaining categories measure the extent to which they differ from the base category. *See* PETER KENNEDY, A GUIDE TO ECONOMETRICS 216-18 (3d ed. 1992).

**Table 5: Regression results by technology subcategories**

<b>Industry Sub-category</b>	<b>Estimate <math>\beta</math></b>	<b>Standard Error</b>	<b>Significance p</b>
Agriculture, Food & Textiles – Chemical	-0.349	0.089	<.0001
Coating Chemicals	0.044	0.077	0.570
Gas Chemical	0.023	0.111	0.833
Organic Compounds – Chemical	-0.131	0.069	0.058
Resins – Chemical	-0.091	0.068	0.180
Miscellaneous – Chemical	0.013	0.063	0.834
Communications – CnC	0.185	0.067	0.006
Computer Hardware & Software – CnC	0.146	0.070	0.036
Computer Peripherals – CnC	0.263	0.094	0.005
Information Storage – CnC	0.280	0.076	0.000
Drugs – DnM	-0.210	0.067	0.002
Surgical Instruments – DnM	0.069	0.070	0.325
Miscellaneous Drugs & Medical – DnM	0.191	0.092	0.038
Electrical devices – EnE	0.216	0.070	0.002
Electrical Lighting – EnE	0.015	0.075	0.840
Electrical Testing – EnE	-0.026	0.070	0.712
Nuclear & X-ray – EnE	0.093	0.074	0.211
Power Systems – EnE	0.028	0.070	0.691
Semiconductors – EnE	0.309	0.072	<.0001
Miscellaneous EnE	0.246	0.073	0.001
Material Handling – Mechanical	-0.023	0.066	0.730
Metal working – Mechanical	0.048	0.070	0.487
Motors & Engines + parts – Mechanical	0.113	0.068	0.098
Optics – Mechanical	0.302	0.072	<.0001
Transportation – Mechanical	-0.197	0.069	0.004
Miscellaneous Mechanical	-0.048	0.066	0.473
Agriculture, Husbandry, Food – Other	-0.029	0.073	0.693
Amusement devices – Other	-0.282	0.083	0.001
Apparel & Textile – Other	-0.214	0.076	0.005
Earthworking & Wells – Other	-0.109	0.080	0.170
Furniture, House Fixtures – Other	-0.216	0.073	0.003
Heating – Other	0.020	0.083	0.813
Pipes & Joint – Other	0.115	0.090	0.203
Receptacles – Other	-0.184	0.073	0.012
Miscellaneous – Other	-0.027	0.064	0.675

The hierarchy of technology in terms of the likelihood of renewal is as follows in Figure 3:

<b>Figure 3. Classes in which patents are likely to be renewed</b>		
More Likely To Be Maintained	↑	semiconductors—electrical (0.309) optics—mechanical (0.302) information storage—CnC (0.280) computer peripherals—CnC (0.263) miscellaneous electrical—electrical (0.246) electrical devices—electrical (0.216) communications—CnC (0.185) computer hardware and software—CnC (0.146) biotech (and all others not specifically listed) receptacles—other (-0.184) transportation—mechanical (-0.197) drugs—DnM (-0.210) apparel and textile—other (-0.214) furniture and house fixtures—other (-0.216) amusement devices—other (-0.282) agricultural, food & textiles—chemical (-0.349)

By using likelihood of patent maintenance, this study measured long term patent value or delayed patent value. This is different from patent value at any specific point in time. The fact that patents on computer-related inventions are more likely to be maintained than those on biotech is surprising. My intuition suggested that in fields of rapid development, such as computer software or hardware, few patents would likely continue to be valuable twelve years into their patent term because the technology would have changed so drastically. Of course, these patents could be more valuable in the early part of their term. In fact, they may have generated more revenue or protected more market share for their owner in those early years than a new drug patent because new drugs often spend their first few years in review at the FDA. I thought that patents whose value is front-end loaded would appear to be less valuable than patents whose value is back-end loaded. In actuality, my model demonstrates that computer software and hardware patents were significantly more likely to be maintained than biotech or pharmaceutical patents, indicating that the

hardware and software patents filed in 1991 had a longer valuable life for their owners than did the biotech patents.<sup>61</sup>

This unexpected disparity may have to do with the underlying patenting patterns of the biotech industry. Biotech companies often rush to patent before sufficient product and market research can ascertain the commercial viability of the resultant product. A software or hardware patent is generally not filed until a tangible product exists—either a written program or designed hardware. Hence, these sorts of patents are generally filed in a later developmental stage. Biotech, pharmaceutical, and chemical compound patents, in contrast, are generally filed in an earlier research stage where end results or uses are still uncertain.<sup>62</sup> Hence, in the biotech or pharmaceutical area there is a higher variance in patent value.

This model with finer technical classifications and less resultant technical variation indicates that the other identified characteristics (claims, cites received, etc.) continue to indicate value regardless of technology type. Hence, while technology type may temporally affect when a patent's value is fully realized, the other characteristics studied have no temporal aspect. For example, there is no reason to think that the number of claims would affect when in the lifetime of the patent that it would yield value to the patentee. Whereas cost recovery differences (such as R&D) between technology categories influence the value of patents, there are no major cost recovery differences that influence the number of claims in a patent application.

Semiconductor patents are one example of industry-specific empirical findings on renewal rates that yield unexpected results. Two major studies of the semiconductor industry, the Yale and Carnegie Mellon studies, each reported that patents were among the least effective mechanisms for ap-

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61. The dataset of patents issued in 1991 likely does not have a large number of software patents because it was prior to the Federal Circuit's decision in *In re Alappat*, 33 F.3d 1526 (1994). This case effectively opened the PTO doors to software patentability. See, e.g., Gregory J. Maier & Robert C. Mattson, *State Street Bank in the Context of the Software Patent Saga*, 8 GEO. MASON L. REV. 307, 326-27 (1999).

62. Recognizing that thousands of gene patents and gene fragment patents were being filed prior to the discovery of any specific, legitimate utility, the PTO promulgated stricter utility guidelines for examination of these applications. See Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1645-46 (2003) (explaining that the utility guidelines raise the utility standard for the life sciences to ensure that patent protection is not sought too early in the developmental process—"before the actual use of the product has been identified"); cf. Julian David Forman, *A Timing Perspective on the Utility Requirement in Biotechnology Patent Applications*, 12 ALB. L.J. SCI. & TECH. 647, 679-81 (2002) (arguing that the Utility Guidelines promulgated in 2001 force gene patents too far downstream).

propriating returns from research and development expenditures.<sup>63</sup> The studies suggested that the rapid pace of technological change and short product life cycles caused the semiconductor industry to rely more on trade secrets, lead time, and manufacturing capabilities to protect their technological advances rather than patents.<sup>64</sup> Contrasting the survey evidence that suggested semiconductor firms do not rely heavily on patents to protect inventions with the rise in semiconductor patenting rates created what some described as a “patenting paradox.”<sup>65</sup> A study by Hall and Ziedonis found that, among capital-intensive firms in the semiconductor industry, patenting seemed to be used extensively as a defensive strategy—a “patent portfolio race.”<sup>66</sup> My finding that patents on semiconductor inventions are the most likely to be renewed of all the different industries certainly undermines the contention that the semiconductor industry does not value patent rights.<sup>67</sup>

### III. GETTING A CLEARER SENSE OF VALUE: COMPARING PATENTS THAT EXPIRED FOR FAILURE TO PAY MAINTENANCE FEES WITH LITIGATED PATENTS

Comparing and contrasting the data on worthless patents with my previous work on litigated patents may help clarify the significance of patent characteristics for patent valuation. Table 6 lists the data from this study on expired and unexpired patents (from those that issued in 1991), the data on patents that issued from 1976-1999 (2,224,379 patents), and patents that were involved in litigation that terminated during the two-year period 1999-2000 (6,861 patents).<sup>68</sup> The data on litigated patents does not contain all patents that issued in 1991 and that were litigated. If it were possible to identify all of the patents that issued in 1991 and were involved in litigation during their life, the comparison would be more appropriate with the data on expired and unexpired patents in this study. The closest comparison I can make at this time is with the database of litigated patents from

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63. Levin, *supra* note 56, at 794-98; Cohen, *supra* note 56, at 9-11; Hall & Ziedonis, *supra* note 5, at 102.

64. Hall & Ziedonis, *supra* note 5.

65. *Id.*

66. *Id.* at 125.

67. See *supra* note 64 and accompanying text. My finding in the litigation-based study is that despite the high rate of semiconductor patenting, there is a low rate of semiconductor litigation. This further substantiates the contention that the semiconductor industry, more so than other industries, uses patents defensively to ensure cross licensing and to avoid hold-ups. See Allison, *Valuable Patents*, *supra* note 9, at 472.

68. For a discussion of the data on issued patents and litigated patents, see Allison, *Valuable Patents*, *supra* note 9.

1999-2000. Because patent characteristics have changed over time,<sup>69</sup> a straight-forward comparison of patents litigated in 1999-2000 (which issued in many different years) with issued patents from 1991 is not appropriate. To control for these changes, the issued patents database is weighted in proportion to the patents that were litigated. For example, if 10% of the litigated patents were issued in 1999, this study gives issued patents from that year 10% of the weight.

**Table 6: Comparing Worthless and Valuable Patents**

<b>Characteristic</b>	<b>Worthless Patent (Expired 4, 8, 12 years post-issuance)</b>	<b>Issued Patents (Unexp. Pats--1991)</b>	<b>Issued Patents (1976- 1999)</b>	<b>Valuable Patents (Litigated Patent)</b>
Number of Claims	12.0 (11.5, 12.0, 12.7)	13.3	13.0	19.6
Number of Cites Made	7.51 (7.39, 7.55, 7.53)	7.78	8.43	14.20
Number of Cites Received	4.72 (4.16, 4.77, 5.79)	7.40	4.32	12.23
Number of Related Apps	0.30 (0.27, 0.30, 0.34)	0.38	0.40	1.04
Prosecution Time (yrs.)	2.14 (2.10, 2.13, 2.20)	2.32	2.47	3.75
Number of Inventors	1.96 (1.81, 1.99, 2.07)	2.16	2.10	1.86
Percent Foreign	47 (44, 47, 50)	48	46	17

As Table 6 indicates, the characteristics that identified patents that were more likely to be renewed (patents of more value) also identify patents that are likely to be litigated (patents of more value).<sup>70</sup> Expired patents had fewer claims than unexpired patents, which, in turn, had fewer claims than litigated patents. Fewer U.S. prior art cites were considered

69. Hall et al., *supra* note 34, at 14-16, 23-24 (finding that patent citation and claiming practice has changed over time).

70. Given the high litigation costs, litigated patents are a subset of all valuable patents. As discussed, there are a number of ways in which patents may be valuable to their owners, including signaling, licensing, and providing defense. Many valuable patents are never litigated, and these valuable, unlitigated patents may not share the same characteristics as the litigated ones. For a discussion of the litigation/value relationship, see Allison, *Valuable Patents*, *supra* note 9, at 439-43.

during the examination of expired patents than during the examination of unexpired patents, and fewer cites were considered during the prosecution of unexpired patents than were considered during the prosecution of patents that were ultimately litigated. The same is true for citations received, time spent in prosecution at the PTO, and the number of related applications that were filed by the patentee. Each of these characteristics is significant in identifying the likelihood that a patent will expire and the likelihood that a patent will be litigated. This supports the claim that these characteristics are indicia of patent value.

The number of inventors do not, however, consistently signify value. A higher number of inventors indicates that a patent is more likely to be maintained (not expire), but the lower the number of inventors, the more likely a patent is to be litigated.

Does this mean that this characteristic is not indicative of patent value? Probably not. The likely explanation is that certain kinds of patentees are more litigious than others. In an earlier work, *Xenophobia in American Courts*, I discovered that foreign parties acquire 45% of all U.S. patents annually, but only initiate 13% of U.S. patent litigation to enforce those patents.<sup>71</sup> Characteristics of the person or patentee (such as foreign/domestic and individual/corporation), rather than of the patent (such as claims, prior art cites, etc), may still be good predictors of patent value despite their inability to predict litigation. Patent value is not only determined by litigation. Foreign and corporate patentees would be more likely to acquire patents for defensive or signaling purposes than domestic individuals.

Finally, with regard to technology, both the litigated patents comparison and the renewal data comparison reach surprising conclusions. In the broad technology classifications, computers and communication patents are more likely to be maintained and more likely to be litigated than all of the other types of patents. Mechanical patents fall into the middle in both maintenance and litigation rates. The rest of the technology classifications, however, reach results which seem inconsistent: electrical and electronics patents are likely to be maintained, but unlikely to be litigated; whereas chemical, drugs and medical, and other patents are more likely to be litigated and less likely to be maintained. These results, while seemingly inconsistent, actually tell a logical story. In communications and computer technology, patenting decisions are made late in the developmental process, when software is written or hardware is designed. Accordingly, patenting in these industries is more predictive of commercial value. Patent-

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71. Moore, *Xenophobia in American Courts*, *supra* note 4, at 1504.

ing in the biotech, pharmaceutical, and chemical industries generally occurs at earlier stages of product development. Therefore, these patents are more like a lottery. However, given the relatively high research and development costs in these industries, the patents that do result in commercial products are very important to the patentee's ability to recoup costs. This explains the high litigation rates.

A comparison of the finer technical classifications supports this theory as well.<sup>72</sup> Some categories such as optics, communications or electronics have both a high litigation rate and a high maintenance rate. Other categories with inconsistent litigation and maintenance rates follow the preceding pattern: a combination of development stage and research and development costs influence maintenance and litigation rates in opposite ways.

There is an alternative explanation for why some industries have high rates of renewal but low rates of litigation. Industries not only value patents differently in terms of their ability to protect intellectual assets and recoup R&D expenditures, but also value them for different reasons.<sup>73</sup> Some industries value patents for their ability to generate revenue (licensing and litigation) while others value them more for defensive purposes (cross licensing or avoiding holdups). Renewal fees confirm the continued value of patents owned, whereas litigation data confirms the specific value as revenue generation.

Industry variation in litigation rates and renewal rates significantly affects the study of the patent system, patent policy and patent value. Renewal rates estimate value better than litigation rates because renewal rates respond to the many ways patents may be of private value. Litigation rate data would never identify patents whose value stems from defensive use in a large portfolio or use as a signal to consumers, competitors or venture capitalists. Finally, there are valuable patents that generate significant licensing revenue and are never litigated. Since litigated patents are only a subset of valuable patents and may not be a representative subset, renewal data is a more objective measure of value. Moreover, renewal data eliminates many of the personal idiosyncrasies that appear in litigation data. Foreign parties are frequently averse to litigation, and individuals and corporations have different patenting strategies.

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72. A direct comparison of the finer technology classifications is not straightforward since the classifications herein are based on the PTO classification system, whereas the finer classifications in the Valuable Patents paper were done by hand. See Allison, *Valuable Patents*, *supra* note 9, at 456.

73. This explanation is consistent with the economic literature. The literature concludes that patents play different roles in different industries. See *supra* note 56.

In addition to differences in qualitative value between litigation and renewal rate data, there is a difference in quantitative value. Renewal rate data identifies patents whose value to their owner is at least the cost of the maintenance fees (\$900-\$6,200),<sup>74</sup> whereas litigation rate data identifies patents whose value is generally much higher quantitatively. For example, a patent in litigation may be valued based on the price the owner is willing to pay for the litigation – the litigation costs and attorneys fees. The further the litigation progresses the more money the litigation costs and the more valuable the patent must be to its owner.<sup>75</sup> Hence renewal data is useful to analyze a broader range of valuable patents. Finally, since the litigation rate data and the renewal rate data agree on which characteristics of the patents are likely to be indicia of patent value, they confirm the role of the patent characteristics for patent valuation.

#### IV. CONCLUSION

This Article provides empirical estimates of the importance of the patent system as a source of economic return on inventive activity. Literature on intellectual property rights and patent policy ask whether the patent system is an effective incentive mechanism for spurring innovation and disclosure; some people question the very existence of a patent system.<sup>76</sup> Others question whether the importance of the patent system varies across technology areas and have suggested that patent laws might be tailored to particular technology areas.<sup>77</sup> Since patenting is just one of several alterna-

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74. See *supra* note 24 and accompanying text.

75. See generally AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION, 2003 REPORT OF THE ECONOMIC SURVEY 93-94 (demonstrating that the median litigation expenses for a patent infringement vary depending on the location and the stage that the case progresses too).

76. Fritz Machlup, *An Economic Review of the Patent System*, Subcommittee on Patents, Trademarks, and Copyrights of the Senate Committee on the Judiciary, 85th Cong., 44-45 (Comm. Print 1958) (summarizing arguments for and against the patent system); see also EDITH PENROSE, THE ECONOMICS OF THE INTERNATIONAL PATENT SYSTEM (1951) (arguing that patent systems harm developing countries); C. TAYLOR & Z. SILBERSTON, THE ECONOMIC IMPACT OF THE PATENT SYSTEM: A STUDY OF THE BRITISH EXPERIENCE 194-208 (1973) (reporting results of a survey suggesting that abolition of the patent system would affect innovation in some industries more than in others). *But see* Brian Peckham, *Should the U.S. Patent Laws Be Abolished?*, 11 J. CONTEMP. L. 389, 419-21 (1985) (concluding that present knowledge does not strongly justify immediate abolishment of the patent system).

77. See James Bessen & Eric Maskin, *Sequential Innovation, Patents, and Imitation* (MIT Dep't of Econ. Working Paper No. 00-01, 1999) (arguing that patent protection is altogether unnecessary in some industries even though it may be necessary in others). Computer software and databases have been popular targets for *sui generis* legislative

tive forms of protection that might be sought for innovative output, the decision to patent depends on the comparative efficacy of this intellectual property rights scheme. In particular, the difference in returns from the invention with and without patent protection is relevant. The patentee's estimate of the incremental value determines both whether to file patent applications and whether to renew patents. The empirical evidence in this Article provides information on the value of patent protection and how that value may vary.

While many scholars have attempted to use patent counts (the total number of patents issued annually) to measure innovative output,<sup>78</sup> the high percentage of patent expirations found in this study shows that patents vary greatly in private and social value. Whether a patent is likely to be maintained by its owner is indicative of the long term value of the patent. Whether a patent is likely to end up in litigation is indicative of the

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proposals. *See, e.g.*, Himanshu S. Amin, *The Lack of Protection Afforded Software Under the Current Intellectual Property Laws*, 43 CLEV. ST. L. REV. 19 (1995) (suggesting *sui generis* intellectual property protection for software to balance the interests of software developers with those of society); Jane C. Ginsburg, *Copyright, Common Law, and Sui generis Protection of Databases in the United States and Abroad*, 66 U. CIN. L. REV. 151, 171-76 (1997) (arguing for a new *sui generis* form of intellectual property protection for databases); Peter S. Menell, *Tailoring Legal Protection for Computer Software*, 39 STAN. L. REV. 1329 (1987) (arguing for *sui generis* protection for computer software); J.H. Reichman & Pamela Samuelson, *Intellectual Property Rights in Data?*, 50 VAND. L. REV. 51, 64-109 (1997) (discussing the rationale for *sui generis* database legislation); Pamela Samuelson et al., *A Manifesto Concerning the Legal Protection of Computer Programs*, 94 COLUM. L. REV. 2308, 2332-2432 (1994) (discussing a *sui generis* regime for protecting computer software). Biotechnology is another technology which has attracted *sui generis* proposals. *See, e.g.*, Dan L. Burk, *Copyrightability of Recombinant DNA Sequences*, 29 JURIMETRICS J. 469 (1989) (arguing that copyright-like protection would be more appropriate for protection of biotechnology); S. Benjamin Pleune, *Trouble With the Guidelines: On Urging the PTO to Properly Evolve with Novel Technologies*, 2001 J. TECH. L. & POL'Y 365 (arguing for DNA-specific legislation). In fact, both existing statutes and precedent single out biotechnology for different application of various patent laws. *See* 35 U.S.C.A. § 103(b) (2005); Burk & Lemley, *supra* note 62, at 1577. Semiconductor chips and plants have, in fact, received *sui generis* legislative protection. 7 U.S.C. § 2401 (2004) (plant variety protection act rights); 17 U.S.C.A. §§ 901-914 (West 2005) (semiconductor chip rights); 35 U.S.C. §§ 161-164 (2004) (plant patent rights); *see also* Mark D. Janis & Jay P. Kesan, *U.S. Plant Variety Protection: Sound and Fury?*, 39 HOUS. L. REV. 727, 730-46 (2002) (discussing the emergence of *sui generis* systems for plant variety protection).

78. *See* Lanjouw et al., *supra* note 28, at 406 (lamenting the use of patent counts as a flawed measure of innovative output); Ariel Pakes & Margaret Simpson, *Patent Renewal Data*, in 1989 BROOKINGS PAPERS ON ECON. ACTIVITY: MICROECONOMICS 331, 363-65 (explaining the problems with using patent counts as a measure of inventive activity).

value of the patent to both the patent owner and competitors, since competitors are unlikely to infringe a patent of low value. But litigation rate data are limited to identifying patents that are valuable to their owners primarily for revenue generation. Litigation data ignore other forms of private value that may exist for patents (e.g., defensive or signaling value). The fact that certain patent characteristics do predict likelihood of patent maintenance and the likelihood of patent litigation suggests that they are useful predictors of value.

Here, I have used patent maintenance data to identify *ex ante* valuable patents. Generally, patent maintenance data is at present an underutilized tool in assessing intellectual property rights policy. The high rate of patent expiration suggests that maintenance fees are useful as an innovation sorting mechanism. The data demonstrate that patentees are able to identify the innovative value of technology as soon as three and a half years after a patent issues, likely because of decreased uncertainty in the technology. There is no way of knowing with great precision *ex ante* the twists and turns technology will take after disclosure. It may be that an industry widely embraces a given technology, resulting in a huge return for the patentee; on the other hand, competitors may successfully create design alternatives.

The data permit some generalities. For example, patentees obviously rush to patent before ascertaining meaningful estimates of the expected return of any given technology. The identification of this rush to patenting in the present U.S. patent system is important. If the rush is substantial in our present first-to-invent patent system, it would likely be exacerbated if the U.S. adopted the first-to-file system of every other country. This major reform proposal is under nearly constant consideration. A further implication of these data and the identified patent rush is that the current system of patent examination by the PTO may in fact be optimal. Although the current system is heavily criticized, it would be inefficient for the PTO to spend more time evaluating worthless applications.<sup>79</sup>

Finally, Congress should review the current schedule of patent maintenance fees. It may be possible to redesign the PTO maintenance fee schedule more strategically to increase social welfare.<sup>80</sup> Since renewal fee

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79. See Mark Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1496 (2001) (suggesting that it would be inefficient for the PTO to spend more time on patent applications).

80. See Francesca Cornelli & Mark Schankerman, *Patent Renewals and R&D Incentives*, 30 RAND J. ECON. 197, 197 (1999) (finding that revising the patent renewal fee schedule for high R&D productivity firms to have renewal fees rise more sharply with patent term length would yield significant welfare gains).

requirements and the payment thereof determine effective patent term, the renewal fee schedule could adapt to differing technologies. An annual renewal fee, like those found in most countries, may have advantages over the current four year fee schedule or alternative fee schedules that vary based on the term of the patent. Annual renewal fee schedules would likely result in technology entering the public domain sooner. An annual renewal fee schedule would be unlikely to impact disclosure or patent filings given the high cost of patent acquisition relative to the maintenance fees. It may also be the case that maintenance fee schedules ought to be inverted; namely higher maintenance fees on the front end and lower over time to encourage more rapid transfer to the public domain. Maintenance data is an area ripe for additional research. Maintenance data helps identify the characteristics of valuable patents, which is useful in patent valuation theory as well as for targeting reforms to the Patent and Trademark Office. This is one use, but there are undoubtedly other uses of maintenance data.

# THE TORT OF NEGLIGENT ENABLEMENT OF CYBERCRIME

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## ABSTRACT

Michael L. Rustad and Thomas H. Koenig propose a new tort of negligent enablement which will hold software vendors accountable for defective products and services that pave the way for third party cybercriminals who exploit known vulnerabilities. At present, the software industry has externalized the costs of making code safe for its intended environment of use onto its end users through one-sided mass market agreements. The proposed negligent enablement tort fills the void left by the failure of contract law to give meaningful remedies for the unacceptably high levels of risk of computer intrusions due to defective software. The public policy rationale for imposing secondary tort liability on software publishers who aid and abet cybercriminals is to reduce the rate of cybercrime. The proposed negligent enablement tort draws upon well-established principles of the Uniform Commercial Code (UCC) Article 2 warranties, premises liability, and negligence-based product liability to construct a modified duty of care to produce safe software suitable for its environment of use. This Article examines the elements of duty, breach, causation, and damages for the proposed negligent enablement tort as well as defenses, procedure, and possible policy-based objections.

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## I. INTRODUCTION

America is rapidly shifting its economic base from the production of durable goods to software engineering and other types of information production.<sup>1</sup> Since the 1990s, “the American economy [has] exploded with new technology and a proliferation of software and internet companies.”<sup>2</sup> The total revenue of the top 500 software companies for 2004 was \$330.7 billion, a 14% increase from 2003.<sup>3</sup> The interconnected nature of the internet is both its great strength and its Achilles heel.<sup>4</sup> The internet has spawned new classes of online injuries, such as the flood of spam e-mail and Trojan horse programs, that are choking electronic commerce and bilking unwary consumers.<sup>5</sup>

Highly vulnerable software often enables intruders to gain privileged access to computer systems, allowing intruders to alter code, compromise

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1. This sea of change in the American economy is reflected in its shift from durable manufacturing to hardware and software manufacturing, internet sales and services, Computer-Aided Design (CAD), and Computer-Aided Manufacturing. Online computer databases, data processing services, and software publishing have displaced the assembly line. Software is at the heart of internet-based services such as call centers, electronic contracting, and online banking. The digitized image and computer graphics industry also rely upon software as do internet-related technologies such as multicasting. Computer software engineering is now a leading source of new jobs. Of the 675,000 software engineering jobs in 2002, 394,000 were computer applications software engineers. Another 281,000 Americans work as computer systems software engineers. U.S. Department of Labor, Bureau of Labor Statistics, Computer Software Engineers, <http://www.bls.gov/oco/ocos267.htm> (last visited Dec. 9, 2005).

2. Tanya Patterson, *Heightened Securities Liability for Lawyers Who Invest in Their Clients: Worth the Risk*, 80 TEX. L. REV. 639, 639 (2002).

3. John P. Desmond, *2004 Software 500: Growth Came in Segments*, SOFTWARE MAG.COM, Oct. 2004, available at <http://www.softwaremag.com/L.cfm?Doc=2004-09/2004-09software-500>.

4. “This profound integration of computers and information technology is obviously the strength of modern life, but it is also its vulnerability. The greater the vulnerability, the greater the ease with which it can be exploited.” EDUARDO GELBSTEIN & AHMAD KAMAL, *INFORMATION INSECURITY: A SURVIVAL GUIDE TO THE UNCHARTED TERRITORIES OF CYBER-THREATS & CYBER-SECURITY* (2d ed. 2002), available at [http://www.itu.int/wsis/docs/background/themes/security/information\\_insecurity\\_ed.pdf](http://www.itu.int/wsis/docs/background/themes/security/information_insecurity_ed.pdf). Cybercriminals may easily exploit several vulnerabilities at the server level. See Michael L. Rustad & Lori Eisenschmidt, *The Commercial Law of Internet Security*, 10 J. OF HIGH TECH. L. 213, 216 (1995).

5. See *Optinrealbig.com, LLC v. Ironport Sys.*, 323 F. Supp. 2d 1037, 1039 (C.D. Cal. 2004) (stating that approximately 80% of the e-mail received at AOL is spam and that \$2 of each customer’s monthly ISP fee is directed towards fighting spam).

personal data, or destroy system files.<sup>6</sup> Cisco's Authentication Proxy, for example, which is used in Cisco firewalls, contains a defect that hackers can exploit to execute viruses or other arbitrary code or to launch a denial-of-service (DOS) attack on an affected system.<sup>7</sup> Music publisher Sony BMG recently began releasing CDs containing anti-copying code, which caused software to be installed on users' computers without their knowledge or permission. The software contained a security vulnerability that hackers exploit to circumvent the user's firewall.<sup>8</sup> Defective software costs businesses and consumers tens of billions of dollars because of the large number of security vulnerabilities that enable cybercriminals.<sup>9</sup>

The first wave of computer security lawsuits stemmed from claims alleging that defective software offers inadequate security, and is unreliable in protecting network perimeters.<sup>10</sup> The race to market products without sufficient attention to quality results in software with known defects being released into the stream of commerce. As one software entrepreneur stated, "Everyone is in a dirty race to get products out quick, and they are getting their feet held to it on quality."<sup>11</sup>

A class action lawsuit was filed in San Francisco in July of 2005 against CardSystems Solutions, Inc., alleging that the company's lax computer security led to the wholesale misappropriation of credit and debit cards.<sup>12</sup> Committing one of the largest cybercrimes in world history, intruders gained unauthorized access to forty million credit cards and transferred data from 200,000 cards from CardSystems's computer network.<sup>13</sup> A

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6. See, e.g., United States Computer Emergency Readiness Team (U.S.-CERT), Cyber Security Bulletin, SB05-264, Summary of Security Items from Sept. 14 through Sept. 20, 2005, <http://www.us-cert.gov/cas/bulletins/SB05-264.html>.

7. U.S.-CERT Current Activity, Vulnerability in Cisco IOS Firewall Authentication Proxy, Sept. 8, 2005, [http://www.us-cert.gov/current/current\\_activity.html](http://www.us-cert.gov/current/current_activity.html).

8. *New Virus Uses Sony BMG Software*, CNN.COM, Nov. 10, 2005, <http://www.cnn.com/2005/TECH/Internet/11/10/sony.hack.reut>.

9. Quentin Hardy, *Saving Software From Itself*, FORBES, Mar. 14, 2005, at 60.

10. Gary H. Anthes, *The Future May Hold Bad Software, Ever-More-Dangerous Security Threats and a Host of Other Causes for Concern, Say Our Panelists*, COMPUTER WORLD, Mar. 7, 2005, at 36.

11. Hardy, *supra* note 9 (quoting Coverity's cofounder, Seth Hallem).

12. Complaint for Declaratory and Injunctive Relief, *Parke v. CardSystems Solutions, Inc.*, No. CGC05-442624 (Cal. Super. Ct., July 5, 2005), available at <http://www.techfirm.com/cardsystems.pdf> [hereinafter CardSystems Complaint]; see also David Bank, *Security Breaches of Customers' Data Trigger Lawsuits*, WALL ST. J., July 21, 2005, at B1.

13. CardSystems Complaint, *supra* note 12, at 3; see also Joris Evers, *Judge Holds Off Disclosure in Credit Card Heist*, CNET NEWS.COM, Sept. 23, 2005, [http://news.com.com/2100-7350\\_3-5879179.html](http://news.com.com/2100-7350_3-5879179.html).

California retailer and an individual plaintiff brought a class action suit against CardSystems Solutions, Inc. in California State Superior Court.

In the *CardSystems Solutions* litigation, the defendants were charged with negligent data security practices that allowed cybercriminals to compromise customers' credit card accounts.<sup>14</sup> The complaint charged CardSystems with numerous negligent acts, including insecure data handling practices, failure to maintain properly configured firewalls, failure to encrypt confidential customer data, and violations of reasonable internet security standards.<sup>15</sup> The complaint also charged the financial services firm with violating a California state statute requiring it to inform customers of computer intrusions that compromise their personal data.<sup>16</sup> CardSystem Solutions's class-action lawsuit is one of the first cases in which data handlers have been sued for negligent computer security practices.

At present, there is no available tort cause of action for producing software which enables breaches of computer security and highly foreseeable cybercrime. In the absence of tort liability, the software industry reallocates the costs of making its code safe for its intended environment of use to the end-user community. Customers receive a steady stream of releases, patches, updates, and new and improved security tools that they must install rather than rely upon a system that incorporates a comprehensive software security solution prior to release.<sup>17</sup> Critics charge that the software industry "would rather dump the security mess in the laps of users than solve it at the level where a solution really belongs: in the operating system, or the hardware, or the online provider's servers."<sup>18</sup>

This Article argues that a software vendor should be secondarily liable to consumers and other third parties for a new tort, namely the negligent enablement of cybercrime. Courts should recognize a modified duty of care on the part of software licensors to incorporate reasonable security into their products and services. Our proposed negligent enablement tort is premised upon the unacceptably high levels of risk of computer intrusions

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14. CardSystems Complaint, *supra* note 12, at 3.

15. *Id.* at 2.

16. *Id.*

17. Walter Mossberg, *It's About Time For Somebody to Solve the Security Problem*, CHI. SUN-TIMES, Mar. 13, 2004, at 36.

18. Walter S. Mossberg, *PC Users Deserve a Free, Simple Service to Handle All Threats*, WALL ST. J., Mar. 11, 2004, at D1, available at <http://ptech.wsj.com/archive/ptech-20040311.html>.

caused by excessive preventable vulnerabilities in software.<sup>19</sup> The public policy rationale for imposing secondary liability on software publishers who aid and abet cybercriminals is to reduce the rate of malicious tortious or criminal activities. The software industry has simply abdicated to third parties its responsibility for limiting high-risk design defects. “The problem is that those responsible for securing our personal data are rarely the ones who pay the cost of securing it and in many cases are not the same people with whom we have entrusted our data in the first place.”<sup>20</sup>

Our new tort of negligent enablement of cybercrime draws upon the Uniform Commercial Code’s (UCC) well-established principles of warranties, premises liability,<sup>21</sup> and negligence-based product liability to construct a modified duty of care to produce safe software.<sup>22</sup> The negligent enablement tort will provide injured consumers and users with remedies when defective software paves the way for cybercrime. Part II of this Article documents the failure of contract law to provide software licensees with meaningful warranties and remedies for defectively designed code.<sup>23</sup> Presently, no recovery is available under contract law to redress the recovery of consequential damages caused by flawed software because courts

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19. We use the term “defective software” to mean any software that fails to conform to its intended use in a substantial way. Defective software may take the form of bugs that lead to computational errors or inadequate security features that enable cybercriminals to misappropriate or alter data. Software failure may cause a computer to crash or function in a way that falls short of features that were warranted. *See generally* David Polin, *Proof of Manufacturer’s Liability for Defective Software*, 68 AM. JUR. PROOF OF FACTS 3d 333 (2004).

20. Mark Rasch, *How Much Does a Security Breach Actually Cost?*, REGISTER, July 15, 2005, at 1, [http://www.theregister.co.uk/2005/07/15/who\\_pays\\_for\\_security\\_breaches](http://www.theregister.co.uk/2005/07/15/who_pays_for_security_breaches).

21. A premise liability lawsuit is “a claim for damages brought in civil court on behalf of a crime victim, usually against the owner of the premises where the crime occurred. The victim of a crime such as a mugging, assault, or rape seeks to hold the landowner responsible for the injuries—usually both physical and psychological—that the victim sustained, contending the crime was ‘caused’ by the landowner’s failure to provide sufficient security to protect persons from criminal occurrences at the location.” ALAN KAMINSKY, *A COMPLETE GUIDE TO PREMISES SECURITY LITIGATION* 3 (2d ed. 2001).

22. The concept of enabling liability for industries that facilitate third party crimes and other injuries to third parties was first developed in Robert L. Rabin, *Enabling Torts*, 49 DEPAUL L. REV. 435, 452 (1999) (formulating negligent enablement cause of action against handgun manufacturers for marketing products “‘inviting’ misuse and consequent harm to innocent victims”).

23. Steve Lohr, *Product Liability Lawsuits Are New Threat to Microsoft*, N.Y. TIMES, Oct. 6, 2003, at C2 (noting that the software industry has sidestepped the possibility of product liability by licensing software using agreements that disclaim warranties).

are unlikely to strike down one-sided liability-limiting license agreements. Part III reviews the social costs of insecure software, arguing that the greater the risk of enabling cybercrime, the greater the duty to protect the public. Part IV examines the elements of duty, breach, causation, and damages for the proposed new tort as well as defenses, procedure, and possible policy-based objections to recognizing negligent enablement. The tort of negligent enablement of cybercrime builds upon the bedrock principle of premises liability that those who aware of dangerous conditions but take no prompt remedial steps are liable for the consequences.

## II. CONTRACT-BASED REALLOCATION OF DAMAGES

### A. The Software Vendor's Blame Game

The recent increase of cybercrime shows no sign of abating, principally because the software industry has been slow to design comprehensive measures to protect against computer viruses. Forty-six major new computer infestations were recorded in 2004 versus only thirty-five virus epidemics in the previous year.<sup>24</sup> The security risk posed by dangerously defective software raises serious questions as to which party should bear legal responsibility for the consequences of cybercrime.

The software industry tends to blame cybercrime, computer intrusions, and viruses on the expertise and sophistication of third party criminals and on careless users who fail to implement adequate security,<sup>25</sup> rather than acknowledging the obvious risks created by their own lack of adequate testing and flawed software design.<sup>26</sup> Software licensors disavow responsibility for inadequate software even when their design decisions create systemic vulnerabilities.<sup>27</sup> This mistaken logic assumes that cybercrimi-

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24. *Major Computer Viruses on the Increase*, COMMC'NS & ELECS. REPORT, Jan. 25, 2005.

25. The software industry contends that assigning product liability would be unfair because software is "often misused or modified by consumers." *Id.* Software executives argue that expanded liability will have a chilling impact on innovation and undermine American competitiveness. Lohr, *supra* note 23, at 2.

26. *See* *United States v. Ladish Mfg. Co.*, 135 F.3d 484, 488 (7th Cir. 1998) (discussing a defendant's ostrich-like approach to obvious risk).

27. *See* Jonathan Krim, *Security Report Puts Blame on Microsoft*, WASH. POST, Sept. 24, 2003, at E01 (quoting a Microsoft spokesman who states, "No other company in the world is more committed to providing its customers with more secure software than is Microsoft.").

nals are too skilled to be successfully thwarted, and therefore, that cybercrime is unavoidable—like death, natural disasters, and taxes.<sup>28</sup>

In reality, the blame for inadequate computer security must be shared between the software industry and the user community.<sup>29</sup> A distinguished panel of computer security experts concluded that “the deplorable quality of commercial software” has paved the way for an epidemic of cybercrime.<sup>30</sup> Sun Microsystems’s Whitfield Diffie observed that many of the problems of computer security are due to bad software produced by firms that say, in effect, “‘You pay. We promise you nothing. Have fun.’ But we need to put in place legal targets—perhaps for 2010 or 2015—and improve our methodology to provide much higher security standards if we are to accept liability.”<sup>31</sup> Software contracting law reallocates the cost of cybercrime by shifting legal responsibility from the designer to the user community.<sup>32</sup> In order to develop comprehensive solutions to the computer security problem, focus must shift from blaming cybercrime on customer inadequacies to the development of systematic, proactive solutions against malicious attacks by outside intruders.<sup>33</sup>

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28. “It’s obvious Microsoft doesn’t bear 100% of the responsibility . . . but it’s just as obvious that it doesn’t bear 0%.” Byron Acohido, *Hacker Victim Files Lawsuit Blaming Microsoft Security*, USA TODAY, Oct. 8, 2003, at 5B (quoting a representative of Counterpane Internet Security).

29. Krim, *supra* note 27, at E01 (citing report arguing that governments “should force Microsoft to reveal more of its software code to allow development of better security tools, and to make its software work better with competing products”).

30. Anthes, *supra* note 10, at 36.

31. Shawna McAlearney, *Suing for Security*, INFO. SECURITY, Nov. 2003, at 16 (quoting Whitfield Diffie at the Information Security Solutions Europe event).

32. See Raymond T. Nimmer et al., *License Contracts Under Article 2 of the Uniform Commercial Code: A Proposal*, 19 RUTGERS COMP. & TECH L.J. 281, 294 (1993) (defining a “software contract” as “an agreement that transfers or promises to transfer one or more rights in specific computer software, including the right to access, the right to use or to have used, the right to modify, the right to copy or the right to otherwise employ the computer software”).

33. See Tom Espiner, *Developers ‘Should be Accountable’ for Security Holes*, ZDNET UK, Oct. 12, 2005, <http://news.zdnet.co.uk/software/developer/0,39020387,39228663,00.htm> (arguing that software coders should be held liable for failing to develop secure applications); *Should We Blame Security Victims?*, Posting of Mike to [http://www.techdirt.com/articles/20040428/0125258\\_F.shtml](http://www.techdirt.com/articles/20040428/0125258_F.shtml) (Apr. 28, 2004, 01:29AM) (quoting security expert); see also *Frontline: Hackers* (PBS television broadcast), <http://www.pbs.org/wgbh/pages/frontline/shows/hackers/interviews/giovagnoni.html> (last visited Dec. 9, 2005) (interviewing Robert Giovagnoni, Executive Vice President for Strategic Relations for iDefense who observed that “liability [for computer intrusions] is a very real issue, and probably one of the greatest driving forces that we’re going to be dealing with in the next few years”).

Secure software,<sup>34</sup> proper firewalls, and computer security products have become highly profitable industries in their own right.<sup>35</sup> Companies that sell security solutions to industry have advocated reallocating the costs of defective software entirely to the manufacturer. For example, the CEO of Preventsys, Inc., a maker of enterprise security solutions calls for applying strict liability for third party losses resulting from insecure computer software or hardware.<sup>36</sup> Absolving end users from all responsibility for their own carelessness would be tantamount to absolute liability. Unlike strict liability, the negligence paradigm permits a sharing of responsibility for defective software that enables cybercrime.

The proposed negligent enablement tort will allocate responsibility to both software manufacturers and end users. Manufacturers will be held liable for marketing software with excessive preventable security flaws to vendors, but computer users will be accountable if they fail to protect passwords or take reasonable steps to implement vendors' security updates. Vendors that place software on the market with known vulnerabilities will also be liable for the consequences of excessive preventable risks. The next Section explores the industry's widespread use of one-sided adhesion contracts to reallocate the risks of defective software onto the user community. The development of a new negligent enablement tort will require software companies to build reasonable security into products and services through adequate testing.

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34. Norton AntiVirus and McAfee AntiVirus are well-known examples of mass market security solutions. More sophisticated programs offering more comprehensive protection are also available as mass marketed software products. For example, Norton's Disklock can be used on a single computer or a network to restrict access to hard drives, directories, and files to authorized users only. Like dead bolts and window bars for the home, software security products can be purchased and installed by the consumer to deter specific threats.

35. See George Myers, Jr., *Microsoft to Profit from Flaws in Windows*, COLUMBUS DISPATCH, Oct. 6, 2003, at 01C (describing Microsoft's plans to sell stand-alone antivirus software). In a 2004 study of the top 500 software companies, Symantec leads the security software category with \$1.7 billion in sales, which was a 28% increase from 2003. Desmond, *supra* note 3.

36. Gene J. Koprowski, *The Web: Dealing with Cyber-Crime*, UPI, Feb. 16, 2005, available at <http://www.upi.com/inc/view.php?StoryID=20050216-085340-1695r> (quoting Tom Rowley).

## B. Reallocating the Risks of Inadequate Computer Security

### 1. *The Rise of Licensing Agreements to Reallocate Risk*

The software industry was born when computer code was unbundled from hardware.<sup>37</sup> Computer vendors began selling hardware and licensing the use of software without conveying title.<sup>38</sup> The widespread licensing of software is emblematic of the transformation of a new information-based economy where access to software, data, and entertainment products outweighs the production of durable goods.

### 2. *The Failure of Courts to Police the Software Industry*

Mass market license agreements are classic examples of adhesion contracts in which the licensor routinely disclaims all meaningful warranties and remedies, and the manufacturer reallocates the risk of loss to the user community for all failures of performance.<sup>39</sup> The consumer is offered the product or service on a “take it or leave it” basis.<sup>40</sup> Many, even most, license agreements do not allow bargaining over any term or condition of service. Shrinkwrap agreements<sup>41</sup> and other mass market licenses typically

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37. *The History of Computing: The Industrial Era*, Mar. 15, 2005, <http://www.thocp.net/timeline/1978.htm> (noting, for example, that the first business-type software, VisiCalc, was marketed in the 1970s and sold approximately a million copies); see MICHAEL D. SCOTT, INTERNET AND TECHNOLOGY LAW DESK REFERENCE 512 (1999); Bradford L. Smith & Susan O. Mann, *Innovation and Intellectual Property Protection in the Software Industry: An Emerging Role for Patents?*, 71 U. CHI. L. REV. 241, 243 (2004).

38. See Robert W. Gomulkiewicz, *Getting Serious About User-friendly Mass-Market Licensing For Software*, 12 GEO. MASON L. REV. 687, 689 (2004).

39. One-sided software license agreements are a form of adhesion contracts in which the weaker licensee submits to the terms of the licensor. See generally Frederick Kessler, *Contracts of Adhesion—Some Thoughts About Freedom of Contract*, 43 COLUM. L. REV. 629 (1943).

40. Shrinkwrap and other mass market license agreements are often presented to the user on a “take it or leave it” basis. David McGowan, *Free Contracting, Fair Competition, and Article 2B: Some Reflections on Federal Competition Policy, Information Transactions, and “Aggressive Neutrality”*, 13 BERKELEY TECH. L. J. 1173, 1213 (1998) (describing how proposed Article 2B validated software industry “take it or leave it” agreements); see also Michael L. Rustad, *Commercial Law Infrastructure For The Age of Information*, 16 J. MARSHALL J. COMPUTER & INFO L. 255, 300 (1997) (noting that mass market licenses are delivered to the user on a “take it or leave it” basis).

41. See David G. Post & Dawn C. Nunziato, *Shrinkwrap Licenses and Licensing on the Internet*, 477 PLI/PAT 517 (1997). Mass market licenses are often structured so that the consumer pays before having an opportunity to review the terms of the license agreement. The “pay now and see the terms later” approach to mass market licensing prevents consumers from shopping for more favorable terms. See Gomulkiewicz, *supra* note 38, at 716.

bind licensees to the terms of the dominant licensor without the possibility of negotiating key terms.<sup>42</sup>

The software licensor's purpose in issuing shrinkwrap license agreements is to create a "reverse unilateral contract,"<sup>43</sup> which is structured so that the customer who opens the plastic wrap and uses the software will be bound to one-sided terms.<sup>44</sup> "One can read hundreds of click-wrap, Web site, shrink-wrap, and other mass-market transactions and have yet to find a single example of a software licensor willing to provide any warranty for its software."<sup>45</sup> A pundit wryly observed that "by unwrapping a software package or downloading a demo, you've agreed to a thickly worded contract that may result in enslaving your first-born child to Bill Gates for all you know."<sup>46</sup>

Licensors typically disclaim warranties, offering only the repair or replacement of the software disk or other media as the sole and exclusive remedy.<sup>47</sup> The typical "click through" website agreement requires end users to click on an icon, "I agree," which creates a contract where the user agrees to submit to all of the licensor's terms and conditions. For example, Dell's software agreement binds the consumer to all the terms of its license agreement when the preloaded software is used.<sup>48</sup>

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42. Software publishers impose standard one-sided terms in the typical shrinkwrap agreement. See Batya Goodman, Note, *Honey, I Shrink-Wrapped the Consumer: The Shrink-Wrap Agreement as an Adhesion Contract*, 21 CARDOZO L. REV. 319 (1999) (documenting the widespread industry practice of software publishers offering standard terms to the user community).

43. Mark A. Lemley, *Intellectual Property and Shrinkwrap Licenses*, 68 S. CAL. L. REV. 1239, 1241 (2000).

44. *Id.*

45. Michael L. Rustad, *Making UCITA More Consumer-Friendly*, 18 J. MARSHALL J. COMPUTER & INFO. L. 547, 579 (1999) (arguing that UCITA should be amended to incorporate greater consumer protection for licensees).

46. *Id.* at 578 (quoting Margie Wylie, software critic). A famous Dilbert cartoon lampoons adhesive shrinkwrap license agreements, by forcing Dilbert to become Bill Gates' towel boy. Scott Adams, *Dilbert*, RICHMOND TIMES DISPATCH, Jan. 14, 1997, at D5. For a discussion of how software vendors developed restrictive license agreements for packaged software, see Rustad & Eisenschmidt, *supra* note 4, at 267-93.

47. See, e.g., *i.Lan Sys., Inc. v. Netscout Serv. Level Corp.*, 183 F. Supp. 2d 328, 329, 334 (D. Mass. 2002) (describing the ubiquity of mass market license agreements where the user manifests assent by clicking "I Agree" and thereby creating an enforceable agreement to limit liability).

48. Dell USA, Dell Software License Agreement, <http://www1.us.dell.com/content/topics/global.aspx/policy/en/policy?c=us&l=en&s=gen&~section=015> (last visited Nov. 11, 2005) (stating terms of the software agreement between Dell Products, LP and its customers).

One-sided choice of law<sup>49</sup> and forum selection clauses<sup>50</sup> have a chilling effect on the user's ability to file suit for defective software. It is prohibitively expensive, for example, for a Minnesota consumer to file suit in Washington, the forum chosen by Microsoft. Requiring a consumer to file suit in a distant forum functions as an absolute immunity, where the cost and inconvenience of filing a lawsuit far exceed what can be recovered if they prevail. Very few consumers are even aware that they waive their implied warranty of merchantability, surrender their right to file suit in a court of law, and agree to submit to arbitration in a distant forum by the mere act of clicking on an icon labeled "I agree."<sup>51</sup> It is questionable whether most consumers even understand that they are typically licensing, not purchasing, software.

A license conditions access to and use of software on acceptance of the license's terms.<sup>52</sup> A mass market agreement generally begins with a legal notice, disclaimer, or terms of use, stating that opening the package indicates the users' acceptance of the license terms.<sup>53</sup> The license agreement is

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49. See Jeffrey D. Dunn, *Texas Choice of Law Analysis for Contracts*, 40 TEX. J. BUS. L. 37, 39 (2004) (describing choice of law and conflicts of law analysis).

50. The U.S. Supreme Court in *Carnival Cruise Lines, Inc. v. Shute*, 499 U.S. 585 (1991) enforced an onerous forum selection clause of a cruise contract requiring the consumer to litigate in Florida, a forum distant from the consumer. See also *Net2phone, Inc. v. Superior Court*, 109 Cal. App. 4th 583, 588 (2003) (citing *Carnival Cruise* as authority for a "take it or leave it" forum selection clause). Courts have frequently required users to litigate in distant forums since the advent of the internet. See, e.g., *CompuServe, Inc. v. Patterson*, 89 F.3d 1257 (6th Cir. 1996); *Westendorf v. Gateway 2000, Inc.*, 41 U.C.C. Rep. Serv. 2d (CBC) 1110 (Del. Ch. 2000) (holding that the plaintiff was bound to an arbitration clause because she kept her computer for thirty days, thereby accepting Gateway's terms and conditions for sale of the computer and related services). But see *Specht v. Netscape Commc'ns Corp.*, 306 F.3d 17 (2d Cir. 2002) (refusing to enforce choice of forum clause where license agreements were located on a submerged screen that the user would have needed to scroll through to read the full agreement and arbitration clause, and holding therefore that the internet users' act of downloading the software did not unambiguously manifest assent to the arbitration provision in the license terms).

51. A typical software license agreement for a computer security product disclaims all express and implied warranties including fitness for a particular purpose and non-infringement of third party rights. Products are offered on an "as is" or "without any warranties of any kind" basis, that do not even warrant functionality of the product without defect or vulnerability. See, e.g., *Lockdown Networks, End User Software License Agreement*, <http://www.lockdownnetworks.com/freeaudit/conditions.php> (last visited Sept. 25, 2005).

52. See, e.g., *Real Networks, Legal Notice Disclaimer and Terms of Use*, <http://www.realnetworks.com/company/legal.html> (last visited Dec. 2, 2005).

53. For example, Adobe Systems provides that the customer's downloading of software from its website signifies agreement to its terms and conditions. Adobe, *Downloads*, <http://www.adobe.com/support/downloads/main.html> (last visited Dec. 2, 2005).

frequently not even visible to a consumer before purchase because it is sealed inside the product's packaging.<sup>54</sup> Mass market license agreements not only reallocate the risk of software failure<sup>55</sup> to the licensee, but usually also bypass the first sale doctrine of federal copyright law.<sup>56</sup>

Prior to the mid-1990s, U.S. courts were reluctant to enforce adhesion contracts in the form of software agreements.<sup>57</sup> However, the courts' attitudes have since changed in favor of broad enforceability of mass market license agreements; the current trend is to enforce one-sided software agreements so long as the user has an opportunity to review and manifest assent to the terms.<sup>58</sup> In *ProCD*,<sup>59</sup> the Seventh Circuit upheld the enforceability of a shrinkwrap license located inside the package of the computer program. The bargaining power of the parties with respect to the mass market agreement was highly unbalanced, in part because consumers were not able to see the terms of the contract until after the software was purchased. The court summarily rejected the licensee's claim that he had no choice but to adhere to the licensor's terms once he opened the package<sup>60</sup> and gave short shrift to the argument that shrinkwrap licenses must be conspicuous to be enforceable.<sup>61</sup> The court found that the licensor invited

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54. *See, e.g.*, *Hill v. Gateway 2000, Inc.*, 105 F.3d 1147 (7th Cir. 1997) (enforcing license agreement with clause ordering arbitration despite the fact that the agreement was not available to the consumer prior to purchase).

55. *See* Daniel T. Perlman, Note, *Who Pays the Price of Computer Software Failure?*, 24 RUTGERS COMPUTER & TECH. L.J. 383, 387 (1998) (defining software failure as "the occurrence of either deficient functionality, where the program fails to perform a required function, or deficient performance, where the program performs a required function too slow or in an insufficient manner").

56. The first sale doctrine of copyright law gives the owner of a lawfully made copy the power to "sell or otherwise dispose of the possession of that copy without the copyright holder's consent." *Step-Saver Data Sys. v. Wyse Tech.*, 939 F.2d 91, 96 n.7 (3d Cir. 1991) (quoting *Bobbs-Merrill Co. v. Straus*, 210 U.S. 339, 350 (1908)).

57. *See, e.g.*, *Vault Corp. v. Quaid Software, Ltd.*, 847 F.2d 255 (5th Cir. 1988) (affirming a district court finding that a shrinkwrap license was an unenforceable adhesion contract and ruling that federal copyright law preempted Louisiana's Software License Enforcement Act); *Step-Saver Data Sys.*, 939 F.2d at 105 (ruling that box-top mass market license was an additional term not incorporated into the parties' contract where the term's addition to the contract would materially alter the agreement and the consumer did not see the license until after paying for product).

58. *See, e.g.*, *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447 (7th Cir. 1996) (upholding a shrinkwrap license); *M.A. Mortenson Co. v. Timberline Software Corp.*, 998 P.2d 305 (Wash. 2000) (upholding a limitation on consequential damages included in a license accompanying protection devices for mass market software).

59. 86 F.3d at 1447.

60. *Id.*

61. *Id.* at 1452.

acceptance by silence and that the licensee accepted the software after having an opportunity to reject its terms.<sup>62</sup> In so holding, the Seventh Circuit validated the software industry's practice of disclaiming all warranties and all meaningful remedies, reasoning that this form of licensing benefited consumers by permitting them to make extra copies, use software on multiple computers, and incorporate software into the user's own products.<sup>63</sup> In *Hill v. Gateway*,<sup>64</sup> the same court further extended its pro-industry tilt by ruling that a customer was bound by an arbitration clause contained in the packaging of a computer, regardless of whether it was conspicuous or if the purchaser had actual knowledge of its existence.

As demonstrated in previous cases, the evolution of software law has led to the enforcement of unsigned adhesion contracts, depriving consumers of meaningful remedies.<sup>65</sup> The Uniform Computer Information Transactions Act (UCITA), the first comprehensive statute for software licensing, is a model act which also represents a pro-licensor standpoint by its validation of one-sided mass market license agreements.<sup>66</sup> In sum, contract law has failed to provide consumers and other users with meaningful remedies to redress foreseeable cybercrimes caused by defective software design. In the absence of adequate contractual remedies for defective software, corporate users must purchase specialized insurance policies to cover risks that should be borne by the software manufacturer.

In the next Part, we propose the expansion of tort remedies to redress the financial costs of cybercrime enabled by defective software. We argue that courts should examine public policy interests as well as precedent in determining whether to recognize a new duty or modify an old one.<sup>67</sup>

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62. *Id.*

63. *Id.* at 1455.

64. 105 F.3d 1147 (7th Cir. 1997).

65. *See, e.g., ProCD*, 86 F.3d at 1450 (validating license agreement and treating licenses as ordinary contracts accompanying the sale of products, and therefore as governed by the common law of contracts and the UCC); *i.Lan Sys., Inc. v. Netscout Serv. Level Corp.*, 183 F. Supp. 2d 328 (D. Mass. 2002) (relying on U.C.C. § 2-204 to validate a clickwrap license agreement); *Brower v. Gateway 2000, Inc.*, 676 N.Y.S.2d 569, 571-72 (App. Div. 1998) (holding that assent to shrinkwrap agreement occurred in consumer's actions after time of purchase instead of at purchase).

66. *See Rustad, supra* note 45, at 547 (arguing that UCITA should be amended to extend federal and state consumer protection to mass market license agreements).

67. *See Robert L. Rabin, The Torts History Scholarship of Gary Schwartz: A Commentary*, 50 UCLA L. REV. 461, 480 (2002).

### III. TOWARDS A DUTY OF CARE TO PRODUCE SECURE SOFTWARE

This Part argues that courts should recognize a duty of software vendors to market software with reasonably secure software to prevent cybercrime. Consumers and licensees have been left without meaningful warranties or remedies for software failure. To date, despite an epidemic of computer security flaws, no plaintiff has recovered damages for cybercrimes enabled by flawed software under either a contract theory or under a tort theory. Most software security incidents result from hackers exploiting known vulnerabilities arising out of grossly inadequate software engineering practices.<sup>68</sup> Too many vendors market their products and services with vulnerabilities that improved software development practices could reduce.<sup>69</sup>

Software vendors, not computer users, are in the best position to design software that deters cyber-intruders. Software defects should be detected by software engineers before a product's release. Furthermore, software vendors can bundle together tools to prevent foreseeable cybercrimes. For example, vendors possess technology to track antivirus software and to warn users if their protection is not installed or properly updated.<sup>70</sup> The social costs associated with hackers, viruses, and cybercrimes will not decrease until the software industry is held accountable for marketing products with known design defects. Constructing a duty of care to produce secure software will provide vendors and other stakeholders incentives to implement, install, and update safe and reliable products and

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68. Noopur Davis, *Developing Secure Software*, SOFTWARE TECH NEWS, July 2005, at 3, 3, available at <http://www.softwaretechnews.com/stn8-2/noopur.html> ("Most security vulnerabilities result from defects that are unintentionally introduced in the software during design and development. Therefore, to significantly reduce software vulnerabilities, the overall defect content of software must be reduced."). "Almost all software is riddled with holes, and programs are released to purchasers with hundreds, if not thousands, of security-related weaknesses." Reid Skibell, *The Phenomenon of Insecure Software in a Security-Focused World*, 8 J. TECH. L. & POL'Y 107, 108 (2003) (citing Bruce Schneier, *Foreword* to JOHN VIEGA & GARY MCGRAW, BUILDING SECURE SOFTWARE: HOW TO AVOID SECURITY PROBLEMS THE RIGHT WAY, at xix (2002) ("[T]he average large software application ships with hundreds, if not thousands, of security related vulnerabilities")).

69. *Id.*

70. Tom Mainelli, *Internet Security Suites Face Off*, PC WORLD, Feb. 2005, at 50-51.

services.<sup>71</sup> Robust internet security constitutes the first line of defense against spam, viruses, and other cybercrimes.

The courts have yet to articulate such a duty of care for software manufacturers.<sup>72</sup> Recently, however, plaintiffs have asserted such a duty. Class action suits against Reed-Elsevier's LEXIS/NEXIS and ChoicePoint Inc. were filed in federal district courts in California for failing to implement security that might have prevented the theft of customers' personally identifiable information.<sup>73</sup> The Federal Trade Commission entered into a consent agreement with BJ's Wholesale Club Inc.,<sup>74</sup> whose customers' credit card information was compromised by computer hackers.<sup>75</sup> In the agreement, BJ's agreed to develop a comprehensive plan to protect the security of their customers.<sup>76</sup>

These computer security cases may signal a greater willingness of courts to recognize a duty to implement reasonable software security practices.<sup>77</sup> Should courts recognize this duty, software vendors should expect

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71. [A] court's task in—determining 'duty'—is not to decide whether a particular plaintiff's injury was reasonably foreseeable in light of a particular defendant's conduct, but rather to evaluate more generally whether the category of negligent conduct at issue is sufficiently likely to result in the kind of harm experienced that liability may appropriately be imposed on the negligent party.

Ballard v. Uribe, 41 Cal. 3d 564, 573 n.6 (1986) (emphasis omitted).

72. See Jonathan B. Mintz, *Strict Liability for Commercial Intellect*, 41 CATH. U. L. REV. 617, 649 (1992); Stephen E. Henderson & Matthew E. Yarbrough, *Frontiers of Law: The Internet and Cyberspace: Suing the Insecure? A Duty of Care in Cyberspace*, 32 N.M. L. REV. 11, 15 (2002) (noting that there is little authority for extending a duty of care to internet security threats). Some commentators have urged that strict liability not be extended to software because of the chilling effects on innovation. Donald R. Ballman, *Software Tort: Evaluating Software Harm by Duty of Function and Forum*, 3 CONN. INS. L.J. 417, 421 (1996-1997).

73. *Ballard*, 41 Cal. 3d at 573 n.6.

74. Credit unions and their insurers filed suit against BJ's and its bank on fraud, negligence, and other grounds, seeking to recover the cost of closing accounts and reissuing cards. Bank, *supra* note 12, at B8.

75. *Id.* at B1.

76. The consent order agreed to by BJ's Wholesale Club bound the corporation and all its subsidiaries or divisions, "in connection with the advertising, marketing, promotion, offering for sale, or sale of any product or service" to "establish and implement, and thereafter maintain, a comprehensive information security program that is reasonably designed to protect the security, confidentiality, and integrity of personal information collected from or about consumers." *In re BJ's Wholesale Club*, FTC Order #0423160, <http://www.ftc.gov/os/caselist/0423160/050616agree0423160.pdf> (last visited Dec. 2, 2005).

77. "[T]he software industry is no longer in its infancy. Its development has moved out of garages and into corporate offices. It has matured to become a dominant sector of

a “flood of lawsuits by both consumers and businesses” stemming from breaches of data security.<sup>78</sup> A special advisor to President Bush opined that reform will come through litigation: “We’ll see [vendors] getting sued [because] so much of our infrastructure depends on computers that it’s unsustainable to hold software companies blameless.”<sup>79</sup>

Just as landowners who open their premises to business visitors owe a duty of care, the software industry may be required by an expansion of tort law to use reasonable precautions to protect its users from computer intruders.<sup>80</sup> Several new torts emerged during the twentieth century to remedy the previously “unredressed harms of intentional infliction of emotional distress, invasion of privacy, product-related injury, and wrongful discharge.”<sup>81</sup> Our proposed negligent enablement tort, like these other innovations in tort law, “is not so much a new creation as an adjustment to well-established law,”<sup>82</sup> based upon professional malpractice, product liability, and premises liability. While each of these legal theories would need considerable modification before being extended to software transactions, they serve as useful heuristic devices for visualizing the contours of the new enablement tort. The negligence-based enabling tort anchors li-

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the economy. Consequently, it is appropriate to consider liability for defective software in the same light as liability for defective automobiles, pharmaceuticals, and other products.” Frances E. Zollers et al., *No More Soft Landings for Software, Liability for Defects in an Industry That Has Come of Age*, 21 SANTA CLARA COMPUTER & HIGH TECH. L.J. 745, 746 (2005); see also Mark Jewell, *Credit Fraud Raises ID-Theft Concerns*, THE CALL, July 5, 2004, available at [http://www.zwire.com/site/news.cfm?newsid=12215347&BRD=1712&PAG=461&dept\\_id=24361&rfti=6%20](http://www.zwire.com/site/news.cfm?newsid=12215347&BRD=1712&PAG=461&dept_id=24361&rfti=6%20).

78. Bank, *supra* note 12, at B1 (quoting Mark Rasch, Senior Vice President for Solutionary, Inc.).

79. Neville Smith, *Insurers May be Hit by A Bad Idea Whose Time Has Come: Class Actions Over Faulty Software Could Land Insurers in a Tangle*, LLOYD’S LIST INT’L, Sept. 23, 2004, at 6.

80. See DAN B. DOBBS, THE LAW OF TORTS 876 (2001). In addition to the landowner’s duty to protect customers, there are a large number of relationships between a defendant and the plaintiff where the duty to use reasonable care against third party criminals is based upon the superior party’s relationship to the plaintiff. A duty to protect the plaintiff from third party intrusions is present in the formal relationship between common carrier and passenger, parent and child, schools and students, and employers and employees. *Id.* at 874-75.

81. Anita Bernstein, *How to Make a New Tort: Three Paradoxes*, 75 TEX. L. REV. 1539, 1541 (1997) (explaining how new causes of action evolved).

82. *Id.* at 1555 (arguing that new torts such as the invasion of privacy, the intentional infliction of emotional distress, wrongful termination, and product liability only survived because they were “framed” in terms of well-established, as opposed to novel, victim classes).

ability to accepted industry standards, federal and state community security statutes, and risk/utility formulas.

Under our proposed negligent enablement tort, the software industry would owe its users an affirmative duty of reasonable care in protecting them from highly foreseeable cybercrime by eliminating negligent design practices, inadequate internet security services, and poorly configured firewalls. The allocation of software liability should attach where the industry fails to implement available means to prevent foreseeable cybercrimes.<sup>83</sup> Just as in premises liability cases, courts should impose negligence-based liability for failure to implement available means to protect software customers from third-party crimes. Although courts are unlikely to stretch landowner's duties to apply to cyberspace, customer protection from acts by foreseeable third-party criminals is functionally equivalent.<sup>84</sup> Similarly, although courts are unlikely to expand the principles of strict product liability to software, software vendors are best suited to maintain proper computer security.

In a networked world, it is reasonably foreseeable that computer hackers or cybercriminals will discover and exploit known vulnerabilities in operating systems. The number of security breaches experienced by software consumers has reached epic proportions.<sup>85</sup> Such errors cost the U.S. economy an estimated \$59.5 billion each year.<sup>86</sup> In addition, dangerously

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83. Defective software creates widespread harm because "[t]he software industry [is] one of the most important sectors of the economy. Performance gains in computer hardware, advances in software functionality, and the growth of the Internet into an established communications and commercial medium have fueled the integration of software into nearly every aspect of modern life." Smith & Mann, *supra* note 37, at 241.

84. The salutary trend of the law has been to impose a duty of care on landowners for preventing third-party crimes. DOBBS, *supra* note 80, at 876. This duty has been extended to common carriers, operators of hotels, theaters, and places of public entertainment. *Id.*

85. The CERT Program of the Software Engineering Institute (SEI) of Carnegie Mellon University was established by the U.S. Department of Defense as an Advanced Research Project to coordinate computer security emergencies, analyze computer software vulnerabilities, and develop security solutions. CERT Coordination Center monitors computer and cyber security and develops techniques to survive and resist attacks on computer systems. SEI, Meet CERT, [http://www.cert.org/meet\\_cert/meetcertcc.html#bkgd](http://www.cert.org/meet_cert/meetcertcc.html#bkgd) (last visited Sept. 26, 2005). In a six month period, the CERT Coordination Center at Carnegie Mellon University received over half a million e-mails and nearly one thousand calls reporting computer security incidents or requesting information. The Center handled 137,529 computer security incidents during this period. SEI, CERT Coordination Center 2003 Report, [http://www.cert.org/annual\\_rpts/cert\\_rpt\\_03.html#highlights](http://www.cert.org/annual_rpts/cert_rpt_03.html#highlights).

86. Alia Susann Zohur, Comment, *Acknowledging Information Technology Under the Civil Code: Why Software Transactions Should not be Treated as Sales*, 50 LOY. L. REV. 461, 461 (2004).

defective software enables other thefts, such as the theft of credit card information, trade thefts, and the interception of personally identifiable data.<sup>87</sup> Any data handler or software licensor should be liable for losses resulting from the marketing of software with inadequate security features.<sup>88</sup>

Software publishers releasing dangerously insecure code should shoulder the costs of enabling foreseeable computer intruders. For the software industry to incur liability for negligently causing harm, the vendor must owe a duty of care to its licensees. Judicial opinions in negligence cases demonstrate that determinations of no duty are rare.<sup>89</sup> A company will have a duty where its conduct poses preventable risks to others.<sup>90</sup> Such a duty may arise from a company's failure to anticipate tortious or criminal acts of others, although "courts are reluctant to impose a duty to anticipate the criminal or tortious conduct of third parties."<sup>91</sup>

The limited duty would require the licensors of network security and mass market products to implement computer code that is reasonably fit for their intended environment of use. In software law, as in any other area of tort law, the greater the risk, the greater the duty of care. The software vendor's duty to protect third party personal and proprietary information should be calibrated by the radius of the risk. A software vendor that markets tailored software to a hospital or to a financial institution, for example, would have a higher duty of care to produce secure software than a vendor marketing to the home entertainment market.

The marketing of software or network services without adequate perimeter defenses provides, in effect, a welcome mat for hackers, crackers,<sup>92</sup> and other cybercriminals. Microsoft's Internet Explorer has become

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87. The most common software defects enabling computer intrusions include: buffer overflows, format string problems, SQL injection, command injection, failure to handle errors, cross-site scripting, failing to protect network traffic, the use of "magic" URLs and hidden forms, improper use of SSL, use of weak password-based systems, failing to store and protect data, information leakage, improper file access, integer range errors, trusting network address information, signal race conditions, unauthenticated key exchange, failing to use cryptographically strong random numbers, and poor usability. Michael Howard's Web Log, *The 19 Deadly Sins of Software Security*, [http://blogs.msdn.com/michael\\_howard/archive/2005/07/11/437875.aspx](http://blogs.msdn.com/michael_howard/archive/2005/07/11/437875.aspx). (last visited Dec. 9, 2005).

88. See Ethan Preston & John Lofton, *Computer Security Publications: Information Economics, Shifting Liability & the First Amendment*, 24 WHITTIER L. REV. 71, 131 (2002).

89. *Id.*

90. See Rabin, *supra* note 67, at 480.

91. *Id.*

92. A cracker is generally defined as a "hacker with criminal intent." Eric J. Sinrod & William P. Reilly, *Cyber-crimes: A Practical Approach to the Application of Federal*

an instrumentality of choice for cybervillains to spread internet worms via online advertisements.<sup>93</sup> Computer “intruders have become highly proficient at turning internet-connected Windows PCs into obedient ‘zombies.’”<sup>94</sup> When software vendors provide antivirus, firewall, spam, spyware, patches, and other post-marketing stop-gaps for computer security, it is like using “chewing gum stuck in the cracks of a sinking ship.”<sup>95</sup> A comprehensive security solution is needed to thwart crime.

The next Section contends that a duty of care must be recognized given the radius of the risk of cybercrime caused by defectively designed software. If the vendors are held liable for the consequences of defective software, they will have a strong incentive to develop comprehensive solutions for thwarting cybercriminals, instead of continuing with the current “perimeter centric model” of focusing too narrowly on strengthening borders through improved firewalls.<sup>96</sup>

#### A. The Radius of the Risk of Defective Software

The number of detected software vulnerabilities has increased rapidly over the past decade. Figure 1 below illustrates this steady increase of known software flaws. Given that corporations are reluctant to report that their security has been breached, the number of detected vulnerabilities is likely even greater than depicted in Figure 1.<sup>97</sup> In addition, the Federal Trade Commission estimated in 2003 that personal data from approximately ten million Americans was stolen that year, resulting in

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*Computer Crime Laws*, 16 SANTA CLARA COMPUTER & HIGH TECH. L.J. 177, 182 (2000). Cracking is defined as “computer system ‘break-ins’ to secure computer services and computer-storage such as databases of credit-card details.” Roger Clarke, *Paradise Gained, Paradise Re-lost: How the Internet is being Changed from a Means of Liberation to a Tool of Authoritarianism*, 18 MOTS PLURIELS, Aug. 2001, at sec. 3.2, available at <http://www.anu.edu.au/people/Roger.Clarke/II/PGPR01.html>.

93. Stuart J. Johnston, *Protect Your Browser From Attack Ads*, PC WORLD, Feb. 2005, at 47 (describing malicious code as exploiting an operating systems defect in Windows 98 and XP versions of Microsoft’s program).

94. *The Rise of Zombie Computers*, USA TODAY, Sept. 8, 2004 at 3B.

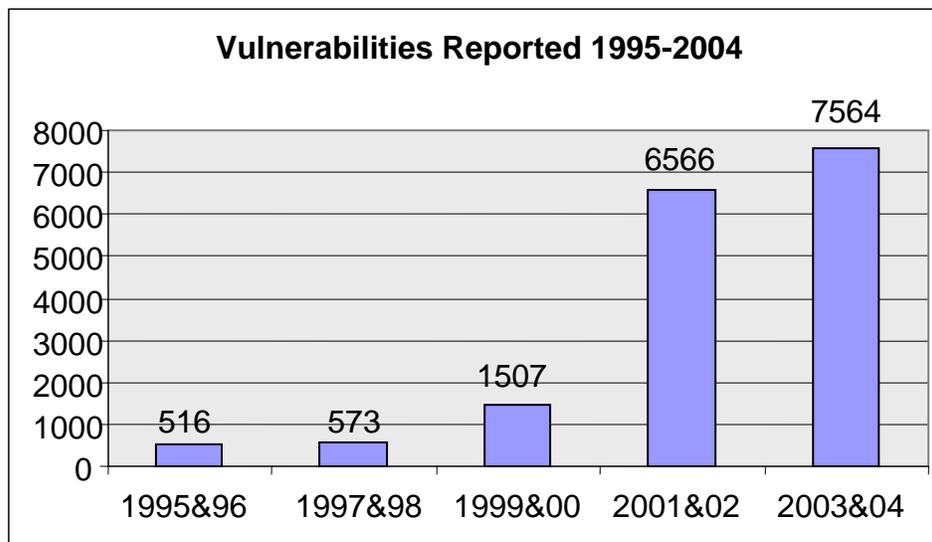
95. John Dix, *How the Bad Guys View Software*, NETWORK WORLD, Mar. 8, 2004, at 38 (quoting a question presented to computer security expert Gary McGraw).

96. Erik Pace Birkholz, *Birkholz Fights Network Negligence at Inland Empire ISSA*, PR WEB DIRECT, June 28, 2005, <http://www.prwebdirect.com/releases/2005/6/prweb256232.htm>.

97. The underreporting of cybercrime intrusions is likely the result of a company’s desire to avoid undue publicity or the loss of public confidence because of its inability to prevent intrusions.

direct losses of \$5 billion to consumers and another \$48 billion in losses to the business community.<sup>98</sup>

**Figure 1: The Growth in Software Defects<sup>99</sup>**



Security holes are not rare anomalies; rather, they have become the software industry norm. Spyware entrepreneurs commonly exploit security holes to install unwanted software such as pornographic icons on users' computers.<sup>100</sup> For example, employees at AOL, the world's largest internet

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98. Press Release, FTC, FTC Releases Survey of Identity Theft in U.S. 27.3 Million Victims in Past 5 Years, Billions in Losses for Businesses and Consumers (Sept. 3, 2003), available at <http://www.ftc.gov/opa/2003/09/idtheft.htm>.

99. The historical data on vulnerabilities reported in Figure 1 is constructed from reports to the CERT Coordination Center (CERT/CC), which is a federally funded center located at the Software Engineering Institute at Carnegie Mellon University in Pittsburgh, Pennsylvania. See SEI, CERT/CC Statistics 1988-2005, available at [http://www.cert.org/stats/cert\\_stats.html](http://www.cert.org/stats/cert_stats.html).

100. The vendors of unwanted software and spam use at least four methods to install software on personal computers without obtaining the computer users' informed consent: (1) drive-by downloads; (2) installation via distribution partners; (3) installation through security holes; and (4) installation at a user's request without displaying a license agreement. Ben Edelman, 180solutions Installation Methods and License Agreement, <http://www.benedelman.org/spyware/180-affiliates/installation.html> (last visited Dec. 8, 2005). The modus operandi of a "drive-by download" is to send misleading pop-up offerings to install software while the user is browsing. The user may inadvertently install software without even seeing the terms and conditions of the license agreement. *Id.*

service provider, accidentally downloaded virus-infected e-mails leading to the compromise of the system.<sup>101</sup>

Windows software contains multiple vulnerabilities that enable malicious users to obtain elevated privileges, gain arbitrary file access, or execute arbitrary code.<sup>102</sup> For example, security holes in Microsoft's Internet Information Server permit malicious code to be installed on a user's computer.<sup>103</sup>

An empirical study of thousands of software programs documented the lax practices in the design, coding, and testing of software that leads to vulnerabilities.<sup>104</sup> The researchers found approximately one coding error for every seven to ten lines of new and changed software.<sup>105</sup> Even if 99% of these errant codes were detected and removed, the rate of error would be unacceptably high.<sup>106</sup> To change this systematic pattern of insecure software design, computer security must be built into each phase of the product development cycle. The current haphazard approach, in which security is "bolted-on" after a vulnerability is discovered in the post-marketing period, creates too many social costs.<sup>107</sup>

One of the earliest computer security breach lawsuits was filed against Microsoft in 2003 for marketing software with known security vulnerabilities.<sup>108</sup> The plaintiff's complaint charged Microsoft with unfair competition, violation of California's unfair and deceptive trade practices law, and violation of a state law requiring notification of security breaches.<sup>109</sup> The underlying factual claim is that Microsoft knowingly marketed its soft-

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101. Jim Hu, *AOL Security Breach Exposes Personal Info*, CNET NEWS.COM, June 16, 2000, <http://news.com.com/2100-1023-242034.html?legacy=cnet>. ("AOL, the largest Internet service provider with 23 million paid subscribers, is targeted frequently by account crackers.").

102. *See* Who Profits from Security Holes?, <http://www.benedelman.org/news/111804-1.html> (Nov. 24, 2004).

103. *Id.*; *see also* Preston & Lofton, *supra* note 88, at 73 (explaining the buffer overflow vulnerability created by security holes in Microsoft's Internet Information Server).

104. *See* Davis, *supra* note 68 (reporting results of an SEI study and arguing that "[m]ost security vulnerabilities result from defects that are unintentionally introduced in the software during design and development").

105. *See id.*

106. *See id.*

107. *Id.*

108. Class Action Complaint, *Hamilton v. Microsoft Corp.*, No. 49-031017-1010 (Cal. Super. Ct. Sept. 30, 2003) (charging Microsoft with launching numerous products with security flaws enabling cyberattacks, viruses, worms, and Trojans).

109. *Id.* at 11-12.

ware despite knowing of defects that permitted widespread identity theft<sup>110</sup> and the possibility of cascading failures in computer systems.<sup>111</sup> To date, no third-party victim of inadequate computer security has received a single dollar of compensation in any contract or tort-based lawsuit.

## B. Lessons Learned from New Tort Duties

During the second half of the nineteenth century, tort law evolved to protect the public against new dangers arising from the dramatic expansion of industrial enterprises. Negligence emerged as the liability standard for non-intentional injuries caused by railroads, streetcar companies, and industrial corporations.<sup>112</sup> During this era, tort law was characterized by a host of defenses, immunities, and special privileges that limited the liability of corporate defendants.<sup>113</sup>

After World War II, the reach of tort law expanded to counter new social hazards created by the rapid growth of corporate, medical, and governmental bureaucracies. Prior to the 1960s, manufacturers were shielded from liability by the doctrine of privity and other barriers to recovery. Strict product liability assigned losses based, in part, upon the public policy recognition that the manufacturer is in the best position to avoid the perils of defective products. The expansion of tort liability to govern bad software may be more efficient than a rigid regulatory regime.<sup>114</sup>

The recognition of a negligent enablement duty will impose short-term costs on the software industry because of the need to institute preventive law audits and other quality measures for each of the design and testing

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110. Computer intrusions frequently result in identity theft because a cybercriminal or intruder steals information such as Social Security numbers, credit card information, or bank account information to complete fraudulent transactions.

111. *Id.*

112. See RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL HARM § 3 (Proposed Final Draft No. 1, Apr. 6, 2005) (discussing basic principles of negligence). The Restatement defines negligence as the failure to exercise the standard of reasonable care. *Id.* We believe the variables of foreseeability of harm, severity of harm, and the burden of precaution apply equally well to software vendors or manufacturers. In the context of insecure software cases, we argue the vendor should be held negligent based upon marketing products or services where there was a high foreseeability of harm with readily available means “to eliminate or reduce the risk of harm.”

113. See Robert L. Rabin, *The Historical Development of the Fault Principle: A Reinterpretation*, in PERSPECTIVES ON TORT LAW 44, 68 (Robert L. Rabin ed., 2d. ed. 1983). “The term ‘privilege’ has come to be regarded as a general purpose of social policy in the law of torts.” FOWLER HARPER, A TREATISE ON THE LAW OF TORTS 51 (1933).

114. See Steven Shavell, *Liability for Harm Versus Regulation of Safety*, 13 J. LEGAL STUD. 357, 373 (1984).

stages. However, these costs will ultimately be borne by the user community as will the cost of litigation and insuring these new liabilities.

Software vendors contend that imposing greater liability on the industry is impracticable because one cannot create defect-free software. Furthermore, it will stifle innovation and punish the wrong entity.<sup>115</sup> However, even the corporate community acknowledges that legal liability often results in superior products. The business-backed Conference Board reported:

Where product liability has had a notable impact—where it has most significantly affected management decision-making—has been in the quality of the products themselves. Managers say products have become safer, manufacturing procedures have been improved, and labels and use instructions have become more explicit.<sup>116</sup>

While no software can be totally bulletproof, the current legal regime misses the mark by too wide a margin. Slipshod software testing gives a competitive advantage to the developer who releases poorly tested software whose vulnerabilities will be discovered only after the user is harmed.<sup>117</sup> A balance must be found that allows responsible software sellers to continue to thrive while protecting the legitimate security interests of the computer user.

### *1. Product Liability for Defective Software*

Product liability refers to the liability of manufacturers, processors, distributors, and sellers of products for personal injury or property damage under diverse theories including: negligence, strict liability, and breach of warranty.<sup>118</sup> Product liability in a bad software case would be based upon

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115. Bruce Schneider, *Should Vendors be Liable for Their Software's Security Flaws?; Two Industry Leaders Debate Whether Vendors Should be Accountable for Vulnerable Products*, NETWORK WORLD, Apr. 22, 2002, at 51.

116. NATHAN WEBER, CONFERENCE BOARD, PRODUCT LIABILITY: THE CORPORATE RESPONSE 14 (Rep. No. 893, 1987).

117. Imposing product liability on software vendors will shift the cost of precaution onto those vendors through increased cost for improved testing, research, and beta testing of software before releasing it into the market. Although substantial, these costs will be less than the duplicative costs of requiring every computer user to secure every computer system with a patch and assume the consequences of not taking this remedial measure. It is more cost-efficient for software licensors to take precautions prior to marketing software than requiring the user to take remedial steps in the post-marketing period. See Preston & Lofton, *supra* note 88, at 134.

118. THOMAS H. KOENIG & MICHAEL L. RUSTAD, IN DEFENSE OF TORT LAW 35, 51-59 (2001) (explaining theories of product liability).

claims that personal injury, death, or property damage was caused by a manufacturing defect, design defect, or failure to warn of a known danger.<sup>119</sup> Courts have yet to extend product liability to defective software.<sup>120</sup> Product liability may fill the breach where warranty provisions in license agreements fail.<sup>121</sup> Courts have not considered the extension of strict liability to defective computer hardware or software, although the potential liability is great.<sup>122</sup>

A small number of forward-looking courts have extended product liability concepts to information products. One California court, for example, imposed liability on the seller of an inaccurate instrument approach chart.<sup>123</sup> Most courts tacitly assume that a dissatisfied software licensee has recourse under Article 2 of the UCC, but the universal disclaiming of warranties and remedies deprives users of any real protection. No court has yet applied the *Restatement (Third) of Torts: Product Liability*, adopted by the American Law Institute in 1997, in a defective software case.<sup>124</sup> Given the *Restatement (Third's)* retreat from strict liability to a negligence-based standard, it seems unlikely that the courts adopting the *Restatement* will be receptive to stretching product liability concepts to software, digital information, and other intangibles.<sup>125</sup> A defective soft-

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119. Michael L. Rustad & Thomas H. Koenig, *Taming the Tort Monster: The American Civil Justice System as a Battleground of Social Theory*, 68 BROOK. L. REV. 1, 88-93 (2002).

120. See Patrick T. Miyaki, Comment, *Computer Software Defects: Should Computer Software Manufacturers Be Held Strictly Liable for Computer Software Defects?*, 8 SANTA CLARA COMPUTER & HIGH TECH. L.J. 121 (1992) (arguing that a computer software manufacturer should not be held liable for defective software under strict product liability); Michael R. Maule, Comment, *Applying Strict Product Liability to Computer Software*, 27 TULSA L.J. 735, 756 (1992).

121. Peter Alces, *W(h)ither Warranty: The B(l)oom of Product Liability Theory in Cases of Deficient Software Design*, 87 CALIF. L. REV. 269 (1999) (explaining how strict liability could fill the void caused by the failure of warranty in license agreements).

122. *Lessons to Learn Regarding Restatement Product Liability*, 15 COMP. LAW STRAT. 5 (Oct. 1998).

123. *Fluor Corp. v. Jeppesen & Co.*, 170 Cal. App. 3d 468, 476 (Ct. App. 1985) (“[A] sheet of paper might not be dangerous, per se, it would be difficult indeed to conceive of a salable commodity with more inherent lethal potential than an aid to aircraft navigation that, contrary to its own design standards, fails to list the highest land mass immediately surrounding a landing site”); see also *Salomey v. Jeppesen & Co.*, 707 F.2d 671 (2d Cir. 1983) (applying Colorado law); *Brocklesby v. United States*, 767 F.2d 1288, 1298 (9th Cir. 1985).

124. RESTATEMENT (THIRD) OF TORTS: PRODUCT LIABILITY § 19 cmt. a (1998).

125. See *id.* On the warranty side, courts have been more willing to expand Article 2 concepts even though software is an intangible. See generally Amy H. Boss & William J. Woodward, *Scope of the Uniform Commercial Code; Survey of Computer Contracting*

ware case could be tried on grounds of a manufacturing defect, a failure to warn or a design defect. Courts are currently evaluating such a theory; in the Microsoft class action, the plaintiff argued that the software vendor's warnings were inadequate.<sup>126</sup>

A "risk-benefit" test should be utilized to ascertain whether public policy supports holding the software industry liable for defective software.<sup>127</sup> Software vendors argue that the "benefit" of reduction in risk does not justify the burden of extending product liability to defective software.<sup>128</sup> We believe, in contrast, that the "magnitude of the risk" is so great that increased incentives are necessary to motivate companies to produce safer products and services.<sup>129</sup>

Courts have had little difficulty extending product liability for bad software when the design defect causes physical injury or death.<sup>130</sup> Catastrophic software failure has been the cause in fact of major accidents in a variety of fields.<sup>131</sup> Software failure, for example, was the probable cause of the crash of a Boeing 757 that killed seventy people in Peru.<sup>132</sup> A New Jersey court applied product liability law in a case in which the brakes of a tractor-trailer failed because of defective software on the vehicle's on-board computer.<sup>133</sup> The plaintiff's product liability case was based on the

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*Cases*, 43 BUS. LAW. 1513 (1988); Andrew Rodau, *Computer Software: Does Article 2 of the Uniform Commercial Code Apply*, 35 EMORY L.J. 853 (1986); Bonna Llyn Horowitz, Note, *Computer Software as a Good Under the Uniform Commercial Code: Taking a Byte Out of the Intangibility Myth*, 65 B.U. L. REV. 129 (1985).

126. See Lohr, *supra* note 23 (documenting industry's determined opposition to product liability theories being extended to software).

127. In defective software cases, the factors most relevant to liability are awareness or constructive knowledge of high-level risks balanced against the burden of eliminating the vulnerabilities. See RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL HARM § 3 (Proposed Final Draft No. 1, Apr. 6, 2005).

128. See Lohr, *supra* note 23.

129. *Id.*

130. See generally Miyaki, *supra* note 120, at 121.

131. Diane Savage, *Avoiding Tort Claims for Defective Hardware and Software Strategies for Dealing with Potential Liability Woes*, 15 COMP. LAW STRAT. 1 (1998).

132. *Computer Failure Puzzling in Peruvian Crash* (CNN television broadcast Oct. 3, 1996); see also *Computer Failure Puzzling in Peruvian Crash*, CNN.COM, Oct. 3, 1996, <http://www.CNN.com/world/9610/03/peru.crash>.

133. *Roberts v. Rich Foods, Inc.*, 654 A.2d 1365, 1367, 1372-73 (N.J. 1995) (describing the issue of whether defective computer software caused a truck accident). In *Roberts*, the court remanded the case for a new trial in light of its interpretation of a defense to the New Jersey Product Liability Act of 1987 (NJPLA). The court ruled that the trial court must require the plaintiff to prove that the manufacturer could have eliminated the software defect or "danger without eliminating an inherent characteristic of the product, and thereby significantly diminishing the product's intended use." *Id.* at 1373.

claim that the “on-board computer used to record a truck’s toll and mileage information was defectively designed to be operated by the driver while the truck was in motion and that this resulted in” the collision.<sup>134</sup> A jury decided that the on-board computer was not defective, but the New Jersey Supreme Court reversed, finding that the jury had been improperly instructed.<sup>135</sup>

The Alabama Supreme Court considered a case in which a driver’s grandson was killed when his Chevrolet pickup truck stalled in an intersection and was struck by a logging truck.<sup>136</sup> A defective computer chip that controlled engine functions, including the fuel delivery system, contributed to the accident.<sup>137</sup> The jury awarded \$15 million in punitive damages based upon evidence that General Motors knew about the stalling problems in their vehicles but took no prompt remedial action to protect the consuming public.<sup>138</sup>

Although product liability concepts have been extended to durable goods that incorporate software, they have never been applied defective software alone<sup>139</sup> because such causes of action were initially conceived as remedies for personal injury, rather than for financial loss.<sup>140</sup> In most cases, an empirically-based risk/benefit calculation is impossible because information concerning the foreseeable likelihood of a computer intrusion and the burden of risk-prevention measures is limited. However, it makes little sense to hold a manufacturer liable for software failure when the programming code is embedded in a tangible product but not where the software is a stand-alone product. As software displaces the durable goods-based economy, it is critical to develop remedies with teeth in order to make the industry more accountable.<sup>141</sup>

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134. *Id.* at 1368.

135. *Id.* at 1374 (remanding the case to trial court).

136. *General Motors Corp. v. Johnston*, 592 So.2d 1054 (Ala. 1992).

137. *Id.* at 1056.

138. *Id.* at 1057.

139. Some commentators have urged extending strict product liability principles to software. *See, e.g.*, Lori A. Weber, *Bad Bytes: The Application of Strict Product Liability to Computer Software*, 66 ST. JOHN’S L. REV. 469 (1992); Miyaki, *supra* note 120, at 121. To date, no court has accepted the invitation to apply strict liability to computer software defects.

140. *See, e.g.*, *Suter v. San Angelo Foundry & Mach. Co.*, 406 A.2d 140, 151-52 (N.J. 1979) (discussing Judge Guido Calabresi’s efficiency-based argument for strict product liability).

141. IBM introduced the concept of the PC, or personal computer, in a 1981 press conference. By 1990, the software industry’s revenues were growing many times faster than revenues for computer hardware. Rustad, *supra* note 45, at 566.

Another obstacle to imposing product liability for defective software is the economic loss rule that precludes recovery in tort where the injury is pecuniary and there is no claim for physical injury, death, or other property damages.<sup>142</sup> The economic loss rule foiled the plaintiffs in *Benning v. Wit Capital Group, Inc.*,<sup>143</sup> where the customers of an internet brokerage firm alleged that the company “owed a duty of reasonable care to maintain the facilities and support systems necessary to provide the services offered its members.”<sup>144</sup> In *Benning*, the plaintiffs argued that the online brokerage house “failed to use reasonable care in managing customer orders in a fair, consistent, and reasonable manner as required by professional governing standards.”<sup>145</sup> The court dismissed the claims of fraud and negligent misrepresentation because, under Delaware law, purely economic losses are not recoverable by way of a tort claim.<sup>146</sup> Similarly, in *NMP Corp. v. Parametric Tech. Corp.*,<sup>147</sup> an Oklahoma court held that the economic loss doctrine barred negligence claims for defective software. Courts have largely been unreceptive to stretching strict product liability to purely economic losses such as damage to hard drives caused by destructive computer viruses. Courts may be more willing to recognize a negligent enablement theory of product liability where prior similar computer intrusions signal a software manufacturer’s ill-considered design decisions.

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142. The end-user’s right to seek recovery from the manufacturer . . . of a product . . . when the user does not directly deal with the manufacturer . . . often hinges on product liability concepts. In most states, however, product liability claims are not available for pure economic loss. . . . In cases of economic loss, the primary avenue of recovery must flow through contract law theory.

*Hou-Tex, Inc. v. Landmark Graphics*, 26 S.W.3d 103, 107 (Tex. 2002) (citation omitted); *see also* *East River Steamship Corp. v. Transamerica Delaval, Inc.*, 476 U.S. 858, 871 (1986) (stating that the economic loss doctrine limits damages “[w]hen a product injures only itself”); *Apollo Group v. Avnet*, 58 F.2d 477, 479 (9th Cir. 1995) (stating that the economic loss rule bars recovery in tort where the injury is only pecuniary); *Southwestern Bell Tel. Co. v. Delaney*, 809 S.W.2d 493, 491 (Tex. 1991).

143. No. 99C-06-157, 2001 Del. Super. LEXIS 7, at \*1 (Del. Super. Ct. Jan. 10, 2001).

144. *Id.* at \*19-20.

145. *Id.*

146. *Id.* at \*21.

147. 958 F. Supp. 1536, 1546-47 (N.D. Okla. 1997) (rejecting negligence claim for defective software because of economic loss rule).

## 2. *Licensing of Tangibles, Not Sales of Goods*

The concept of the breach of an implied warranty of merchantability, like strict liability, does not turn on fault.<sup>148</sup> Courts are inclined to classify software as goods—especially if the programming code is incorporated in a computer system—but there are problems with this approach.<sup>149</sup> Software is neither a good nor a product, but rather an intangible collection of digital information: code composed of 1s and 0s. Software licenses permit licensees to use information, but do not transfer title. Software is licensed with restrictions on the conditions of use and is therefore unlike tangible products that can be used at the discretion of the purchaser. Network security software is frequently a hybrid of sales and services. The mixed character of software creates the legal dilemma of whether to treat it as the sale of goods under Article 2 of the UCC, or as the rendering of professional services.

## 3. *Premises Liability for Computer Software*

Protecting computer users from third-party cybercrime parallels concepts of premises liability.<sup>150</sup> Marketing software with a known security defect is analogous to not having a front door on an apartment building. In

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148. In order to prevail in an Article 2 implied warranty of merchantability lawsuit, a plaintiff need only prove that the delivered goods failed to be at least fair average quality, did not run within variations specified in the contract, were inadequately contained or packaged, or deviated from one of the six measures of merchantability found in U.C.C. § 2-314 (2005). To be merchantable, goods must satisfy each of the following standards: (1) pass without objection in the trade; (2) be of fair, average quality; (3) be fit for the ordinary purpose of the product; (4) have evenness of quality; (5) be adequately contained; and (6) conform to the representations on the label. U.C.C. § 2-314(2). U.C.C. § 2-314 has no requirement that the dissatisfied buyer prove fault of the seller; just as in product liability, the entire focus is on the delivered goods rather than what the seller did or did not do.

149. Courts frequently extend Article 2 to software where the predominant purpose of the computer contract is a sale rather than a service. Article 2 supports this broad reading of Article 2's scope which uses the phrase "transactions in goods," including "specially manufactured goods." U.C.C. § 2-102. It is arguable that "transactions in goods" includes software in a transaction that also includes hardware. *See Colonial Life Ins. Co. v. Elec. Data Sys. Corp.*, 817 F. Supp. 235 (D.N.H. 1993) (extending Article 2 to software in a mixed transaction); *see also Advent Sys. Ltd. v. Unisys Corp.*, 925 F.2d 670 (3d Cir. 1991); *RRX Indus., Inc. v. Lab-Con, Inc.*, 772 F.2d 543 (9th Cir. 1985); *Sys. Design v. Kansas City Post Office*, 788 P.2d 878 (Kan. Ct. App. 1990).

150. In a premises liability case against a landowner, it is critical to establish that a landowner owed the plaintiff a duty of care. As a general rule, a landowner must exercise ordinary care to avoid reasonably foreseeable risks of injury to the entrant on the land. *See Crowley v. Westside City*, No. E033634, 2004 Cal. App. LEXIS 670 (Ct. App. Jan. 26, 2004).

premises liability, a property owner who invites the public onto his property for business purposes is potentially liable if those invitees are harmed by negligent or accidental attacks by third parties.<sup>151</sup>

To prevail in a premises liability lawsuit, a plaintiff must establish that: (1) the defendant owed a duty to protect the injured crime victim; (2) the defendant breached that duty; and (3) the breach of the duty was a proximate cause of the criminal act and the victim's injuries.<sup>152</sup> Premises liability lawsuits are brought against the owners of residential property, hospitals, colleges, day care centers, and shopping centers whose inadequate security enables criminals who attack customers.<sup>153</sup> The duty of reasonable computer security will require a similar analysis and useful analogies may be drawn from contract, public duties, statutes, or ordinances. Courts have extended the concept of premises liability for inadequate security to shopping malls, parking lots, and apartment complexes but never to software or networked computer systems.

The seller of inadequately configured software may expose its customers to predators just like a retail establishment that fails to employ security guards in a high crime area.<sup>154</sup> A software vendor may owe a duty of care to its customers as well as to third parties that makes it liable for enabling the conversion of credit card numbers, the invasion of privacy, identity theft, or the misappropriation of trade secrets. Courts may find such a vendor liable for rushing poorly tested software to market.<sup>155</sup> In such a situation, a computer vendor may avoid liability by building in comprehensive security solutions that reduce the cybercrime rate.

Concepts developed for landowner or occupier liability do not fit well with the ethereal nature of cyberspace. The law of premises liability de-

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151. The comment to Section 432 of the *Restatement (Second) of Torts* states that subsection (1) applies "where the actor's tortious conduct consists in a failure to take some precautions which are required for the protection of another's person or land or chattels." RESTATEMENT (SECOND) OF TORTS § 432 cmt. b (1979).

152. ALAN KAMINSKY, A COMPLETE GUIDE TO PREMISES SECURITY LITIGATION 7 (2d ed. 2001).

153. *Id.* at 5.

154. Premises liability is based on the notion of prior similar acts that establish the foreseeability of harm. *See, e.g., K.L. v. Riverside Medical Ctr.*, 524 N.W.2d 300 (Minn. Ct. App. 1994).

155. There is no case law on whether an implied contract to provide a secure environment applies to cyberspace. In *K.M.H. v. Lutheran Gen. Hosp.*, 431 N.W.2d 606, 608 (Neb. 1988), the Nebraska Supreme Court held that the hospital entered into an implied contract to provide patients with a secure environment. In that case, a male employee performing a bed check sexually assaulted a patient. *Id.* at 607. A hospital seemingly would owe a higher duty to vulnerable patients than an online business would owe to its customers.

termines the degree of a landowner's liability based upon the status of the entrant: (1) trespasser;<sup>156</sup> (2) licensee;<sup>157</sup> and (3) invitee.<sup>158</sup> In the bricks and mortar world, the possessor of land owes duties, in descending order, to invitees, licensees, and trespassers. To be liable to business invitees, the land possessor must discover that crimes are being committed and then fail to give a warning that is adequate "to enable the visitors to avoid the harm, or otherwise to protect them against it."<sup>159</sup>

The most significant doctrinal obstacle to extending premises liability to the internet is that cyberspace is borderless and does not involve land, which makes all landowner classifications problematic. In the law of premises liability, courts have constructed a number of tests to determine when a defendant should be liable for enabling the crimes of third parties. The "specific harm" case in premises liability holds landowners liable for failing to protect patrons from the violent acts of third parties once they become aware of specific imminent harms.<sup>160</sup> If this approach were adopted for computer software cases, the vendor's duty of care would be triggered only if the vendor knew of a specific cybercrime threat and failed to redesign the software to respond to that risk. This narrow approach would mean that few, if any, software vendors would be liable because prior knowledge of a cybercrime threat from a specific individual is unlikely. Even if this test could be broadened, it would be unlikely that a vendor would learn of specific cyberthreats in time to avert the danger.

Courts in computer security cases will seek to avoid imposing unlimited liability. To this end, courts may require plaintiffs to prove that the computer intermediary was on notice because of a prior similar computer intrusion.<sup>161</sup> Under this approach, plaintiffs would prove the foreseeability

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156. THE RESTATEMENT (SECOND) OF TORTS § 329 (1965) defines a trespasser as "a person who enters or remains upon land in the possession of another without a privilege to do so created by the possessor's consent or otherwise."

157. Traditionally, licensees, defined as social guests and others with the permission to enter the land, were owed an intermediate standard of care. *Id.* § 313.

158. The concept of the business invitee was originally developed to protect passengers on common carriers or other public utilities. *Id.* § 344. The duty to business invitees arises when the "land [is] open to the public for entry for his business purposes, and then only to those who come upon the land for the purposes for which it is thus held open to the public. Such persons are commonly called business visitors." *Id.* § 344 cmt. a.

159. *Id.*

160. See *Posecai v. Wal-Mart Stores, Inc.*, 752 So. 2d 762 (La. 1999) (discussing the theory of specific harm for third party criminal acts).

161. "Foreseeability is endless because foreseeability, like light, travels indefinitely in a vacuum." *Newton v. Kaiser Found. Hosp.*, 184 Cal. App. 3d 386, 391 (1986). In landowner owner cases, some courts have adopted a prior similar incidents test to demonstrate foreseeability. *Posecai*, 752 So. 2d at 767.

of cybercrime by presenting evidence of prior security breaches, intrusions, or virus incidents. Courts would have the most flexibility in choosing either a “totality of the circumstances” or a “balancing” test to determine whether the software vendor breached its duty.<sup>162</sup> A court using either of these approaches would look at all relevant circumstances including the number, nature, and location of prior similar computer crimes and the closeness of the connection between defective software and the intrusions.

Thirty-five years ago, a federal appellate court in *Kline v. 1500 Mass Ave. Apartment Corp.*<sup>163</sup> became the first judicial body to recognize that a landlord had a duty to protect tenants in the common area of an apartment building from foreseeable criminal attacks. The *Kline* court cited several reasons for judicial reluctance to recognize the landlord’s duty to prevent third-party crimes. The policy reasons included:

[J]udicial reluctance to tamper with the traditional common law concept of the landlord tenant relationship; the notion that the act of a third person in committing an intentional tort or crime is a superseding cause of the harm to another resulting . . . [in] the oftentimes difficult problem of determining foreseeability of criminal acts; the vagueness of the standard which the landlord must meet; the economic consequences of the imposition of the duty; and conflict with the public policy allocating the duty of protecting citizens from criminal acts to the government rather than the private sector.<sup>164</sup>

Similar considerations have made contemporary judges reluctant to impose a duty of care on software vendors to reduce cybercrimes.

*Kline*’s creation of a landlord’s duty to minimize risk to tenants may serve as a model for expanding liability to encompass defective software. Courts can balance the foreseeability of harm and the gravity of harm against the burden on the software industry in crafting the duty of care. Internet security is critical to the information industry but imposing too much of a burden of precaution may have a chilling effect on the information-based economy.<sup>165</sup> Courts should have little difficulty in supporting a

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162. *Id.* (describing these approaches).

163. 439 F.2d 477, 483 (D.C. Cir. 1970).

164. *Id.*

165. The changing economy is illustrated by the projected increase in demand for computer software engineers, which is a professional category that is likely to develop faster than other occupations. U.S. Department of Labor, Bureau of Labor Statistics, Computer Software Engineers, <http://www.bls.gov/oco/ocos267.htm> (last visited Mar. 29, 2005).

generalized duty to implement virus-protection, improved software design, and industry-standard network security, but the exact limits of the duty will be difficult to determine.

The owner of a website, like any other retail establishment, could theoretically be liable for the reasonably foreseeable harm caused by third parties that injure customers. A court adopting either of these approaches should look first at the role defective design of software plays in enabling computer intrusions along with all other relevant circumstances including the number, nature, location, and response to prior security.<sup>166</sup> Courts should examine factors such as: (1) whether there have been prior similar cybercrimes; (2) the cost of increased internet security measures; and (3) the degree to which intermediaries can reduce the radius of the cybercrime problem. In the absence of a history of similar intrusions and security breaches, foreseeability is based on all facts and circumstances.<sup>167</sup>

Part IV of this Article will explore the parameters of our proposed tort of negligent enablement of cybercrime. The duties owed to a plaintiff by an online company may be based upon private duties, such as contract, or public duties, based on a statute or an ordinance. A duty of care may also arise from a vendor's failure to anticipate foreseeable tortious or criminal acts of others. A vendor, for example, could potentially be held liable for negligently permitting a third party to hack into its computer network and steal data or proprietary information owned by others, where that inadequate security results in injuries to third parties. Courts must determine whether software liability should be permitted as a matter of duty and, if so, how to balance the public interest in encouraging a dynamic software industry with the need to counter the massive harms caused by cyber-criminals.

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166. The trend in the law is to impose premises liability for injuries caused by the criminal acts of third parties. Courts have imposed a duty to maintain a secure environment against a wide array of property owners including landowners, landlords, business owners, and other possessors of land. *See generally* Shelley Ross Saxer, *Am I My Brother's Keeper? Requiring Landowner Disclosure of the Presence of Sex Offenders and Other Criminal Activity*, 80 NEB. L. REV. 522, 524 (2001) (summarizing expansion of premises liability for third-party crimes).

167. *See* Hamilton v. ACCU-TEK, 62 F. Supp. 2d 802, 818 (E.D.N.Y. 1999) ("In the usual run of cases, a general duty to avoid negligence is assumed, and there is no need for the court to undertake detailed analysis of precedent and policy." (citing RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL HARM, Basic Principles § 6 (Discussion Draft, Apr. 5, 1999) and finding that no duty is rare); *see* Rabin, *supra* note 67, at 480 (quoting RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL HARM, Basic Principles § 6).

#### IV. THE TORT OF NEGLIGENT ENABLEMENT OF CYBERCRIME

This Part examines the prima facie case for negligent enablement of cybercrime. A claim of negligent enablement requires proof of the following elements: (1) a duty of care owed by the software vendor to its customer; (2) conduct below the applicable standard of care that amounts to a breach of that duty; (3) an injury or loss; (4) cause in fact; and (5) proximate or legal cause.<sup>168</sup> Once the software publisher owes the licensee a legal obligation to conform to a reasonable standard of conduct, the question is whether the duty has been breached.<sup>169</sup> Software vendors are the “cheapest cost avoider” because they have superior information about known or developing vulnerabilities in their products or services.<sup>170</sup> This Part concludes by briefly discussing defenses and immunities to the imposition of liability for negligent enablement of cybercrimes.

##### A. Crafting a Duty of Care

The recognition of new tort duties is inevitably a policy-based determination. The judiciary will balance such factors as the foreseeability of the harm of computer viruses or other breaches of security; the degree of certainty between software vulnerabilities and harm; the connection between lax internet security practices and the injury suffered by a computer user; the policy of preventing future intrusions; the burden on the information industry and the consequences to the community of imposing a duty to maintain adequate security; and the availability, costs, and prevalence of security solutions and insurance.<sup>171</sup> In most instances, the software vendor creates the risk while also benefiting from the information-based economy. The judiciary should be open to crafting creative new duties of care for the information age when the magnitude of risk caused by bad software outweighs the burden of precaution.

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168. See, e.g., *McCall v. Wilder*, 913 S.W.3d 150 (Tenn. 1995) (explaining elements of negligence).

169. The more modern theory of breach is based upon risk-utility. See Guido Calabresi & Jon T. Hirschoff, *Toward a Test for Strict Liability in Torts*, 81 YALE L.J. 1054, 1060 (1972) (“The question for the court reduces to a search for the cheapest cost avoider.”); *Id.* at 1060 n.19 (“The cheapest cost avoider has been . . . defined as the party an arbitrary initial bearer of accident costs would (in the absence of transaction and information costs) find it most worthwhile to ‘bribe’ in order to obtain that modification of behavior which would lessen accident costs most.”).

170. See generally GUIDO CALABRESI, *THE COST OF ACCIDENTS* 244-45 (1970).

171. These factors are drawn from *Rowland v. Christian*, 443 P.2d 561, 564 (Cal. 1968).

A court's willingness to recognize a software licensor's duty of care to produce secure software is a policy-based decision tied to the radius of the risk. The common law imposes no obligation to prevent crime or even to control the actions of others.<sup>172</sup> However, the epidemic of software vulnerabilities constitutes a compelling reason to recognize a new duty of reasonable internet security.

Any duty to protect computer users from the cybercrimes of third persons must be predicated on a preventable risk. In many computer security cases, there may be multiple defendants who owe third party consumers a duty of care. The scope of liability will ultimately rest with the courts and be decided on grounds of duty or proximate cause. For example, where the loss is primarily economic, the courts may be reluctant to extend the duty of maintaining adequate computer security to credit card issuers. Courts are also likely to be unreceptive to claims that an issuing bank engaged in negligent marketing and distribution of insecure credit instruments.<sup>173</sup>

## **B. Determining Breach in Negligent Enablement Cases**

### *1. Custom and Software Industry Standards*

A software vendor's compliance with the customary best practices of others in the industry is strong probative evidence that the company was not negligent, but does not preclude a finding of negligence where the industry's standards are lax.<sup>174</sup> In the software industry, the failure of a licensor to incorporate a risk-reducing precaution adopted by others in the community should be given significant weight.<sup>175</sup> In traditional tort law, courts frequently turn to industry standards or custom to determine best

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172. JOHN DIAMOND, UNDERSTANDING TORTS 133 (1999) ("As a general principle, there is no obligation to protect another from harm.").

173. Courts have not been receptive to finding for the victims of physical injury under a negligent marketing and distribution theory, so it is even more unlikely that the duty will be extended in economic loss cases. *See generally* Hamilton v. Beretta U.S.A. Corp., 750 N.E.2d 1055 (N.Y. 2001) (holding that the manufacturers of hand guns owed no duty on grounds of negligent marketing under diverse theories such as market share or alternative liability).

174. RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL HARM § 13 (Proposed Final Draft No. 1, Apr. 6, 2005) (describing the powerful role of customs as the source of legal obligations and in tort law as the test of "ordinary care").

175. *Id.* § 13 cmt. c (noting that "the actor's departure from custom—its failure for example to incorporate a risk-reducing precaution adopted by others in the same line of activity—tends to answer relevant questions concerning the availability and feasibility of appropriate precautions").

practices in a given field.<sup>176</sup> Private standards such as best practices or industry safety codes may be used in bad software litigation to establish negligence by departure from custom.

In the field of financial services, for example, the industry has developed the Payment Card Industry (PCI) Data Security Standard that went into effect on June 30, 2005.<sup>177</sup> The PCI standard requires all retailers, online merchants, data processors, and other businesses that handle credit card information to encrypt data, incorporate end-user access control, and devise activity monitoring and logging systems.<sup>178</sup> This financial industry standard also mandates “formal security policies and vulnerability management programs.”<sup>179</sup> A software company’s departure from this standard provides some evidence of negligence.<sup>180</sup> Proof that a software vendor has failed to incorporate industry-wide precautions in its design or testing of a new product or service will help the fact finder determine whether the company has acted with ordinary care.

Custom provides the floor, but not necessarily the ceiling, of reasonable care. A threshold question for setting the standard of care for software design is to examine whether compliance to industry standards should be a complete defense against a negligence claim.<sup>181</sup> Software companies should be required to constantly update and adapt their security protocol. Vendors designing UNIX systems, for example, should have a duty to reasonably minimize security holes. Yet, at present, “Unix systems, with their large number of built-in servers, services, scripting languages, and inter-

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176. See generally Richard A. Epstein, *The Path to the T.J. Hooper: The Theory and History of Custom in the Law of Tort*, 21 J. LEGAL STUD. 1 (1992).

177. Jaikumar Vijayan & Todd Weiss, *CardSystems Breach Renews Focus on Data Security A New Data Protection Standard Goes Into Effect Next Week*, COMPUTER-WORLD, June 20, 2005, <http://computerworld.com/securitytopics/security/story/0,10801,102646,00.html>.

178. *Id.*

179. *Id.*

180. See, e.g., *Trimarco v. Klein*, 436 N.E.2d 502, 506-07 (N.Y. 1982) (discussing the probative value of deviation from custom as evidence of negligence).

181. Companies should institute and enforce stringent computer security policies, provide organizational training and awareness of computer security issues and conduct regular security audits to ferret out security weaknesses. Companies should also implement and, to the extent feasible, require their vendors to implement the latest security technologies such as firewalls, anti-virus software, intrusion detection systems, and encryption of its most sensitive data. Finally, a company should investigate obtaining insurance coverage for computer security liability. Many general commercial liability policies exclude coverage for computer-related liability. Bradford D. Bimson, *Poor Tech Security Can Mean Lawsuits*, THE VIRGINIAN-PILOT, Nov. 16, 2003, [http://www.williamsmullen.com/news/articles\\_detail/122.htm](http://www.williamsmullen.com/news/articles_detail/122.htm).

preters, are particularly vulnerable to attack because there are simply so many portals of entry for hackers to exploit.”<sup>182</sup> A vendor’s compliance with lax security protocols should not shield it from negligent security claims.

In *The T.J. Hooper*,<sup>183</sup> Judge Learned Hand found an industry custom of not having radios aboard barges to be negligence even though this precaution was not widely adopted. Judge Hand rejected the barge owners’ argument that they were not negligent because the industry had not yet generally adopted receiving sets, stating “a whole calling may have unduly lagged in the adoption of new and available devices.”<sup>184</sup> The *T.J. Hooper* decision stands for the proposition that compliance with custom is not an absolute defense to negligence. Just because a software vendor complies with inadequate testing standards does not immunize the company from a finding of negligence. Businesses that use wireless computer networks may be found to be negligent because of unacceptable risk even though many companies fail to use adequate security.<sup>185</sup> Custom is a good test for reasonable care only when industry practices do not create unreasonable preventable dangers.<sup>186</sup>

Since private industry standards are relatively undeveloped for the software industry, custom is less important in setting the standard of care in the software industry. It may be premature to turn to industry standards in many areas where there is no consensus as to custom or standard.<sup>187</sup> An actor’s compliance with industry standards will be a good test for negligence once best practices are established. Independent laboratories now have devised protocols for testing computer networks for their vulnerability to intrusions.<sup>188</sup> Certifying organizations must develop standards for properly configuring voice, video, fax, and data traffic between conventional telephone networks and packet-based data networks such as the internet. Partnerships between government and industry may be helpful in

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182. W3C World Wide Web Security FAQs, <http://www.w3.org/Security/faq/wwwsf1.html#GEN-Q3> (last visited Mar. 5, 2004).

183. 60 F.2d 737 (2d Cir. 1932).

184. *Id.* at 740.

185. Drew Clark, *Cyber Security: White House Aide Criticizes Progress Toward Internet Security*, NAT’L J.’S TECH. DAILY, July 30, 2002.

186. *See generally* Epstein, *supra* note 176.

187. *See* Robin A. Brooks, *Deterring the Spread of Viruses Online: Can Tort Law Tighten the ‘Net’?*, 17 REV. LITIG. 343, 360 (1998).

188. Press Release, TruSecure, ICSA Labs Certifies Network Intrusion Detection Systems in Phase One of Testing in Multiple Network Environments (July 29, 2002), available at <http://www.trusecure.com/company/press/release618.shtml>.

certifying industry standards.<sup>189</sup> Compliance with internet industry standards should be interpreted as some evidence of compliance with due care, rather than a complete defense against negligence-enabling claims.<sup>190</sup>

## 2. *Computer Malpractice*

The common law imposes a higher duty of care upon professionals such as doctors or lawyers.<sup>191</sup> In the field of medical malpractice, courts determine whether physicians exercised the care and skill of the average qualified practitioner.<sup>192</sup> In the future, it is possible that courts will hold internet security professionals to a higher professional standard of care, similar to those currently imposed on doctors, lawyers, accountants, and other established professionals.<sup>193</sup> Computer security may become professionalized with credentialing and accreditation procedures. Certification in the future may focus on specialized training in examining binary data for malicious code, creating the architecture for safe corporate computer security, and identifying software vulnerabilities.<sup>194</sup>

It is theoretically possible that a software engineer could be held liable for computer malpractice but, to date, no court has held that a software engineer's failure to develop reasonably secure software constituted professional negligence. The field of computer security is just beginning to mature, making it difficult for courts to determine professional standards

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189. There is no case law or commentary on the question of whether the government would be liable for negligent security under the Federal Tort Claims Act for harm caused by negligent information security. The discretionary function exception may be extended to immunize the government against claims for negligent security where there are rapidly evolving standards of information security. *See* William P. Kratzke, *The Supreme Court's Recent Overhaul of the Discretionary Function Exception to the Federal Tort Claims Act*, 7 ADMIN. L.J. AM. U. 1 (1993) (discussing how courts would apply the discretionary function to a wide range of governmental activities).

190. Rustad & Eisenschmidt, *supra* note 4, at 248 (arguing that failure to comply with industry security standards constitutes negligence).

191. *See* RESTATEMENT (SECOND) TORTS § 299A (1965).

192. *Brune v. Belinkoff*, 235 N.E.2d 793 (Mass. 1968).

193. *See Steiner Corp. v. Johnson & Higgins of Cal.*, 135 F.3d 684, 688 (10th Cir. 1998) (holding that a professional who held himself out as a professional was liable for the negligent performance of duties undertaken); *In re Daisy Sys. Corp.*, 97 F.3d 1171, 1175 (9th Cir. 1996) (holding that a duty of professional care required the plaintiff to show that the defendant should have used such skill, prudence, and diligence as other members of his or her profession commonly possessed and exercised); *see also Hosp. Computer Sys., Inc. v. The Staten Island Hosp.*, 788 F. Supp. 1351, 1361 (D.N.J. 1992); *Heath v. Swift Wings, Inc.*, 252 S.E.2d 526, 529 (N.C. App. 1979).

194. *See generally* Sandra Lancaster & Oneil Cross, *Security Academic Programs*, 1 J. SECURITY EDUC. 131 (2005) (classifying and describing academic programs specializing in computer security).

of care.<sup>195</sup> No court has held a software company liable for failing to meet professional computer security standards. Courts have also been reluctant to recognize the tort of computer malpractice for negligent design of hardware or software.<sup>196</sup>

Software engineering is a relatively new field without the well-established professional standards that are found in more developed professions such as law and medicine. For example, medical specialists must pass far more stringent board certifications than the optional certification examinations provided by various computer services vendors. Courts have uniformly rejected attempts to apply a professional standard of care to software engineers, designers, or consultants despite the fact that software designers and computer engineers have professional organizations that set standards.<sup>197</sup> In *Heidtman Steel Products v. Compuware Corp.*,<sup>198</sup> the Ohio federal court refused to extend the concept of professional malpractice to a negligent computer consultant under Michigan law.<sup>199</sup> Courts will not apply the professional standard of care to software engineers and other professionals until they can reliably assess the skill and expertise required of software engineers.

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195. One organization establishing standards is the International Information Systems Security Certification Consortium, or (ISC)<sup>2</sup>, which promotes the Certification for Information System Security Professional (CISSP) certification exam to aid in the evaluation of personnel performing information security functions. Welcome to CISSP.com, <http://cissp.com/> (last visited Dec. 10, 2005).

196. While early cases found that software vendors owed no professional duty of care, one court found this was a question for the jury to decide. *Savage*, *supra* note 131 (discussing *Diversified Graphics v. Groves*, 868 F.2d 293 (8th Cir. 1989)).

197. The IEEE Computer Society and ACM have established standards for their members. The Institute for Certification of Computing Professionals has an ethics code for its certified members. If a developer is a member of IEEE, the developer accepts their code of performance. The IEEE is a society for engineers (traditional professionals), and therefore software developers could be held to a similar level of liability as their professional counterparts. Even if software development cannot be declared a profession, a member of a skilled trade can also be held to the standards of care and practice for that trade. If programmers are not judged professionals, they are certainly practitioners of a skilled trade. Karen Hooten, *'Twas the Day after Christmas: Legal Issues Facing Software Developers: Programming by Profession*, 9 COMPUTER LANGUAGE 105 (1992); see Patricia DiRuggiero, *The Professionalism of Computer Practitioners: A Case for Certification*, 25 SUFFOLK U. L. REV. 1139 (1991) (arguing for the extension of the professional standard of care to computer specialists).

198. No. 3-97CV7389, 1999 U.S. Dist. LEXIS 21700, at \*1 (N.D. Ohio, Feb. 15, 1999).

199. *Id.* at \*34-\*35.

### 3. *Statutory Violations as Negligence Per Se*

A statute that declares certain conduct or practices to be unlawful may also serve as a measure of whether a software vendor is liable for negligence per se in its marketing of products or services. Legislatures, however, have been slow to enact critically needed statutory standards and administrative regulations governing computer security.<sup>200</sup> At present, no federal or state statutory standard that plaintiffs might use as a proxy for the standard of care governs software quality. However, the violation of such a statute could establish breach of a common law standard of care.<sup>201</sup>

Although courts vary in what impact a statutory violation has on the adjudication of negligence,<sup>202</sup> they may employ civil statutes to set standards in negligent enablement lawsuits.<sup>203</sup> An unexcused violation of a

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200. However, the computer security requirements of the Health Insurance Portability and Accountability Act (HIPAA), Pub. L. No. 104-191, 110 Stat. 1936 (1996), and the Gramm-Leach-Bliley Act (GLBA), Pub. L. No. 106-102, 501-527, 113 Stat. 1338, 1436-50 (1999), may be useful in a defective software case.

HIPAA applies to the privacy of medical records and protects all “individually identifiable health information” held or transmitted by a covered entity. 45 C.F.R. § 160.103 (2004). HIPAA’s privacy rule prohibits covered entities from using or disclosing individually-identifiable information unless authorized by the statute. *Id.* § 164.502(a). The Department of Health and Human Services, which issues privacy and security regulations regarding personal data, has also released rules that require covered entities to safeguard information. *See id.* § 164.530(c)(1).

The GLBA creates an affirmative obligation on the part of financial institutions to prevent the disclosure of personal information. 15 U.S.C. § 6802 (2000). The GLBA safeguarding provision requires financial institutions to “establish appropriate standards for the financial institutions subject to their jurisdiction relating to administrative, technical, and physical safeguards-- (1) to insure the security and confidentiality of customer records and information; (2) to protect against any anticipated threats or hazards to the security or integrity of such records; and (3) to protect against unauthorized access to or use of such records or information which could result in substantial harm or inconvenience to any customer.” *Id.* § 6801(b).

201. *See* Stewart Baker & Maury Shenk, *A Patch in Time Saves Nine: Liability Risks for Unpatched Software*, 18 CORPORATE COUNSELOR 1 (Apr. 2005) (noting that although “neither HIPAA nor GLBA provides private individuals with a right to sue, these statutes could have significant weight in private actions under common law”).

202. *See* RUSSELL L. WEAVER ET AL., TORTS: CASES, PROBLEMS & EXERCISES 163 (2d ed. 2004).

203. The court may adopt the standard of conduct defined by legislation or regulation where there is a:

legislative enactment or an administrative regulation whose purpose is found to be exclusively or in part:

- (a) to protect a class of persons which includes the one whose interest is invaded, and
- (b) to protect the particular interest which is invaded, and

statute requiring reasonable security is itself negligence, that is, negligence per se.<sup>204</sup> Three factors are used for determining the propriety of adopting a statute as the standard of care: (1) Does the statute provide specific guidance on the standard of care? (2) Was the statute enacted to protect against the harm suffered by the plaintiff? and (3) Was the plaintiff included in the class protected by a statute?<sup>205</sup>

Since the internet is fairly new, there is little by way of legislative guidance on what constitutes reasonable security. No legislative body has articulated specific rules or even a general level of care applicable to all internet security cases. If statutes were enacted specifying a given level of computer security, users could use the violation of that statutory standard of care as a potent surrogate for negligence.<sup>206</sup> Conversely, software vendors could defend against claims of defective software by arguing that it complies with the statutory requirements.<sup>207</sup> In the automobile industry, manufacturers must comply with National Highway Traffic Safety Administration (NHTSA) standards.<sup>208</sup> It is unclear why Firestone is account-

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(c) to protect the interest against the kind of harm which has resulted, and

(d) to protect the interest against the particular hazard from which the harm results.

RESTATEMENT (SECOND) OF TORTS § 286 (1965).

204. A plaintiff must prove four elements in a negligence per se case. *Id.* (listing four elements). The Restatement also comments that:

Even where a legislative enactment contains no express provision that its violation shall result in tort liability, and no implication to that effect, the court may, and in certain types of cases customarily will, adopt the requirements of the enactment as the standard of conduct necessary to avoid liability for negligence. The same is true of municipal ordinances and administrative regulations.

*Id.* § 285 cmt. c.

205. DIAMOND, *supra* note 172, at 95.

206. When a statute sets the standard of care, jurisdictions differ in the legal significance of a statutory violation. The majority of jurisdictions treat the breach as negligence per se, while a minority of jurisdictions considers the statutory violation as evidence for the jury to consider in determining whether there has been a breach in the standard of care. *Id.* at 98.

207. David G. Owen, *Special Defenses in Modern Product Liability Law*, 70 MO. L. REV. 1, 13-21 (2005) (discussing trends in the statutory compliance defense in product liability litigation).

208. *See* Regulations & Standards, <http://www.nhtsa.dot.gov/cars/rules/> (last visited Dec. 9, 2005).

able for defective tires whereas Microsoft is immune from claims when it “produces an operating system with two systemic flaws per week.”<sup>209</sup>

At present, federal and state regulations have not been used in any systematic way to set standards for software quality.<sup>210</sup> The next Section will show how federal statutes requiring reasonable levels of computer security may offer strong probative evidence for the plaintiff in bad software cases. Federal statutes not only declare conduct unlawful but specify that the violator is liable for damages to the victim of security breaches. The following statutes may be used to calibrate a standard of computer security because they declare certain conduct unlawful. If Congress has chosen to attach liability to a security breach, courts should be able to determine that conduct in violation of such a statute is unreasonable.

a) HIPAA’s Security Rule

Potentially, a software licensee could use The Health Insurance Portability and Accountability Act of 1996 (HIPAA)<sup>211</sup> to prove negligent enablement of a computer intrusion.<sup>212</sup> HIPAA prohibits a person from knowingly using a “unique health identifier” or wrongfully obtaining “identifiable health information relating to an individual” or disclosing “individually identifiable health information to another person.”<sup>213</sup> Arguably, a provider that uses software with a known vulnerability is, in effect, knowingly disclosing private health information to unauthorized third parties such as cybercriminals. HIPAA’s general privacy rule is that a “cov-

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209. *Business: Liability Rules for Software Firms Irk Consumer Advocates*, NAT. J.’S TECH. DAILY, Sept. 12, 2003 (quoting Bruce Schneier, Computer Security Expert).

210. One problem with the preemption argument is that Congress has not expressly preempted tort actions in its internet security statutes and regulations. Another problem for the computer manufacturer is that compliance with statutory obligations does not preclude a finding of negligence.

Courts and commentators long ago rejected the idea that an actor whose conduct comports with a safety standard required by statute or administrative regulation is automatically protected from tort liability for harm resulting from that conduct. Courts on infrequent occasions do make an exception to the general rule in limited situations where a defendant conformed its behavior precisely as directed by an especially well-considered government standard. But it is fundamental law that governmental safety standards adopt only a minimum safety floor below which an actor may face criminal sanctions but above which due care may require the actor to be more cautious.

Owen, *supra* note 207, at 14.

211. Congress addressed security and electronic signature standards and other administrative simplification issues in HIPAA, Pub. L. No. 104-191, 110 Stat. 1936 (1996).

212. *See* Bimson, *supra* note 181.

213. 42 U.S.C. § 1320d-6 (2000).

ered entity may not use or disclose protected health information, except as permitted or required.”<sup>214</sup> A “covered entity” must “make reasonable efforts to limit protected health information to the minimum necessary to accomplish the intended purpose of the use, disclosure, or request.”<sup>215</sup> The purpose of HIPPA’s security rule is to have entities “implement[] and maintain appropriate security measures to protect that information.”<sup>216</sup> HIPPA does not authorize a private cause of action,<sup>217</sup> let alone an indemnification action. The HIPPA statutory framework “expressly provides a method for enforcing its prohibition upon use or disclosure of individual’s health information—the punitive imposition of fines and imprisonment for violations.”<sup>218</sup> Health care providers punished for such unauthorized disclosures of individually identifiable health information should be able to seek indemnification against a software vendor whose products or services paved the way for the wrongful disclosure. Tort actions against the software vendor will supplement HIPPA’s statutory goal of safeguarding electronic health information.

Congress enacted HIPAA to allay the increasing public concern about the threat to privacy posed by interconnected electronic information systems.<sup>219</sup> HIPAA regulations are designed to protect medical records from computer intruders who may misuse, misappropriate, or alter them.<sup>220</sup> However, to invoke a negligence per se argument based on HIPAA, the victims of defective software must establish that HIPAA was meant to encompass the foreseeable consequences of security flaws. HIPAA’s internet security regulations have three purposes:

- (1) To protect and enhance the rights of consumers by providing them access to their health information and controlling the inappropriate use of that information;
- (2) to improve the quality of health care in the U.S. by restoring trust in the health care system among consumers, health care professionals, and the multitude of organizations and individuals committed to the delivery of

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214. 45 C.F.R. § 164.502(a) (2005).

215. *Id.* § 164.502(a)(2)(ii)(b).

216. *See* Health Insurance Reform: Security Standards, 68 Fed. Reg. 8334, 8335 (Feb. 20, 2003).

217. *See* Univ. of Colo. Hosp. Auth. v. Denver Publ’g. Co., 340 F. Supp. 2d 1142, 1145 (D. Colo. 2004).

218. *Id.*

219. *See* Standards for Privacy of Individually Identifiable Health Information, 65 Fed. Reg. 82462, 82465 (Dec. 28, 2000) (codified at 45 C.F.R. pts. 160, 164).

220. Press Release, Dept. of Health and Human Servs., HHS Proposes Security Standards for Electronic Health Data, Aug. 11, 1998, <http://www.hhs.gov/news/press/1998pres/980811.html>.

care; and (3) to improve the efficiency and effectiveness of health care delivery by creating a national framework for health privacy protection that builds on efforts by states, health systems, and individual organization and individuals.<sup>221</sup>

A victim of a computer intrusion would need to prove that she was within the class of potential victims protected by the statute and was injured in the manner contemplated by the statute in order to establish negligence per se.

The software vendor will argue that the scope of its duty to secure data should be limited to standards explicitly enacted by Congress. Since Congress has enacted no private cause of action, the victims of computer intrusions have no federal civil remedy. It is even more unlikely that courts will find that Congress intended to impose liability on software vendors for enabling the theft of patients' medical records. Congress has yet to enact, or even seriously consider, any statute imposing secondary liability for computer intrusions. The statutory duty to maintain adequate computer security is on the health care provider, not the software vendor, irrespective of whether its product was marketed with known vulnerabilities. HIPAA, therefore, offers little hope to the victims of security flaws introduced by software.

#### b) GLBA's Information Privacy Provisions

Likewise, the victim of a computer intrusion that resulted in a breach of confidentiality of financial information will find it difficult to use a statutory violation of the Gramm-Leach-Bliley Act (GLBA) to make a negligence per se argument. When Congress enacted the GLBA in November of 1994,<sup>222</sup> its intent was to require financial institutions to respect the privacy of their customers and to protect the security and confidentiality of these customers' nonpublic personal information.<sup>223</sup> GLBA compliance requires that each financial institution secure data, including credit card information, transmitted on the internet.<sup>224</sup>

The GLBA prohibits financial institutions from disclosing nonpublic personal information about customers to nonaffiliated third parties unless

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221. Standards for Privacy of Individually Identifiable Health Information, 65 Fed. Reg. 82,462, 82,463 (Dec. 28, 2000) (codified at 45 C.F.R. pts. 160, 164).

222. The Commission issued final rules governing the GLBA on May 24, 2000. *See* Privacy of Consumer Financial Information, 65 Fed. Reg. 33,646 (May 24, 2004) (codified at 16 C.F.R. 313).

223. *See* 15 U.S.C. § 6801 (2004) (entitled Protection of Nonpublic Personal Information).

224. *Id.*

there are adequate disclosure. Financial institutions must provide customers with an opportunity to opt out if they object to divulging or sharing personal information.<sup>225</sup> In addition, the financial institution must disclose its privacy policy both at the time it enters into a fiduciary relationship with a consumer “and not less than annually during the continuation of such relationship.”<sup>226</sup> As with HIPAA, the express statutory purpose applies to financial institutions rather than to the software developers that enabled the theft of personal data or financial information, undercutting the likelihood that the statute could be the basis of a negligence per se claim.

c) California’s Security Breach Information Act

California’s recently-enacted statute requiring notification of a computer security breach involving personal information seems to be the best candidate for a negligence per se claim against software publishers or vendors.<sup>227</sup> The Business Roundtable opposes legislation requiring companies to report computer security breaches or implement minimum security standards because these obligations may lead to greater litigation costs.<sup>228</sup> However, California requires all companies to report network security breaches in order to protect that state’s residents against identity theft and to encourage businesses to improve their network security.<sup>229</sup> Any person or business maintaining computerized data that includes personal information<sup>230</sup> has an affirmative obligation to “notify the owner or licensee of the information of any breach of the security of the data imme-

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225. See 15 U.S.C. § 6802(b)(1) (2005) (stating that consumer must be given an opportunity to opt out before private financial information may be disclosed to third parties).

226. 15 U.S.C. § 6803 (2004).

227. CAL. CIV. CODE § 1798.82 (2005); see, e.g., Cheryl A. Falvey et al., *Disclosure of Security Breaches Required by New California Privacy Legislation*, METRO. CORP. COUNS., Aug. 2003, at 5 (stating that “many predict that the disclosure obligation will result in massive class action suits for companies victimized by security breaches”); Melissa Solomon, *Bank Allies Say California Hacking Law Goes Too Far*, 16 BANK TECH. NEWS 37 (Mar. 2003).

228. David Bank, *Companies Seek to Hold Software Makers Liable for Flaws*, WALL ST. J., Feb. 24, 2005, at B1.

229. CAL. CIV. CODE § 1798.82 (2005) (discussing disclosures of breach insecurity by businesses maintaining computerized data that includes personal information).

230. Personal information is defined as an unencrypted combination of data including a person’s first name (or first initial) and last name in combination with: “(1) social security number, (2) driver’s license number or California Identification Card number, or (3) account number, credit or debit card number, in combination with any required security code, access code, or password that would permit access to an individual’s financial account.” CAL. CIV. CODE § 1798.82(e) (2005).

diately following the discovery” of the breach if data was believed to be acquired by an “unauthorized person.”<sup>231</sup>

A company failing to promptly notify the victim whose personal information has been intercepted on the internet is liable for statutory damages and equitable relief. In addition, a company may be vulnerable to a common law action for negligence per se.<sup>232</sup> The first lawsuit under California’s computer security breach notification statute was filed as a class action in 2003.<sup>233</sup>

Although laws such as California’s security breach notification statute hold some promise for negligence per se causes of action, clear statutory standards of care at either the state or federal levels have yet to be enacted that would serve as a basis for negligence per se findings in defective software lawsuits.

#### 4. *Risk/Utility Methods of Calibrating Due Care*

Judge Guido Calabresi’s 1970 book, *The Cost of Accidents*, provides a starting point for measuring the reasonableness of risk-taking. Calabresi argues that the overarching goal of tort law is to control the costs of accidents rather than to eliminate them. The negligent enabling tort will not eliminate cybercrime, but will reallocate the cost of these intrusions onto the software enterprises—the parties most capable of avoiding or minimizing the rate of computer intrusions.

The need for the proposed new tort may also be evaluated by comparing the radius of the risk to the cost of prevention.<sup>234</sup> Calabresi identified three types of costs that result from accidents: (1) primary costs, (2) secondary costs, and (3) tertiary costs.<sup>235</sup> In a computer software case, the primary or direct cost of a virus or other computer intrusion is likely to be borne by the user community. The primary costs of viruses include the financial resources and time spent in locating and removing virulent code from computer networks. Victims of identity theft suffer other primary costs from computer crime including damaged credit ratings and inability to secure loans.

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231. CAL. CIV. CODE § 1798.82(b) (2005).

232. It is arguable that a company’s violation of its duty to notify consumers of security breaches constitutes negligence per se. A company may defend against a negligence per se claim if the failure of notification was justified because notice would impede a pending criminal investigation. CAL. CIV. CODE § 1798.82(c) (2005).

233. Class Action Complaint, *Hamilton v. Microsoft Corp.*, No. 49-031017-1010 (Cal. Super. Ct. Sept. 30, 2003).

234. *See generally* KOENIG & RUSTAD, *supra* note 118, at 47.

235. *Id.*

Secondary costs include the negative social impact of computer crimes and intrusions. The erosion of trust in the consumer market for online financial transactions, for example, may dissuade customers from providing credit card information for internet purchases.

Finally, Calabresi defined “tertiary” costs as the administrative costs of enforcing negligence liability and administering compensation for intrusions. Through adhesion license agreements, the software industry has succeeded in shifting all three varieties of costs onto the user community.

Almost no empirical data has been collected on even the primary costs of computer intrusions, so it may prove difficult to evaluate the radius of the risk created by insecure software. Similarly, no reliable data exists on the probability of cybercrime, its severity, or the costs of minimizing intrusions, so it is difficult to determine the most efficient level of precaution. Nonetheless, the risk/utility model serves as useful heuristic device in setting the standard of care, despite the lack of reliable, empirical data.

Every software design decision incurs some risk, but not every risk creation reaches the level of negligence.<sup>236</sup> A software vendor should only be liable for those appreciable risks of harm that can be prevented at a reasonable cost. The Grand Canyon could be made safe for the occasional clumsy hiker that loses his footing by filling it in with foam rubber. Reducing the risk would, however, eliminate the utility of the Grand Canyon as a picturesque setting. This solution would also be excessively costly compared to the benefit.

##### 5. *Res Ipsa, Proof, and Circumstantial Evidence of Breach*

The *res ipsa loquitur* instruction supplies a “missing fact that the defendant was negligent.”<sup>237</sup> In medical malpractice cases, the patient who has unexpected and unexplained injuries in the wake of a routine operation would be foreclosed from reaching the jury without the burden shifting power of *res ipsa*.<sup>238</sup> Similarly, direct evidence of software negligence is often difficult to obtain because the vendor does not release the design features or source code of its products. Circumstantial evidence of software failure is frequently the only available proof of design flaws. The doctrine

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236. A utility was not liable for the risk that water in the water main would freeze due to unprecedented cold snap, causing flooding of neighboring houses. *Blyth v. Birmingham Waterworks*, 11 Exch. 781, 784 (1856). One is liable only for appreciable risks of harm, which a reasonable person would take. *Id.*

237. *Alabama Power Co. v. Berry*, 48 So. 2d 231, 238 (Ala. 1950).

238. *Ybarra v. Spangard*, 154 P.2d 687, 688-91 (Cal. 1944) (invoking the doctrine of *res ipsa loquitur* in case where a patient suffers post-operative neck pain normally not associated with the procedure).

of *res ipsa loquitur* assists the plaintiff by supplying a fact that must have existed in the causal chain between the act or omission of a software vendor and the computer intrusion that caused damages to the plaintiff.<sup>239</sup>

The underlying rationale for extending *res ipsa* to defective software is the vendor's ongoing control of the instrumentality that caused the injury. The average consumer is not in a position to ascertain the true cause of the software failure or computer malfunction. The ability of cybercriminals to enter computer systems by exploiting a known vulnerability is the modern equivalent of a barrel of flour falling from a miller's window and striking a passerby.<sup>240</sup> However, a mere computer intrusion may not be as probative of negligence if the vulnerability was not reasonably foreseeable.<sup>241</sup>

A data intermediary such as a software vendor should not be liable for failing to prevent cybercrime on mere conjecture or the mere possibility of negligence. The vendor must be in exclusive control or *res ipsa* should not apply. If someone other than the vendor had as much opportunity to thwart the cybercriminal, it cannot be said that it is more probable than not that the defendant is responsible.<sup>242</sup> *Res ipsa* would not be available, for example, where a software licensee is in control of the software. Finally, this doctrine is limited to situations where there is no direct evidence of a software vendor or online intermediary's negligence. The decision to apply *res ipsa* is a policy driven doctrine based on the defendant's superior knowledge that should be applied only when it is fair to shift the burden of coming forward with evidence because key facts are under the defendant's exclusive control.

### C. Factual Causation

In a negligent enabling case, a plaintiff will need to demonstrate a causal connection (cause-in-fact) between software defects and conse-

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239. "The factfinder may infer that the defendant has been negligent when the accident causing the plaintiff's physical harm is a type of accident that ordinarily happens as a result of the negligence of a class of actors of which the defendant is the relevant member." RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL HARM § 17 (Proposed Final Draft No. 1, Apr. 6, 2005). In order for bad software cases to fall within the doctrine of *res ipsa*, the harm must be within the "exclusive control" of the software vendor and physical harm must have resulted.

240. See generally *Byrne v. Boadle*, 159 Eng. Rep. 299 (Exch. 1863).

241. See Meiring de Villers, *Virus Ex Machina Res Ipsa Loquitur*, 2003 STAN. TECH. L. REV. 1, 17 (2003).

242. See, e.g., *Malvinci v. Stratfield, Motor Hotel, Inc.*, 538 A.2d 690, 693 (Conn. 1988) (finding that the question of whether the plaintiff's own voluntary action in adjusting a shower that burned him was problematic); *Dermatossian v. N.Y. City Transit Authority*, 492 N.E.2d 1200, 1204-05 (N.Y. 1986) (finding that plaintiff failed to meet the burden of proving that a defendant had exclusive control of a dangerous instrumentality).

quential or direct damages suffered. The plaintiff asserting a negligent enabling claim must prove that a software licensor's acts or omissions caused legally recognized damages by a foreseeable third-party cyber-criminal. The "but-for" test would determine "whether the defendant's conduct was a cause in fact of the plaintiff's harm."<sup>243</sup> In a defective software case, the plaintiff would lose if she "would have suffered the same harm had the defendant not acted negligently [because] the defendant's conduct is not a cause in fact of the harm."<sup>244</sup> Multiple causes for a computer intrusion may exist. Under the traditional test, "redundant multiple causes would preclude liability under the 'but for' analysis."<sup>245</sup>

The *Restatement (Second) of Torts* adopted a "substantial factor" test that only requires that the defendant materially contribute to a computer intrusion or internet security breach.<sup>246</sup> It may be difficult to determine whether a software bug, security hole, or a misconfiguration was a "substantial factor" if the security breach was connected to multiple potential causes. Courts will grapple with the "cause-in-fact" problem when third party intruders exploit a variety of security holes on numerous different networks in order to harm internet users.<sup>247</sup>

#### D. Proximate Cause or Legal Causation

Judges typically use the concepts of foreseeability and risk to decide proximate cause issues.<sup>248</sup> Proximate cause rules for internet security may limit the gatekeeper's liability to potential plaintiffs depending upon the

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243. DOBBS, *supra* note 80, at 409.

244. *Id.*

245. DIAMOND, *supra* note 172, at 202.

246. *Id.* at 203-04.

247. The fact that an injury occurred does not mean that an actor is negligent as injury may be the result of unavoidable error or acts of God. In order for negligence to occur, the plaintiff must prove by a preponderance of the evidence that the defendant breached a standard of care. Villers, *supra* note 241, at 5.

248. DOBBS, *supra* note 80, at 444. Proximate cause is a conceptual device for judges to reduce the scope of a defendant's liability. Under proximate cause, "a negligent defendant is liable for all the general kinds of harms he foreseeable risked by his negligent conduct and to the class of person he put at risk by that conduct." *Id.* The concepts of foreseeability and risk-creation are basic to the concept of proximate cause or legal causation in tort law. "Ominously, the argument for preferring 'legal cause' over 'proximate cause' is much easier to follow than the case for replacing 'reasonable foreseeability' with result-within-the-risk language." Richard L. Cupp, Jr., *Proximate Cause, The Proposed Basic Principles*, 53 S.C. L. REV. 1085, 1090 (2002) (comparing proximate cause formulations to an uncrackable puzzle). One court poked fun at the abstract notion of proximate cause: "[T]here are clear judicial days on which a court can foresee forever . . ." *Thing v. La Chusa*, 48 Cal. 3d 644, 668 (1989).

kinds of harm suffered.<sup>249</sup> Even if the plaintiff establishes actual cause, there may not be recovery if the causal relationship between the defendant's breach and the plaintiff's losses is too remote. Justice Benjamin Cardozo noted: "General definitions of a proximate cause give little aid. Our guide is the reasonable expectation and purpose of the ordinary businessman when making an ordinary business contract. It is his intention, expressed or fairly to be inferred, that counts."<sup>250</sup>

The law of torts has historically distinguished between cause-in-fact (or actual cause) and proximate cause. In a computer security case, the plaintiff must present facts and circumstances that will convince a jury that the cybercrime that caused the plaintiff's injury was facilitated by the data handler or software vendor. Finally, the plaintiff must demonstrate that damages flowed from the breach of the defendant's duty to protect her against cybercriminals or other unauthorized users.

In the absence of comprehensive empirical studies of the frequency and costs of computer intrusions, it may prove difficult to evaluate the radius of the risk created by insecure software. Courts are reluctant to hold a defendant liable where the damages are bizarre or remote.<sup>251</sup> Judges will need to draw the line of liability for the consequences of defective software.

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249. Courts frequently use the concept of proximate cause to limit liability for negligently enabling the crimes of third parties. *See, e.g.,* *McCarthy v. Olin Corp.*, 119 F.3d 148, 169 n.21 (2d Cir. 1997) (Calabresi, J., dissenting) ("In other words, could the defendant be held liable for the criminal acts of an intervener absent any direct relationship with the plaintiff . . . Historically, a majority of jurisdictions answered this question in the negative, finding either no duty or no proximate cause.").

250. *Bird v. St. Paul F. & M. Ins. Co.*, 120 N.E. 86, 87 (N.Y. 1918).

251. The traditional common law made a defendant liable for all of "the direct consequences" of a negligent act. *See In re Polemis*, 3 K.B. 560 (1921). However, the modern theory of proximate cause limits duties to reasonably foreseeable consequences. Justice Cardozo's majority opinion in *Palsgraf v. Long Island Railroad*, 162 N.E. 99 (N.Y. 1928) argued that that "proof of negligence in the air will not do." Applying Judge Cardozo's test to software, courts would ask whether a "foreseeable" victim of a cybercrime was owed a duty of care. Judge Andrews's dissent took issue with Judge Cardozo's formulation of duty preferring the older concept of proximate cause. *Id.* at 102-04. Judge Andrews contended that proximate cause determinations were always a matter of "practical politics." *Id.* at 103. In the case of bad software, the issue is whether a vendor's negligence is the "proximate cause" of a victim of a computer intrusion. Judge Andrews's test depends upon a judge making societal evaluations as to the desirability of extending proximate cause to software transactions.

Without a proximate cause limitation, internet security breaches could create boundless liability.<sup>252</sup> At some point, a cause of an internet security breach is so remote that it would be unfair to impose liability. If terrorists had exploited a security hole in software to construct illicit communication channels to coordinate the attacks on New York City and Washington D.C., the security hole theoretically could be deemed a cause-in-fact of the billions of dollars in damages that occurred on September 11, 2001. A court would be unlikely to determine the insecure software a proximate cause of the thousands of deaths and destruction even if the security hole was a cause-in-fact of the attacks.

### E. Damages

The predominant injury in a cybertort case will be a financial loss, dignitary injury, or invasion of privacy rather than personal injury or death.<sup>253</sup> The theft of credit card and bank account numbers, for example, is of grave concern because the victims include “buyers and sellers, intermediaries and service industries.”<sup>254</sup>

In June 2005, plaintiffs filed a class action lawsuit in California against CardSystems to force consumer notification when credit card information is hijacked by cybercriminals.<sup>255</sup> The merchants in CardSystems’s network defended on the grounds that the complaint did not demonstrate any damages.<sup>256</sup> Because issuers absorbed all of the financial losses that resulted from fraudulent credit card transactions, the individual plaintiffs suffered no direct economic loss. Instead, the individual claimants argued that they had a reasonable apprehension that the security of their financial transactions had been compromised causing them “to lose control of [their] private financial information to a ‘hacker.’”<sup>257</sup> The plaintiffs’ claimed damages largely in the form of an anticipated loss much like claims for an enhanced risk of developing a future disease, where the injury has not yet manifested.<sup>258</sup>

The typical internet security case would not involve pain and suffering or general damages. A company could theoretically receive damages for

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252. See DOBBS, *supra* note 80, at 445 (explaining how the proximate cause requirement of tort claims restricts liability).

253. See Savage, *supra* note 131.

254. Tom Zeller, *supra* note 98.

255. CardSystems Complaint, *supra* note 12; see also Evers, *supra* note 13.

256. See Evers, *supra* note 13.

257. CardSystems Complaint, *supra* note 12, at 3.

258. See *id.*; Metro North Commuter Railroad Co. v. Buckley, 521 U.S. 424, 444 (1997) (holding that the railroad workers who had chronic, unprotected exposure to asbestos dust had no claim for damages since no injury had yet appeared).

the unauthorized use of computer networks or be compensated for economic expenses incurred because of a computer virus. The law of torts may also provide for punitive damages to punish and deter software vendors that fail to remediate known vulnerabilities after many prior losses.

## F. Defenses to Negligent Security Claim

Cybercrimes are frequently enabled by both the negligence of the vendor and the negligence of the consumer or user. In many instances, the virus problem is a self-inflicted wound because users fail to update their antivirus software.<sup>259</sup> An AOL survey found that one in seven users has no antivirus software at all.<sup>260</sup> Two-thirds of users did not have updated protection.<sup>261</sup> In many computer virus cases, the damaging code could be eliminated at either the computer network level or at the customer level by taking basic precautions. Downloading attachments or sharing diskettes without the user or the network incorporating the latest protection program, for example, may transmit viruses. The following Sections address three tort defenses and how they might apply in situations where user negligence also contributed to injury.

### 1. Contributory Negligence

In a contributory negligence jurisdiction, plaintiffs are precluded from any recovery if they contributed to the injury.<sup>262</sup> The defense of contributory negligence bars recovery entirely in claims where the plaintiff's own negligence contributed to the injury. The tort doctrine of avoidable consequences denies the recovery of damages that could have been avoided by the plaintiff's reasonable care. It is likely that contributory negligence in the form of user carelessness will be an issue in defective software cases. More than a third of a sample of nearly five hundred "users surveyed by the nonprofit National Cyber Security Alliance said they had a greater chance of winning the lottery or being struck by lightning than of being hit by malicious code."<sup>263</sup>

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259. Klez.H Epidemic: *User Negligence or Failed Protection, About Antiviral Software*, ABOUT.COM, <http://antivirus.about.com/library/weekly/aa030503a.htm> (last visited Nov. 15, 2004).

260. Press Release, America Online, Joint AOL/NCSA Online Safety Study Finds That Computer Users Think They're Safer Than They Are, Nov. 19, 2004 (on file with author).

261. *Id.*

262. See RESTATEMENT (SECOND) OF TORTS §§ 463, 467 (1965).

263. *Study: Consumers Take Cyberattacks Lightly*, CNET NEWS.COM, Sept. 30, 2004, [http://news.com.com/Study+Consumers+take+cyberattacks+lightly/2100-7349\\_](http://news.com.com/Study+Consumers+take+cyberattacks+lightly/2100-7349_)

Contributory negligence may take the form of poor password security including weak passwords, accounts using default passwords, shared passwords, and the use of old versions of system software that enable packet sniffers to harvest access codes to compromise computer systems.<sup>264</sup> In cases of computer security, a user may carelessly fail to take reasonable precautions to protect his or her password or other confidential information. Computer users often place their passwords on their computers with Post-its, for example, which is tantamount to sharing the password with wrongdoers.

Users who choose passwords that are easy to guess should also be precluded from recovering from a software vendor even if it has a defect enabling cybercriminals. A user, who believes that his password has been stolen but does not change the compromised phrase, should also have no action for compromised accounts since his own negligence enabled privileged access to a vulnerable system. Similarly, a plaintiff should not be able to recover for permitting an intruder to exploit a password that has not been changed since installation.

For example, contributory negligence could be a defense in a defective software case assuming that a financial institution failed to implement reasonable methods to authenticate its customer's identity. A hospital could also be contributorily negligent if it fails to implement security solutions such as firewalls and routers. Therefore, contributory negligence could be a bar to recovery where a user's negligence contributed to the damage caused by exploiting vulnerable software.

## 2. *Comparative Negligence*

Most American jurisdictions have displaced contributory negligence with some form of comparative negligence. In a traditional contributory negligence jurisdiction, the plaintiff was precluded from any recovery if she contributed to the accident. In contrast, comparative responsibility statutes moderate the harsh "all of nothing" rule that provides no recovery for a plaintiff who is partially to blame.<sup>265</sup> In a comparative negligence jurisdiction, the negligence of the defendant is weighed against that of the plaintiff. A plaintiff in a negligent enablement case would have her dam-

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3-5390749.html (reporting survey of 493 PC users surveyed by the nonprofit National Cyber Security Alliance).

264. SEI, CERT Coordination Center, UNIX Configuration Guidelines, [http://www.cert.org/tech\\_tips/unix\\_configuration\\_guidelines.html](http://www.cert.org/tech_tips/unix_configuration_guidelines.html) (last visited Sept. 25, 2005).

265. Thomas R. Trenkner, Annotation, *Modern Development of Comparative Negligence Doctrine Having Applicability to Negligence Actions Generally*, 78 A.L.R.3d 339 (1977).

ages diminished by the degree of her own negligence, as compared to a contributory negligence regime, which would bar her relief entirely. A plaintiff's contributory negligence, therefore, would be a partial defense to a negligent enablement lawsuit based upon defective software.

Comparative negligence jurisdictions may be classified as employing either "modified" or "pure" versions.<sup>266</sup> In a modified system, negligent plaintiffs may recover, provided their negligence is neither equal to nor greater than that of the defendant. In a pure comparative negligence regime, plaintiffs' recovery is diminished by the degree of negligence, even if their negligence is greater than or equal to that of the defendant.

A plaintiff's failure to use standard antiviral software, for example, might constitute comparative negligence in a lawsuit over the transmission of software containing a virus. Also, harms enabled by input errors in online transactions will typically be the responsibility of the customer, not the online intermediary. An online banking website would likely not be responsible for a customer's misuse of services that resulted in financial injuries. Comparative negligence permits blame to be apportioned between the vendor and the user. Finally, in considering how to apportion fault, an efficient negligent enablement regime will allocate blame to the least cost avoider.

### 3. *Assumption of Risk*

Generally, if a plaintiff expressly or impliedly consents to confront the harm from a particular risk created by the defendant, she assumes the risk and is barred from recovery.<sup>267</sup> This defense is based on the public policy concern that the defendant should be relieved of his obligation to take reasonable care where the plaintiff "agrees to take his chances as to injury from a known or possible risk."<sup>268</sup> If a software licensor, for example, warns the user that it does not employ standard security devices in their operating system, a plaintiff may have voluntarily assumed a known risk. The express assumption of risk will likely have a continuing vitality in software license agreements, and express assumption of risk is a complete bar to recovery where it is allowed.

Mass market license agreements use exculpatory clauses to release the vendor from liability for all consequential damages resulting from negli-

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266. *Id.*

267. *Schutkowski v. Carey*, 725 P.2d 1057, 1059 (Wyo. 1986) ("Exculpatory clauses releasing parties from liability for injury or damages resulting from negligence will be enforced if clause is not contrary to public policy.").

268. RESTATEMENT (SECOND) OF TORTS § 496A (1965).

gent software design.<sup>269</sup> The California Supreme Court in *Tunkl v. Regents of University of California* describes the factors a court will weigh before refusing to enforce an exculpatory clause on public policy grounds.<sup>270</sup> The court there reasoned that activities that are important to the public were of practical necessity and could not be the subject of bargaining.<sup>271</sup> Thus, where a party offered essential services, exculpatory clauses were less likely to be enforceable.<sup>272</sup> The *Tunkl* factors support refusing to recognize the affirmative defense of assumption of risk for negligently-designed software. The risk of preventable software design flaws carries substantial public policy implications and is likely not comparable to an individual's choice to assume the risk of an inherently dangerous recreational activity. What is appropriate for hazardous recreational activities should not apply to software that is critical to America's economic infrastructure and national security.

Courts should not enforce exculpatory clauses releasing vendors from liability for injuries or damages from negligent design because permitting this irresponsible behavior harms the public interest. The typical mass market license agreement seeks to eliminate the vendor's liability for negligent acts. Public policy should disfavor these clauses and closely scrutinize them, because the software industry should be liable for personal injuries or property damages resulting from negligent design.

Releases for hazardous recreational activities are often accompanied with warnings about the danger involved. In contrast, software users often do not receive such warnings and may even be lulled into complacency through advertisements promising complete computer security.

### **G. Policy Justifications for the Negligent Enablement Tort**

New torts succeed because they are anchored to well-established principles of the common law.<sup>273</sup> During the 1960s and 1970s, new tort actions evolved to compensate the victims of wrongful discharge and defective products.<sup>274</sup> Our proposed negligent enablement tort is anchored in principles of premises liability, product liability, and warranty.

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269. The exculpatory language in *M.A. Mortenson Co., Inc. v. Timberline Software Corp.*, 998 P.2d 305 (Wash. 2000) is emblematic of the industry standard that attempts to disclaim all liability for the vendor's negligent acts.

270. 60 Cal. 2d 92, 98-101 (1963).

271. *Id.*

272. *Id.*

273. Bernstein, *supra* note 81, at 1547.

274. See generally Anita Bernstein, *Muss Es Sein? Not Necessarily, Says Tort Law*, 67 LAW & CONTEMP. PROBS. 7 (2004) (arguing that these new causes of action in tort law were successful unlike many other new torts).

The premises liability concept that landowners who open their land to the public must use reasonable care, applies equally well to the intangible and ethereal world of cyberspace. The negligent enablement of cybercrime tort is a natural extension of the requirement that landowners, common carriers, innkeepers, and places of public entertainment owe affirmative duties of reasonable care to protect their customers. Just as landowners may create dangerous conditions that attract robbers and murderers, vendors of defective software create foreseeable risks to users. Courts have imposed liability upon physical businesses when crimes against customers are foreseeable and when the proprietor reasonably could have prevented the crime. The foreseeability of cybercrime creates a similar duty for the software industry.

Software that meets a reasonable safety standard will only become the norm if courts impose a duty to protect users from cybercriminals. Software that has been rushed to market without adequate testing may be cheaper to produce, just as brakeless cars are less expensive, but either marketing plan poses unacceptable risks to the user. Prior to the development of strict product liability, automobile manufacturers used contract disclaimers to disclaim all meaningful warranties and exclude consequential damages.<sup>275</sup> The American automobile industry blamed the epidemic of severe injuries on driver error or bad roads to deflect attention away from design defects that created excessive preventable dangers.<sup>276</sup>

In the 1950s and 1960s, automobiles were not equipped with seatbelts nor were they crashworthy for foreseeable collisions because Detroit's designers focused on aesthetics over safety.<sup>277</sup> Rigid steering wheel columns crushed chests and tattooed drivers with imprints of decorative but sharp emblems. Today's automobiles are much safer – product liability exposed such flaws and encouraged the auto industry to adopt improved designs. It is now time to extend these salutary principles of tort law to insecure software that facilitates the ability of third party cybercriminals to prey upon travelers on the internet.

The new negligent enablement tort will create essential incentives for the development of a seamless internet security system by imposing a fortified duty of care on the software industry. Software vendors should be

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275. See, e.g., *Henningsen v. Bloomfield Motors, Inc.*, 161 A.2d 69, 74 (N.J. 1960) (noting that the standard automobile sales contracts of Plymouth's automobiles included provision in fine print disclaiming all "warranties, express or implied, made by either the dealer or the manufacturer on the motor vehicle, chassis, or parts furnished") (emphasis in original).

276. See RALPH NADER, *UNSAFE AT ANY SPEED* (1965).

277. *Id.* at 112-28.

held liable when they knowingly market defective products and services that pave the way for highly foreseeable computer crimes. Just as the automobile industry enacted safety audits after the imposition of product liability, the software industry will respond to the proposed tort by allocating more resources to preventing cybercrime through better design, fortified product warnings, and more thorough testing. Software vendors owe a duty to warn consumers and other users of the potential threats to the security of their computer systems as well as providing information about how to avoid or recover from foreseeable computer intrusions. Requiring companies to transmit post-marketing warnings of software vulnerabilities will reduce the radius of the risk of computer intrusions.

The consumer orientation of modern product liability law inspires the negligent enablement tort. Prior to the development of strict product liability, automobile manufacturers used contract law as a means of shifting losses to their testimonies by contracts that limited consequential damages and disclaimed all warranties. Privity of contract shielded manufacturers from personal injury lawsuits stemming from dangerously defective products.<sup>278</sup> The breakthrough in product liability came when courts abandoned contract in favor of tort remedies for the injured consumers.<sup>279</sup>

The negligent enablement tort is necessary because of the failure of contract to provide minimum consumer protection to users. In the early 1960s, the courts supplemented remedies under warranty law with strict product liability.<sup>280</sup> A claimant in a product liability case can file suit in either warranty or tort.<sup>281</sup> Despite the strong temptation to transplant strict product liability into software transactions, two obstacles discourage such a development. First, contemporary product liability law is experiencing a pronounced shift away from absolute liability back to negligence. Second, the economic loss rule prevents courts from finding liability where the victim incurs economic harm, but no physical injury or death.<sup>282</sup> However, cybercrime enabled by defective software may cause damage to property other than the defective software where, for example, credit card numbers

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278. The decision of *Winterbottom v. Wright*, 152 Eng. Rep. 402 (1842) was the landmark decision ruling that a passenger injured by a defective stagecoach had no standing to sue the repairer of the vehicle since the victim was not "in privity."

279. *MacPherson v. Buick Motor Co.*, 111 N.E. 1050 (N.Y. 1915) (turning away from the privity approach).

280. RESTATEMENT (SECOND) OF TORTS §402(A) (1965).

281. *See, e.g., Castro v. QVC Network, Inc.*, 139 F.3d 114 (2d Cir. 1998).

282. Most courts determine whether a tort remedy is possible based upon the type of injury. If the software failure causes only economic loss, then no tort action may be filed. *See Savage, supra* note 131. Following this analysis, a tort remedy is only appropriate where physical injury or death arises out of the malfunctioning of software. *See id.*

of consumers or personal data are misappropriated. Courts will be more receptive to imposing liability with fault where the license agreement gives what is, in effect, an anti-warranty and remedy. Where pure economic damages are not recoverable under UCC Article 2 or UCITA, the negligent enablement tort is not displacing contract, but merely filling a void. Stronger warranty protection for software users will be necessary to ensure that the courts will not be flooded with negligent enablement claims.

Our proposed tort of negligent enablement of cybercrime tort is a logical extension of product liability law. The insecure software problem places an economic roadblock in the path of American competitiveness. At present, the software industry has shifted the cost of insecure software onto the user community. The tort of negligent enablement and fortified warranties will place the cost of injury on the party in the best position to prevent cybercrime. The negligent enablement tort will also reward socially responsible software vendors, who are currently at a competitive disadvantage. Our proposed tort will therefore reduce the rate of injuries from viruses, identity theft, computer intrusions, fraud, and other predatory online activities.

## V. CONCLUSION

The rapid pace of technological change has exposed a fundamental weakness in the American civil justice system. In an era in which software “is becoming ubiquitous and increasingly complex[,] the importance of software [network, and internet] security is . . . growing exponentially.”<sup>283</sup> At present, computer users have no meaningful remedies for injuries such as the theft of personal data, computer viruses, or internet fraud enabled by software failure. With cybercrimes skyrocketing and an ever-increasing amount of sensitive information being exchanged on the internet, the development of robust and trustworthy computer systems is a necessity.

Widespread breaches of internet security result in a “massive loss of valuable time and resources, reduced productivity and lost revenue.”<sup>284</sup> Negligently designed and implemented software that enables hackers and creators of viruses to exploit computer systems is the root of much cyber-

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283. Press Release, Cigital, Reliable Software Technologies Discovers Security Flaw in Netscape Navigator (Dec. 15, 1999), <http://www.cigital.com/news/index.php?pg=art&artid=26>.

284. FINJAN SOFTWARE, COMBATING THE NEW GENERATION OF MALWARE: SPYWARE, PHISHING, AND ACTIVE CONTENT 5 (Aug. 2005), [http://www.finjan.com/company/whitepapers/combating\\_malware\\_finjan.pdf](http://www.finjan.com/company/whitepapers/combating_malware_finjan.pdf).

crime and unwanted computer intrusions. New negligence-based remedies are necessary because the only available defendant is often the software publisher whose security holes enabled the crime or tort. More security-conscious network architects, software designers, and website developers are the solution. The tort of negligent enablement will encourage the software industry to institute computer security audits by providing incentives to improve the quality of their products.<sup>285</sup>

All social and commercial relationships depend upon trust.<sup>286</sup> Unless the growing flood of cybercrime is curbed, the internet will become a lawless, "wild West," with unnecessary barriers to conducting business. The judiciary needs to be bolder in carving out tort duties to compensate the victims of cyberwrongs where software companies are the least cost avoider. In the absence of liability for the negligent enablement of cybercrime, "immunity breeds irresponsibility while liability induces the taking of preventive vigilance."<sup>287</sup> Thus, the new tort of negligent enablement brings good sense to software law for the millennium.

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285. Ajay Ayyappan, *UCITA: Uniformity at the Price of Fairness*, 69 *FORDHAM L. REV.* 2471, 2518 (2001).

286. *See generally* FRANCIS FUKUYAMA, *TRUST: THE SOCIAL VIRTUES* (1995).

287. Thomas F. Lambert, Jr., *Suing for Safety*, *TRIAL*, Nov. 1983, at 48.

# INTELLECTUAL PROPERTY AND TRADITIONAL KNOWLEDGE: A PSYCHOLOGICAL APPROACH TO CONFLICTING CLAIMS OF CREATIVITY IN INTERNATIONAL LAW

By Bradford S. Simon<sup>†</sup>

## ABSTRACT

There is mounting evidence that current intellectual property (IP) rights laws are harming those they purport to benefit by fencing off the intellectual commons to future creators, transferring wealth from poor to rich states, and denying affordable access to such critical products as life-saving drugs and seeds. Still, these laws persist and continue to expand their reach. IP laws are justified primarily by the seemingly neutral utilitarian argument that, by conferring incentives to individual inventors and creators, these laws foster individual creativity and benefit society at large. Recently, IP scholars have unveiled the individualistic romantic author conception at the heart of IP laws as part of an effort at rebalancing public and private benefits.

At the same time, groups primarily from the developing world have asserted a counter-discourse to the IP regime, framed in part from outside the IP regime and in response to the globalization of IP laws. This counter-discourse has crystallized under the rubric of traditional knowledge, or “TK.” The TK proponents call into question the cultural assumptions in the IP model and its distributive effects. Their central prescriptive solution calls for a *sui generis* legal regime to protect community rights.

As yet there has been no attempt to compare the TK and IP models apart from their competing but parallel claims to rights and assertions of conflicting cultural norms. This Article assesses these competing models by enlisting a more encompassing perspective on the psychological nature of human cognition: namely creativity and bias.

I argue the TK discourse mistakenly iterates a conceptual frame that contrasts individual knowledge and consciousness of people from “com-

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plex” societies with group knowledge and the collective consciousness of people from “simple” societies. At the same time, current findings from social psychology and the cognitive science of creativity reveal that the individual romantic conscious actor model of creativity embedded in the IP regime is largely inadequate while the assumptions underlying the TK model are a better reflection of the nature of creativity.

Prevalent cognitive biases explain a vital aspect of how the IP model is sustained and accepted, including by those it is likely to harm. The power of these biases brings into focus the limitations of the authorship critique. Finally, I suggest that in the shorter term, “interest-based” approaches to the conflict between the treatment of TK and industrial knowledge are likely to be more fruitful than “rights”- or “power”-based approaches. In the longer term, for a truly global legal regime to foster creativity it should be based not only on diverse cultural norms, let alone simplistic and inaccurate economic incentive models of creativity, but also on scientific understandings of human creativity.

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## I. THE CONTEXT: GLOBALIZATION AND THE INTELLECTUAL PROPERTY VERSUS TRADITIONAL KNOWLEDGE DEBATE

In the last ten years, legal academics have criticized the theoretical justifications for intellectual property (IP) rights.<sup>1</sup> Yet the IP regime grows stronger in scope, duration, and geographic reach.<sup>2</sup> While within the industrialized world, as Professor Lawrence Lessig describes it, the IP rights debate focuses on a “free” versus “permission” culture,<sup>3</sup> there is globally a

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1. CHRISTOPHER MAY, *THE GLOBAL POLITICAL ECONOMY OF INTELLECTUAL PROPERTY RIGHTS: THE NEW ENCLOSURES?* (2000); *see also* LAWRENCE LESSIG, *FREE CULTURE* (2004).

2. LESSIG, *supra* note 1, at 161-62. Lessig writes:  
So copyright’s duration has increased dramatically—tripled in the past thirty years. And copyright’s scope has increased as well—from regulating only publishers to now regulating just about everyone. And copyright’s reach has changed, as every action becomes a copy and hence presumptively regulated. . . . This regulation of the creative process, which began as a tiny regulation governing a tiny part of the market for creative work, has become the single most important regulator of creativity there is. It is a massive expansion in the scope of the government’s control over innovation and creativity; it would be totally unrecognizable to those who gave birth to copyright’s control.

*Id.*

3. *Id.* at xiv.

different critique of IP. This critique has been organized around distinctions between “industrial knowledge” largely located in developed states and “traditional knowledge” (TK) predominant in the developing states. As defined by the World Intellectual Property Organization (WIPO), TK includes indigenous knowledge, folklore, and traditional medical knowledge. According to WIPO, TK is “embedded in traditional knowledge systems, which each community has developed and maintained in its local context.”<sup>4</sup> The emerging TK discourse is the subject of this Article.

There is mounting evidence that current IP rights laws are harming those they purport to benefit by fencing off the intellectual commons to future creators,<sup>5</sup> transferring wealth from poor to rich states,<sup>6</sup> and denying affordable access to such critical products as life-saving drugs and seeds.<sup>7</sup>

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4. WIPO, Intellectual Property and Genetic Resources, Traditional Knowledge, and Folklore, [http://www.wipo.int/about-ip/en/studies/publications/genetic\\_resources.htm](http://www.wipo.int/about-ip/en/studies/publications/genetic_resources.htm) (last visited Nov. 2, 2005) (emphasis in original).

5. See generally LESSIG, *supra* note 1, at 183-99 (arguing that the current legal regime makes a wide range of creative work illegal).

6. See, e.g., PETER DRAHOS & JOHN BRAITHWAITE, INFORMATION FEUDALISM 11 (2002); JAGDISH BHAGWATI, FREE TRADE TODAY 75 (2002) (“Many [economists] also consider [IP protection] to be a transfer from most of the poor countries to the rich ones . . .”).

7. See MICHAEL PERELMAN, STEAL THIS IDEA 138-39 (2002); see also ROBERT L. OSTERGARD, JR., THE DEVELOPMENT DILEMMA 145-51 (2003) (discussing the dispute between the United States and South Africa over South African legislation allowing for the abolishment of patent rights on pharmaceuticals, parallel imports, and compulsory licenses to fight the AIDS crisis). Ostergard states:

The dispute is representative of the IPR protection issues trading states face when they are at different development levels. The dilemma the South African government faced was one of property rights versus subsistence rights. . . . At stake for US corporations was monopoly power and market share in South Africa’s pharmaceutical market; at stake for South Africans was something more important: life and death.

*Id.* at 142. Wallach and Sforza also point to a link between ownership in plant varieties by large agribusinesses and “mono-culture agriculture.” LORI WALLACH & MICHELLE SFORZA, THE WTO: FIVE YEARS OF REASONS TO RESIST CORPORATE GLOBALIZATION 49 (1999). They also note:

The TRIPs Agreement further undermines precarious worldwide food security by exacerbating food and seed access and distribution problems. One provision requires that WTO Members protect agribusiness ownership over plant varieties, including seeds. This requirement provides dramatic new tools to consolidate the power of large seed and biotechnology manufacturers by shifting ownership and control of seed stocks away from farmers. . . . On the other hand, the TRIPs Agreement contains no protections for indigenous communities that have been planting and crossbreeding strains for centuries to

Still, states expand the reach of these laws.<sup>8</sup> As a means of justification, states, corporations, and others argue that by conferring incentives to individual inventors and creators, IP laws foster creativity and benefit society at large. This Article will briefly consider critiques from within the IP discourse, especially the authorship critique best exemplified by Professor James Boyle.<sup>9</sup> This critique reveals important logical discontinuities beneath the claims and common justifications of the IP discourse in regards to these incentive theories, and makes central the individual bias of the IP regime. The current critique, however, does not go far enough and this Article investigates the potential of TK to provide a more radical critique.

Unlike Professor Boyle and Professor Lessig, I argue that social and cognitive psychology shows the perceived authenticity of the romantic author and genius inventor to be largely invalid. At the same time, the magnetism of the romantic author and genius inventor conceptions can be explained by specific human biases that psychologists have studied in depth. These cognitive biases, especially the fundamental attribution error, make the IP discourse more compelling than it should be. Therefore, merely revealing the role of author conceptions in IP law and their historical contingency will not succeed in reforming IP.

According to the TK discourse, IP rights protect specific kinds of creativity to the exclusion of others. In particular, copyright and patent laws protect those works and innovations that have an identifiable author or inventor. These claims to rights are based on historically particular concepts of “originality” or “novelty” and “the public domain” that are not applicable to many indigenous peoples and societies, wherein creativity is

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develop that perfectly adapted variety that a bioprospector can collect and have patented to some distant corporation.

*Id.*

8. In addition to increases in copyright duration, protection of anti-circumvention technologies that foreclose fair use, expansion of patents to cover software, business methods, and gene sequences, and the global spread of the IP regime, less formal trends have an important impact. *See, e.g.*, JENNIFER WASHBURN, UNIVERSITY INC. 148 (2005) (arguing that the United States Patent Office has issued increasingly broad patents). Washburn states:

The breadth and scope of this shift in the ownership of knowledge has been truly startling. Today, companies exert monopoly control over the basic building blocks of computer code. . . ; doctors hold patents on medical procedures they once shared openly with their peers; and drug companies hold title to many of the world’s most valuable medicinal plants and microorganisms, which indigenous peoples and local healers have used freely for generations.

*Id.*

9. *See* JAMES BOYLE, SHAMANS, SOFTWARE, AND SPLEENS (1996).

claimed to be fundamentally collective, cooperative, informal, cumulative, and often spiritual.<sup>10</sup> In this system, knowledge and natural resources cultivated by indigenous peoples over generations serve as free or low-cost inputs into the proprietary industrial knowledge production process.<sup>11</sup> This also enables multinational corporations to claim protection, such as patents on “purified” natural substances, by using expensive technology usually not available in developing states. At its extreme, this aspect of IP is viewed as permitting a new form of colonization<sup>12</sup> in which the dominant IP regime treats TK and associated resources as “raw” materials that have limited value in the international market until they are “cooked”—to borrow a phrase from Levi-Strauss—by capital-intensive practices. At that point, they may be protected by IP laws. They are then sold (even back to the source state) at a higher cost. The current IP regime has difficulty addressing the intellectual value of TK.<sup>13</sup> For each instance in which a court

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10. Compare VANDANA SHIVA, PROTECT OR PLUNDER? 51 (2001) (“When an element from indigenous knowledge systems is transferred to western knowledge systems, it is treated as an innovation in western knowledge systems. As a corollary, the interests and rights of non-western communities find no place in western legal systems and are instead transferred to the scientific practitioners of western knowledge systems, in particular, those backed by corporate capital.”), with Bradford S. Simon, *Global Steps to Local Empowerment in the Next Millennium: An Assessment of UNESCO’s 1989 Recommendation on the Safeguarding of Traditional Culture and Folklore*, in SAFEGUARDING TRADITIONAL CULTURES: A GLOBAL ASSESSMENT 111, 124 (Peter Seitel ed., 2001) (“All laws embody and inculcate values; intellectual property laws are no different. It has been pointed out many times that the individualistic values embodied throughout all intellectual property laws are premised on culturally bound and historically derived concepts of ‘authorship’ and ‘innovation.’”).

11. See SHIVA, *supra* note 10, at 49; see, e.g., Sherylle Mills, *Indigenous Music and The Law: An Analysis of National and International Legislation*, 28 YEARBOOK FOR TRADITIONAL MUSIC 587 (1996) (arguing that Western IP laws and traditional music “clash at the most fundamental level” and that norms of non-Western music production and the emergence of digital sampling allow the free appropriation of indigenous music by commercial interests).

12. See SHIVA, *supra* note 10, at 49 (arguing that the West has been affected by the “‘Columban blunder’ of the right to plunder by treating other people, their rights, and their knowledge as non-existent. Terra nullius has its contemporary equivalent in ‘Bio-Nullius’—treating biodiversity knowledge as empty of prior creativity and prior rights, and hence available for ‘ownership’ through the claim to ‘invention.’”).

13. Consider two examples: In Australia, the works of several Aboriginal artists were copied and incorporated into carpets without permission, either from the artists or the Aboriginal communities to which the artists belonged. The depictions themselves concerned dreamtime stories considered sacred and governed by strict customary norms of use. As the Federal Court of Australia (Northern Territory) noted in *Milpurrurru v. Indofurn Party Ltd.* (1994) 54 F.C.R. 240, 245, “Painting techniques, and the use of totemic and other images and symbols are in many instances, and almost invariably in the case of important creation stories, strictly controlled by Aboriginal law and custom.” In

has found in favor of indigenous individuals (not groups), there are likely many more in which indigenous contributions, direct and indirect, remain unacknowledged.<sup>14</sup> Furthermore, even when indigenous people have prevailed in the IP regime by framing their legal claims in terms cognizable

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the case, only the individual artists could file claims as the copyright owners, despite the fact that Aboriginal norms of ownership and control were much more complex and communal. *Id.* at 273. The court pointed out that under Aboriginal law, “[i]f permission has been given by the traditional owners to a particular artist to create a picture of the dreaming, and that artwork is later inappropriately used or reproduced by a third party the artist is held responsible for the breach which has occurred, even if the artist had no control over or knowledge of what occurred.” *Id.* at 246. Banduk Marika, one of the artists, testified that in the past the offender could be put to death, while presently the offender could be ostracized from the community. *Id.* The court stated that “The statutory remedies do not recognise the infringement of ownership rights of the kind which reside under Aboriginal law in the traditional owners of the dreaming stories and the imagery such as that used in the artworks of the present applicants.” *Id.* at 272. Even so, this case has largely been seen as a success story in that the individual artists prevailed in their claims for monetary damages. Yet, one commentator concludes that, “[w]hilst the judgment is a precedent in the recognition of Indigenous rights within the copyright law framework, significant expressions of Indigenous cultures will not meet the requirements of copyright to benefit from these laws.” TERRI JANKE, WIPO, MINDING CULTURE: CASE STUDIES ON INTELLECTUAL PROPERTY AND TRADITIONAL CULTURAL EXPRESSIONS 19 (2000-01).

While the first example involves artistic and sacred aspects of TK, the second example involves use of plant resources and associated TK as mere inputs for patent rights. In 1995 the United States Patent and Trademark Office granted a patent on medicinal properties of turmeric powder to promote wound healing. *See* DORIS E. LONG & ANTHONY D’AMATO, A COURSEBOOK IN INTERNATIONAL INTELLECTUAL PROPERTY 1056-57 (2000). The Indian Council of Scientific and Industrial Research successfully challenged the patent on the basis that it lacked novelty given that turmeric has been used by people in India for thousands of years for similar purposes. As one law Professor notes, “[t]he refusal to grant patent protection for medicinal uses of turmeric marks a rare instance where traditional knowledge of a third country has been used to prevent patent protection by foreign inventors.” *Id.* at 1057. Indian scientist and environmental activist Vandana Shiva states that the reversal on the turmeric patent is “only a first step” and that “[p]atents on Neem, Amla, Jar Amla, Anar, Salai, Dudhi, Gulmendi, Bagbherenda, Karela, Rangoon-ki-bel, Erand, Vilayetishisham, Chamkura all need to be revoked.” Vandana Shiva, *The Turmeric Patent is Just the First Step in Stopping Biopiracy*, THIRD WORLD NETWORK, <http://www.twinside.org.sg/title/tur-cn.htm> (last visited Oct. 13, 2005).

14. Numerous other examples of alleged biopiracy include efforts by Western corporations to obtain patents relating to or otherwise commercialize traditional use of *hoodia* in Africa to decrease hunger, *plao-noi* in Thailand to treat ulcers, and *j’oublie* in Cameroon as a sweetener. *See* STEPHEN A. HANSEN & JUSTIN W. VANFLEET, TRADITIONAL KNOWLEDGE AND INTELLECTUAL PROPERTY: A HANDBOOK ON ISSUES AND OPTIONS FOR TRADITIONAL KNOWLEDGE HOLDERS IN PROTECTING THEIR INTELLECTUAL PROPERTY AND MAINTAINING BIOLOGICAL DIVERSITY 3 (2003), available at <http://shr.aaas.org/tek/handbook/handbook.pdf>.

by it, their victory has often been Pyrrhic, with complex and specific social and historical norms of knowledge production replaced by the IP regime's notions of the "individual" as inventor or author.

Groups primarily from the developing world have asserted a counter-discourse, framed in part from outside the IP regime and in response to the globalization of IP laws. This counter-discourse has crystallized under the rubric of TK. The TK proponents call into question the cultural assumptions of the IP model and its distributive effects. Their central prescriptive solution calls for a *sui generis* legal regime to protect community rights. TK concerns crosscut "traditional" IP categories such as patents and copyrights because, for example, traditional medical knowledge might be conveyed through artistic means (the realm of copyrights) while containing useful and inventive information (the realm of patents), within a more transcendent spiritual context. Similarly, the distinction between "creativity" as falling under copyright and "innovation" as the domain of patent law is not reflected in the psychology of creativity or the TK discourse.

The issue has become mainstream. As economist Joseph Stiglitz comments on The World Trade Organization's Trade Related Aspects of Intellectual Property Rights Agreement (TRIPS), "What we were not fully aware of was another danger, what has come to be termed *bio-piracy*, international companies patenting traditional medicines and foods."<sup>15</sup> Stiglitz continues, "[i]t is not only that they seek to make money from 'resources' and knowledge that rightfully belongs to the developing countries, but in so doing, they squelch domestic firms that have long provided the products."<sup>16</sup>

As yet there has been no attempt to compare the TK and IP models apart from their competing but parallel claims to rights and assertions of conflicting cultural norms. One part of my argument is that continued resort to conflicting normative rights claims based on purported cultural differences is likely to produce a resolution based on economic and political power, notwithstanding the resistance revealed in the emerging TK discourse. These norms are often constructed and deployed in stereotypical oppositions and offer no point of view from outside either of the two models. This Article attempts to assess these competing models by enlisting a perspective based on the potentially more universal components (albeit within the Western framework of empirical science) of human functioning: namely creativity and bias.

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15. JOSEPH E. STIGLITZ, GLOBALIZATION AND ITS DISCONTENTS 246 (2002) (emphasis in original).

16. *Id.*

The fields of cognitive and social psychology, as they specifically relate to creativity and bias, provide just such a perspective. Despite the dominance of the economic incentive justification for IP laws, economics has been largely silent on a theory of creativity and has been impervious to influences from the psychology of creativity.<sup>17</sup> Worse, economics is blind to the findings from the science of creativity discussed in Part IV. The lack of concern demonstrated by IP proponents, policymakers, and even scholars regarding the “nature” of creativity should give us pause as we expand these laws domestically and globally.

Through the lenses of discourse analysis and social and cognitive psychology, this Article explores the competing claims regarding the “nature” of creativity and innovation, which is central to the IP and TK discourses. In short, discourse analysis reveals how the debate on the international plane has crystallized in oppositional and, to a large degree, mutually reinforcing terms. These terms purport to describe the different “natures” of innovation as practiced by industrial (or post-industrial) Westerners, on the one hand, and indigenous peoples, largely in pre-industrial developing countries, on the other. These oppositions, in turn, replay and repurpose long-standing dichotomies—between the modern and the primitive—once prevalent but now largely discarded in the discipline of anthropology.

I draw from cognitive and social psychology for two purposes. First, I use insights from these branches of psychology to probe potential commonalities of human creativity and thereby reject the prevailing view that there are different “natures” of creativity articulated in the IP/TK debate. To the extent such commonalities exist, these should inform the global debate concerning any legal regime explicitly intended to foster creativity. Second, I draw on the psychology of bias to illuminate and provide a missing piece in understanding the current global expansion of the IP regime. This expansion is occurring notwithstanding theoretical criticism and empirical evidence that such strengthening and expansion of the IP regime is not providing the promised benefits, either to individual creators or to developing countries. Specific cognitive biases enable this expansion even in the face of the criticism.

This debate is currently over-reliant on narrow and even incorrect assumptions about economic incentives on the one hand and essentialist and stereotyped cultural claims on the other. This Article seeks to expand the

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17. Gary B. Magee, *Rethinking Invention: Cognition and the Economics of Technological Creativity*, 57 J. ECON. BEHAVIOR & ORG. 29, 30 (2004) (arguing that economic theories “shed little light on the topics of invention, technological creativity and knowledge production”).

discourse regarding both IP and TK and, in so doing, provide policy-makers with a new approach to the debate.

## II. INTELLECTUAL PROPERTY JUSTIFICATIONS AND CRITICISMS

Invention is a terra incognita of economics.<sup>18</sup>

Copyright is about sustaining the conditions of creativity that enable an individual to craft out of thin air . . . an Appalachian Spring, a Sun Also Rises, a Citizen Kane.<sup>19</sup>

A brief consideration of the justification for intellectual property rights is necessary to set the stage. A leading casebook, *Intellectual Property in the New Technological Age*, begins by pointing out that although the concept of property “is among the oldest institutions of human civilization,” the legal protection of intellectual property arose much later.<sup>20</sup> The key problem in treating ideas as property is that ideas, unlike land or chattel, are nonrivalrous in that one person’s use of an idea does not detract from another person’s use of that idea. Yet this foundational difference between chattel and intangibles has deterred neither efforts at justification nor the entrenchment of intellectual property rights, at least in the developed industrial states, such that these rights seem no different than rights in chattel.<sup>21</sup> Today, the main justification for recognizing rights in knowledge is one of economic utility.<sup>22</sup>

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18. *Id.* at 45.

19. Paul Goldstein, *Copyright*, 38 J. COPYRIGHT SOC’Y U.S.A. 109, 110 (1991).

20. ROBERT P. MERGES ET AL., *INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE* 1 (2003). This casebook is used in this Part not only because it starkly depicts (and offers criticism of) the dominant economic incentive rationale, but also because its views as a leading casebook are the ones to which many would-be IP lawyers are exposed.

21. *See* MAY, *supra* note 1, at 52 (“Thus the possibility that it only makes sense to propose a market for knowledge if knowledge is *already* conceived of as property is hidden by the assumption that knowledge *needs* to be thought of as property to enjoy the benefits of market allocation.”).

22. *See generally* William Fisher, *Theories of Intellectual Property*, in *NEW ESSAYS IN THE LEGAL AND POLITICAL THEORY OF PROPERTY* 168, 168-72 (Stephen R. Munzer ed., 2001) (discussing the Lockean labor theory and various other theories of IP law). *But see* Jane Radin, *Property and Personhood*, 34 STAN. L. REV. 957 (1982) (arguing for a Hegelian “personhood” theory of and justification for IP protection).

## A. Dominant Economic Justification for Intellectual Property Rights

### 1. Individual Incentives

*Intellectual Property in the New Technological Age* states: “Intellectual property in the United States is fundamentally about incentives to invent and create.”<sup>23</sup> This is achieved through grants of monopoly rights. These rights are necessarily limited because “the economic incentive benefits of Intellectual Property Rights must be balanced against the costs of limiting the diffusion of knowledge.”<sup>24</sup> Although neoclassical economic theory rarely treats monopolies as enhancing public welfare, this is exactly the justification for IP rights. The same casebook, referring to Article 1, section 8, clause 8 of the U.S. Constitution affirms this tenet:

Invention and creation require the investment of resources—the time of an author or inventor, and often expenditures on facilities, prototypes, supplies, etc. 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. To profit from a new idea or work of authorship, the creator must be able either to sell it to others for a price or to put it to some use that provides her with a comparative advantage in a market.<sup>25</sup>

The notion of the creative individual, the “author,” “acting in solitude to produce new knowledge . . . lies behind the justification of [IP rights] based on the author’s encouragement and motivation to continue production.”<sup>26</sup>

If authors and inventors are unable to recoup their fixed costs because they are competing with those who can “free ride” on their work and undercut them in price, “authors [and inventors] may be expected to leave the profession in droves, since they cannot make any money at it.”<sup>27</sup> However, these rights come at a cost in that “[g]ranteeing authors and inventors the right to exclude others from using their ideas necessarily limits the diffusion of those ideas and so prevents many people from benefiting from them.”<sup>28</sup> And those who do benefit from them are likely to pay more than if monopoly rights had not been granted. Thus, IP rights impose social

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23. MERGES ET AL., *supra* note 20, at 120.

24. *Id.* at 15.

25. *Id.* at 11.

26. MAY, *supra* note 1, at 50.

27. MERGES ET AL., *supra* note 20, at 14.

28. *Id.* at 15.

costs and “the intellectual property laws can be justified by the public goods argument only to the extent that they do, on balance, encourage enough creation and dissemination of new works to offset those costs.”<sup>29</sup>

This balancing concept obscures two important elements that are a necessary part of it. First, it requires, but leaves implicit, the idea that the costs and benefits are in some manner objectively quantifiable and comparable. Second, its justification depends on IP laws striking a balance between too little and too much protection; either condition would lead to imbalance in the form of under-production of knowledge and innovations and, hence, is a net detriment to society. Importantly, this balancing point appears to exist free from both cultural norms and societal choices about the types and speed of innovation.<sup>30</sup>

## 2. *Individual Incentives Written Large*

The dominant IP justification, based on providing individual incentives, is applied on the state level: just as stronger rights given to an individual will foster that person’s creativity, so too will a state foster its collective creativity by implementing stronger IP laws. In the same way that IP laws are seen as central to the economic engine of the United States, developing states are encouraged to adopt IP laws to encourage their innovative capacity and foster economic growth. Kamil Idris, the Director General of WIPO writes that “IP is a ‘power tool’ for economic development” and that “international acceptance and utilization of IP tools means that there will be more innovation and therefore more creative change and cultural and economic growth.”<sup>31</sup> In the book *Intellectual Property and Economic Development*, Robert Sherwood presents the following “fictional” story to illustrate this common argument:

In Lima, Peru, young Carlos (a fictional proxy for much of the developing world) earns a meager living welding replacement mufflers under trucks and cars. He thinks of a clamp for simplified muffler installation. His wife is skeptical. Should he spend his nights and weekends to design and develop the clamp? He will need help fabricating a prototype. Should he involve his

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29. *Id.*

30. Mark C. Suchman, *Invention and Ritual: Notes on the Interrelation of Magic and Intellectual Property in Preliterate Societies*, 89 COLUM. L. REV. 1264, 1294 (1989) (“The legal structures [including control of innovation through monopolies on magic] that allow preliterate societies to survive as preliterate societies are precisely those with the least dynamic potential; more dynamic regimes are less likely to remain preliterate—and less likely to survive at all.”).

31. KAMIL IDRIS, *INTELLECTUAL PROPERTY: A POWER TOOL FOR ECONOMIC GROWTH* 4 (2002).

friend the metal worker? He needs money for metal and tools. Should he use the money saved under the mattress? . . . The answer to each question is strongly biased toward the negative by weak intellectual property protection. . . . In this story, lack of confidence that his idea can be protected would in all probability lead Carlos to a negative decision at each of these decision points.<sup>32</sup>

And indeed this story has a ring of plausibility to it. Just as stronger IP rights can foster creativity in one individual by shifting categories from “individual” to “state,” it is easy to suppose stronger IP laws favoring individual rights can also foster the economic growth of developing states where such states are conceived merely as an aggregation of individuals, each given an incentive to innovate.<sup>33</sup>

## B. Empirical Challenges

### 1. Individual Incentives?

Given the dominance of the economic rationale for copyright and patent laws, it is important to briefly review empirical findings on the efficacy of patent and copyright laws in fostering creativity and spurring economic development. What is surprising, given the plausibility of the economic incentive model and the zealotry with which it is promoted (by corporations, developed states, the World Bank, and WIPO), is how little support for its claims exists.<sup>34</sup>

A 1958 study by the Senate’s Subcommittee on Patents, Trademarks, and Copyrights of the Committee on the Judiciary concluded that:

[N]o economist, on the basis of present knowledge, could possibly state with certainty that the patent system, as it now operates, confers a net benefit or a net loss upon society. . . .

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32. ROBERT SHERWOOD, *INTELLECTUAL PROPERTY AND DEVELOPMENT* 197 (1990).

33. Interestingly, early economic development models revealed little about the potential role of IP rights in economic development. Neoclassical models of economic growth such as the Solow model treat innovation as exogenous and “free.” *See, e.g.*, JAMES M. CYPHER & JAMES L. DIETZ, *THE PROCESS OF ECONOMIC DEVELOPMENT* 231 (2d ed. 2004).

34. *See* Suchman, *supra* note 30, at 1290 (“Although legal economists have devoted a great deal of attention to the evaluation of Western intellectual property law, their efforts often end with bland assertions that the current regime has both costs and benefits, and that the balance between the two remains an open question.”).

. . . If 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.<sup>35</sup>

Twenty-eight years later, Professor George Priest, in a review of the economics of intellectual property law, wrote that “the ratio of empirical demonstration to assumption in this literature must be very close to zero. . . .”<sup>36</sup> Priest concludes that economists cannot answer the fundamental question of whether “the patent system or other forms of protection of intellectual property enhances or diminishes social welfare” and, hence, “economists can tell lawyers ultimately very little about how to enforce or interpret the law of intellectual property.”<sup>37</sup>

A 1991 study on the effect of patents on pharmaceutical development concluded that a patent system “is not a prerequisite for inventions” and no statistically significant relationship was found to support “[t]he hypothesis that the number of inventions would increase along with worldwide increase in patent systems . . . either in the United States or the world at large.”<sup>38</sup> Importantly, the key area requiring strong IP protection, given the high research and development costs, is the pharmaceutical industry. The case for copyrights is no better. In 1970, prior to joining the Supreme Court, Stephen Breyer argued that the need for copyright for books was minimized because of the threat of retaliation and lead-time advantages.<sup>39</sup>

Professor Peter Drahos and Professor John Braithwaite argue that “[t]here are few if any domains of human creativity where intellectual

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35. STAFF OF THE SUBCOMM. ON PATENTS, TRADEMARKS, AND COPYRIGHTS OF THE S. COMM. ON THE JUDICIARY, 85TH CONG., AN ECONOMIC REVIEW OF THE PATENT SYSTEM 79-80 (Comm. Print 1958).

36. George L. Priest, *What Economists Can Tell Lawyers About Intellectual Property: Comment on Cheung*, 8 RES. IN L. & ECON. 19, 19 (1986).

37. *Id.* at 21. Priest also states:

[A]n economist can tell a lawyer whether a particular rule will lead to more or less inventive activity, but this analysis does not provide a basis for a conclusion by the lawyer as to whether the new level of inventive activity at the new level of costs enhances or diminishes social welfare. . . . In the economics profession, not to mention the public, there is much less consensus about the welfare implications of inventive activity than there is about the welfare implications of criminal activity or pollution.

*Id.* at 22.

38. Pablo Challu et al., *The Consequences of Pharmaceutical Product Patenting*, 15 WORLD COMPETITION 65, 115 (1991).

39. Stephen Breyer, *The Uneasy Case for Copyright: A Study in Copyright of Books, Photocopies and Computer Programs*, 84 HARV. L. REV. 281, 299-302 (1970).

property rights are the main reason for inventiveness.”<sup>40</sup> The authors describe how the late eighteenth and early nineteenth centuries provided significant advances in music, literature, science, chemistry, and philosophy—despite the lack of copyright law in central Europe.<sup>41</sup> Instead, the authors assert that the key to the creativity at that and at other times was the flourishing cultures and institutions of scholarship.<sup>42</sup> Similarly, the technological preeminence of the United States in the twentieth century was not the result of its IP laws—after all, they note, the “United States was . . . one of the latest starters of the capitalist democracies in expanding the scope of intellectual property”<sup>43</sup>—but rather the result of its preeminent universities and the diversity of their students.<sup>44</sup> They write, “Our claim is simply that the two most important institutional supports of innovation—universities and intellectual property—are only parts of the story of a culture of innovation. And that universities are the more important part of those two.”<sup>45</sup> This claim finds support in the fact that two of the three most consequential scientific innovations since the First World War were products of public investment in universities: the internet and biotechnology; the third, nuclear energy, was the fruit of the Manhattan Project which drew minds from universities and other countries.<sup>46</sup> In sum, they write:

In the vast sweep of the history of human creativity the impact of intellectual property rights has been negligible because for most of that history those rights have not existed and, where they have, for the most part they have been poorly designed and even more poorly enforced. It is only with TRIPS that states have begun to systematically criminalize the infringement of intellectual property.<sup>47</sup>

## 2. *Economic Development?*

Evidence of the role of IP in fostering a state’s economic growth is at best ambivalent, and at worst negative with regard to the least-developed

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40. DRAHOS & BRAITHWAITE, *supra* note 6, at 210.

41. *Id.*

42. *Id.* at 211.

43. *Id.* at 211-12.

44. *Id.*

45. *Id.* at 212; *cf.* WASHBURN, *supra* note 8 (arguing that during the last twenty years corporations have gained unprecedented influence on the research conducted at universities while not delivering on their promises of increased revenue for universities).

46. *Id.* at 212-13.

47. *Id.* at 211.

states. If anything, stronger and more pervasive IP laws are likely to entrench the status quo between wealthy and poor states. A World Bank paper states, "Limited evidence exists regarding the usefulness of the patent system in promoting the creation of new knowledge and information in developing countries."<sup>48</sup> The empirical research is inconclusive at best.<sup>49</sup> The results of the studies on the relationship between the "strength" of a state's IP regime and its GDP are mixed, and comparisons are difficult to make given dissimilar measures of IP "strength," as well as the use of different states and time periods.

In 1990, Rapp and Rozek conducted one of the first studies on the relation between patent law and economic growth.<sup>50</sup> They found a positive correlation between IP law strength and GDP.<sup>51</sup> However, Ginarte and Parke examined the patent laws of several states from 1960 to 1990 and found no statistically significant correlation between patent strength and growth.<sup>52</sup> This study was extended by economist Keith Maskus to seventy-two states.<sup>53</sup> Maskus found no relationship between IP strength and GDP.<sup>54</sup> Robert Ostergard used a rating system for patent, copyright, and trademark laws for seventy-six states in 1988, 1991, and 1994.<sup>55</sup> Importantly, unlike prior studies that did not consider enforcement, his scale incorporated laws and enforcement scores. Ostergard's analysis revealed that, for one of the years in his study, IP variables have a negligible relationship to GDP in developed states, but a *negative* and statistically significant correlation between patent strength and GDP in the least-developed states. Summing up the situation, Ostergard points out that prior empirical work has found at most only a marginal correlation between IP

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48. Carlos A. Primo Brago et al., *Intellectual Property Rights and Economic Development* 28 (World Bank Discussion Paper No. 412, 2000).

49. OSTERGARD, *supra* note 7, at 34, 59 (arguing that developing nations adopt stronger intellectual property rights protection in response to international pressures and that stronger intellectual property rights only marginally promote economic growth).

50. Richard T. Rapp & Richard P. Rozek, *Benefits and Costs of Intellectual Property Protection in Developing Countries*, 24 J. OF WORLD TRADE, 75, 79 (Oct. 1990) ("By a well-known statistical process known as regression analysis, we have found that the level of economic development correlates closely with the level of patent protection.").

51. *Id.*

52. Juan C. Ginarte & Walter G. Park, *Determinants of Patent Rights: A Cross-National Study*, 26 RES. POL'Y 283 (1997).

53. KEITH MASKUS, *INTELLECTUAL PROPERTY RIGHTS IN THE GLOBAL ECONOMY* 5 (2000).

54. *Id.*

55. OSTERGARD, *supra* note 7, at 59.

rights and economic growth generally.<sup>56</sup> Additionally, using a more comprehensive measure that incorporates enforcement, and analyzing developing and developed states separately, there are “negligible effects and quite possibly negative effects”<sup>57</sup> from IP protection in developing states.

The above review is not intended to be exhaustive. It should, however, instill skepticism regarding the function of the dominant IP model, whether applied to the individual or to the state. Even if economists found consistent correlations between “strength” of IP laws and GDP, it would not follow that strong IP laws necessarily result in increased GDP through heightened creativity.<sup>58</sup> It is more plausible that strong IP laws reflect the prevalence of powerful corporations in states with high GDP, a point discussed in detail below.

### C. Theoretical Challenges: Indeterminacy and Authorship

In addition to the dearth of empirical—and even the existence of negative—evidence justifying the strong claim of IP proponents, scholars have leveled criticism at the theoretical justifications of intellectual property.<sup>59</sup> These theoretical critiques vary, but the most salient for this article is that of James Boyle, who brings into focus the individual bias of patent and copyright laws by using a semiotic or literary critique.<sup>60</sup> This Section ex-

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56. *Id.*

57. *Id.*

58. See DRAHOS & BRAITHWAITE, *supra* note 6, at 211, which states:

[W]e should be suspicious of incentive views of creativity. Seeing creativity as a supply-side problem that can best be met by meeting individual demand curves for intellectual property rights is an impoverished account, to say the least, of what motivates people to create. It is unlikely, for example, that those driven to write for a living will become more motivated by the extension of the copyright term from 50 years to 70 years after the death of the author, even if publishers seeking to protect monopolies in lucrative works invoke the authors' creative interests in their lobbying campaigns to get such extensions.

59. See Fisher, *supra* note 22, at 181 (“Even if we were able to surmount this enormous hurdle [of knowing whether stimulating innovation is worth its costs]—and concluded that society would be better off, on balance, by supplying authors and inventors some sort of special reward—major sources of uncertainty would remain. . . . Most [scholars] have given up the game, despairing of acquiring the kinds of information on would need”).

60. Boyle is one of several to write about the romantic authorship conception at the heart of IP laws. See also MARTHA WOODMANSEE, *On the Author Effect: Recovering Collectivity*, in THE CONSTRUCTION OF AUTHORSHIP: TEXTUAL APPROPRIATION IN LAW AND LITERATURE 15, 28 (Martha Woodmansee & Peter Jazsi eds., 1994) (arguing that

amines Boyle's "romantic author" critique of IP, in which he argues that historically contingent conceptions of the romantic author appear to resolve fundamental ambiguities underpinning economic justifications of IP laws. Boyle focuses on the ideological importance of the romantic author. It is from this foundation that my argument delves deeper in subsequent Sections by asking *why* the central conceptions of IP law appear so "authentic," despite the theoretical indeterminacy and empirical doubts of IP's efficacy in accomplishing its putative goals.

### 1. Indeterminacy

Boyle describes the indeterminacy of the dominant economic approach to justifying intellectual property law. He states:

A person reading the confident-sounding statements of legal scholars about the superior efficiency of the patent regime over the copyright regime . . . would be surprised to find that economists cannot even agree over the absolutely basic question of whether, in the absence of commodification, there will be underinvestment or overinvestment in the production of information.<sup>61</sup>

Boyle points out two key problems: (1) the contradictory roles that information plays in economic analysis, "as both perfect and imperfect, property rights in information as both necessary incentive and dubious transaction cost," and (2) "the conflict between the assumptions of microeconomic analysis and actual social behavior."<sup>62</sup> In short, this economic approach to IP "is a theory so indeterminate that it frequently functions as a Rorschach blot for dominant social beliefs and the prejudices of the ana-

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even as creative production becomes more corporate and collective, the Romantic author conception is utilized "all the more insistently").

A radical critique of some bedrock notions implicit in intellectual property—most notably, the concept of "the author" herself—has grown up in recent years, fueled by a general deconstructive trend in literary criticism. . . . [These ideas] suggest that the concept of authorship is so malleable, contingent, and "socially constructed" that we should be wary about identifying a creative work too closely with a particular author, let alone her personality. In this view, all creations are largely a product of communal forces. Dividing the stream of intellectual discourse into discrete units—each owned by and closely associated with a particular author—is therefore a logically incoherent exercise subject more to the political force of asserted authors' groups than to recognition of inherent claims of "personhood."

MERGES ET AL., *supra* note 20, at 11.

61. BOYLE, *supra* note 9, at 41.

62. *Id.* at 44-45.

lyst”; it also “tends structurally to undervalue issues of power and inequality.”<sup>63</sup>

Boyle elucidates how most issues in information economics can be seen as either public goods problems or as potential monopolies. From a public goods perspective, commodification in the form of monopolistic IP rights is an effective tonic to the underproduction of knowledge. From the latter perspective, monopolies restrict the distribution of knowledge. Boyle’s argument is that we rely on romantic conceptions of authorship (and inventorship), as reflected in legal concepts of “originality” and “novelty,” to “conceal these tensions, *aporias*, and empirically unverifiable assumptions.”<sup>64</sup> This romanticized conception of the author biases analysis “toward the incentives-commodity vision of information.”<sup>65</sup>

## 2. *The Mediating Role of Authorship*

At the heart of the dominant IP theory is the concept of an individual acting on economic incentives to produce “new” knowledge. Several scholars have written about the romantic individualistic conception of the author at the heart of copyright, and instead of recounting all of them, this Article will focus on Boyle’s assessment of the function of this conception within the dominant incentive model of the IP regime.<sup>66</sup> Boyle argues that the romantic author-centered regime structures legal and economic analysis, “providing the vital initial choices that give the analysis its subsequent appearance of determinacy and ‘commonsense’ plausibility.”<sup>67</sup> As political economist Christopher May notes, the story, or “origin myth,” of intellectual property law is that the “emergence [of intellectual property laws] was a response to the needs of individuals wishing to allocate resources among themselves.”<sup>68</sup> Boyle focuses on the centrality of the authorship conception in copyright law, but since patents must be filed by a legally constituted individual, a similar norm is applicable in patent law.<sup>69</sup>

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63. *Id.* at 45.

64. *Id.* at 42.

65. *Id.*

66. *See supra* note 60.

67. BOYLE, *supra* note 9, at 58-59.

68. Christopher May, *Fishing with Dynamite: Knowledge Commons in the Global Political Economy* (2001) (unpublished manuscript), available at <http://www.isanet.org/archive/may.html> (presented at the International Studies Association Annual Conference at Chicago in 2001).

69. 35 U.S.C. § 111 (2005); *see, e.g.*, BOYLE, *supra* note 9, at 206 (“Both areas [of copyright and patent law] apply a notion of ‘originality’ that suppresses the importance of the culture, the language, and the scientific community. . . . In each case, it is the

Yet, Boyle's view is historically contingent.<sup>70</sup> For instance, "[m]edieval church writers actively disapproved of the elements of originality and creativeness which we think of as an essential component of authorship."<sup>71</sup> Boyle, drawing on Professor Martha Woodmansee's findings that the concept of the romantic author replaced the craft-inspired model of writing in the eighteenth century, argues that IP proponents use this recent conception to justify property rights in intellectual products while maintaining belief in the free flow of information and incentives on which liberal social theory depends. The romantic author conception does this through the idea/expression distinction in copyright law.<sup>72</sup> He concludes that, starting from the romantic conception of authorship, the idea/expression division seems to resolve several problems: (1) it provides a conceptual basis for limited property rights that appears to be based on something real; (2) it provides a moral and philosophical justification for fencing the commons, which gives the author property rights in something new created from "originality of spirit"—and not merely recombining pre-existing elements; (3) it purports to limit the potential reach of a labor theory of property—by basing property rights on the originality of spirit instead of Lockean notions of labor; and (4) it conceals the tension between public and private by separating a written work into two concepts—idea and expression, in which the author assigns the idea to the public, while privatizing the expression.<sup>73</sup>

Equally important, Boyle shows how this romantic vision of authorship falls *within* economic theory itself. He writes, "the language of economic analysis provides no neat solutions to the problems of information regulation—precisely because economic analysis is marked by the same *aporias* as the rest of public discourse," namely of indeterminacy and contradiction.<sup>74</sup> Indeed, "it is the romantic vision of authorship that frequently structures . . . economic analysis—providing vital initial choices that give the analysis its subsequent appearance of determinacy and 'commonsense' plausibility."<sup>75</sup> The author concept appears to work as a basis for the IP system, but only because it defines contradictions central to microeconomics—between information as freely and universally available, and infor-

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manifestation of the appropriate kind of genius that receives protection, while the remainder is given to the public realm.").

70. BOYLE, *supra* note 9, at 53.

71. *Id.*

72. *Id.* at 53-54.

73. *Id.* at 56-58.

74. *Id.* at 58 (emphasis added).

75. *Id.* at 58-59.

mation as a good that will be under-produced in a market without incentives—out of existence by relying on the concept of “original authorship” to mediate between what is public domain and freely available and what is protected by private rights. Thus, resorting to a concept of “originality” only ostensibly resolves one set of contradictions. Although this concept appears to reflect commonsense views of creativity, it does not actually address the contradiction in economic theory any more than it tells us how much “originality” should be required for optimizing incentives.

### 3. *Authorship Effects*

Boyle reveals how this author-centered approach can result in bias against “sources” which become “commons” for which no reward is available—such that the undervaluing of sources will create a public goods problem. Boyle summarizes his argument:

It is possible to portray the fixation on originality and the neglect of sources and audience as a technical error made by the rational guardians of the legal system or as a deep plot by the multinationals. Instead, my argument has been that we need to see the romantic vision of authorship as the solution to a series of ideological problems. . . . If one is critical of a system built on its presuppositions, one must begin by understanding both its authentic appeal and the deep conceptual itches it manages to scratch.<sup>76</sup>

Boyle is correct to point to the deep appeal of IP laws with their embedded conception of individual authorship and inventorship.

For Boyle, this focus on the romantic author and the concomitant blindness to sources in IP law could have devastating consequences for both developed and developing states. With respect to TK, the treatment of TK as a free “source” within the IP regime could lead to the destruction of biodiversity and diverse cultures, even when economic analysis reveals that this is an undesirable result.<sup>77</sup> Boyle states that, within developed states, “the blindness of an author-centered regime” to freely available sources may tilt the IP regime toward expansion and in this expansion,

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76. *Id.* at 60.

77. *Id.* at 128 (describing the situation in Madagascar where the rosy periwinkle, used by indigenous people to treat diabetes, has been used as the basis of a drug to treat cancer and Hodgkin’s disease, earning the multinational pharmaceutical company around \$100 million per year). Meanwhile, much of the state’s forests have been destroyed to feed the population. Boyle writes, “Precisely because they can find no place in a legal regime constructed around a vision of individual, transformative, original genius, the indigenous peoples are driven to deforestation or slash and burn farming.” *Id.*

“deny future creators—novelists, scientists, programmers—the raw material they need to make new products [by treating them as private property].”<sup>78</sup>

Yet, despite his critique, Boyle accepts the “authenticity” of individual authors and like Lessig, another prominent IP critic, retains the fundamentals of the IP structure by emphasizing: *individual* creativity, the significance of *extrinsic* rewards, the concept of a *marketplace of ideas*, and the need for an allocation between public and private to be (re)balanced.<sup>79</sup> Accordingly, Boyle’s self-described project is not to dismantle the author concept, because in his view “it has a clear element of existential truth—our experience of authors, inventors, and artists who do transform their fields and our world, together with the belief (one I hold deeply myself) that the ability to remake the conditions of the individual life and collective existence is to be cherished and rewarded.”<sup>80</sup> Rather, he suggests that this author-centered approach results in a bias against “sources” which become “commons” for which no “reward” is available—such that their undervaluing will create a public goods problem. For Boyle, because TK often has no “romantic author” or “genius inventor” in the form central to patent and copyright laws, it becomes simply a public domain “source” for IP. Like Lessig, Boyle calls for a rebalancing of the IP laws toward the public, as well as recognition of new rights for TK holders.<sup>81</sup>

#### D. Conclusion

This Article draws on Boyle’s assessment of the lynchpin role of the romantic author but pushes beyond it by asking *why* the central conceptions of IP law appear so “authentic,” despite the theoretical indeterminacy, as well as the empirical doubts of IP’s efficacy in accomplishing its putative goals.<sup>82</sup> The answer to this question lays the foundation necessary

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78. *Id.* at 130.

79. *Compare id.* at 163-65 (“I *do* think there is something noble in originality in general and authorship in particular. . . . The tendency of the current system to undervalue the importance of the public domain can deprive the truly creative among us of the raw material necessary to create their next transformative artifacts.”), *with* LESSIG, *supra* note 1, at 286 (“Building a public domain is the first step to showing people how important that domain is to creativity and innovation. . . . Its aim is not to defeat the rights of authors, but to make it easier for authors and creators to exercise their rights more flexibly and cheaply.”).

80. BOYLE, *supra* note 9, at 60.

81. *Id.* at 168 (“We need to show much greater concern for the public domain, both as a resource for future creators and as the raw material for the marketplace of ideas.”).

82. Part of the intuitive feel of the IP regime relates to its balancing schema which is, as mentioned above, central to IP and utilitarian thinking in general. *See* Mark Johnson, *Law Incarnate*, 67 BROOK. L. REV. 949, 950 (2002) (arguing that our

to understanding the global diffusion of the IP regime. The TK discourse, especially its communal claims to creativity, should lead those of us in the West to question the universal applicability and “authenticity” of the romantic author. First, we need to go beneath the ideology and assess the accuracy of the individual author/inventor conception. Second, to the extent that conception is incorrect, we must understand the cognitive basis for its attraction and strength. Whatever the conception’s historical or political roots may be, effective transformation depends on understanding the conception’s pull on individual minds today.

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conceptualization and reasoning are shaped by our bodily interaction with the physical environment such that our thought is both “constrained by the logic of our bodily experience and at the same time dependent on various structures of imagination . . . [which are] shaped by the nature of our bodies, our brains, and the patterns of our interactions with our environment”). Although our bodily experience of balance becomes intuitive and “natural” once we reach a certain age, Boyle’s argument suggests that at least in practice there is strong reason to suspect that the IP schema is neither intuitive nor natural. Still, he holds out hope for a rebalancing. The balancing schema of IP reduces a range of social effects to figurative “weights” that then seem plausible to compare or “balance.” Like a scale, the schema balances two sides of “private” and “public” knowledge. Boyle, no less than other critics of IP such as Lessig and May, ultimately remains within this balancing frame. Such critics argue, however, that the balance keeps shifting and has shifted too far toward the private to the exclusion of the public. This is also the lens through which Boyle assesses TK, which acts as a “public” input in the IP regime. However, there are biases and blind spots in this balancing schema. As Mark Johnson notes, the notion of equality and balance necessary for utilitarian or other consequentialist reasoning “assumes that human beings, their actions, and their interests can be given numerical values, that the moral value of each action can be quantitatively assigned, and that the effects of actions can be precisely calculated.” MARK JOHNSON, *THE BODY IN THE MIND: THE BODILY BASIS OF MEANING, IMAGINATION, AND REASON* 95 (1992). A bodily bias for “balance” is likely to make such translations seem more direct and correct than they are likely to be. The IP justification, by enlisting our bodily balancing schema, encourages us to perceive this balance as plausible by taking for granted that we can measure in some unproblematic way, in the words of patent scholar Robert Merges, “the social benefit of providing economic incentives for creation and the social costs of limiting the diffusion of knowledge” in the first place. MERGES ET AL., *supra* note 20, at 17. Consider also all that is in fact taken for granted: What kinds of creations and innovations provide “social benefit” and to whom? What costs are imposed, and to whom? How should we assess a particular benefit to a particular constituency against a particular cost to another constituency? These are the kinds of questions largely absent from the IP debate.

### III. THE EMERGING TRADITIONAL KNOWLEDGE DISCOURSE

Terra nullius has its contemporary equivalent in “Bio-Nullius”—treating biodiversity knowledge as empty of prior creativity and prior rights, and hence available for ‘ownership’ through the claim to “invention.”<sup>83</sup>

The emerging TK discourse provides an external critique of the IP regime. Beginning in the late 1980s, scholars broadened their focus from “folklore” to a concept of “traditional knowledge.” The international human rights discourse also evolved to include the creativity of indigenous peoples. This development coincided with increasing international concern for the environment and biodiversity, sustainable development, and cultural survival. Yet concurrently, multinational pharmaceutical, chemical, and other companies increased their efforts to gain IP through exploration primarily in biodiversity-rich but economically-poor states.<sup>84</sup>

This Part describes the relevant issues raised by the TK discourse and explores some problematic aspects of the current form the discourse has taken. Unfortunately, the discourse has been constructed in stereotypical opposition to the IP discourse. For example, the discourse contrasts “modern,” Western individual creativity and “primitive,” indigenous collective creativity—reproducing a longstanding Western schema with origins in early social science and colonialism. Moreover, certain aspects of the TK discourse appear overly romantic and idealistic. That being said, other aspects of the TK discourse more closely relate to understandings of creativity that have emerged from social and cognitive science.

#### A. The Call for TK Rights

The issues surrounding the TK discourse are complex and contested. Industrialized states and biodiversity-rich states do not agree on what must be protected, how it should be protected, or who should benefit. The definitions of most terms in the debate are disputed, including the terms “TK,” “folklore,” and “indigenous.”<sup>85</sup> The debate over the protection of TK

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83. SHIVA, *supra* note 10, at 49.

84. Matthias Leistner, *Analysis of Different Areas of Indigenous Resources*, in *INDIGENOUS HERITAGE AND INTELLECTUAL PROPERTY* 49, 49-50 (Silke von Lewinski ed., 2004).

85. *See, e.g.*, WIPO, *Intellectual Property and Genetic Resources, Traditional Knowledge, and Folklore*, [http://www.wipo.int/about-ip/en/studies/publications/genetic\\_resources.htm](http://www.wipo.int/about-ip/en/studies/publications/genetic_resources.htm) (last visited Nov. 2, 2005) (stating that “there is to date no universally recognized definitions [sic] for traditional knowledge as such”); Peter-Tobias Stoll &

raises issues of global information flows and control over biogenetic resources and associated knowledge; the debate takes on urgency when it is thought that at current rates ninety percent of the world's languages, and the associated TK, will disappear over the next one hundred years.<sup>86</sup> There are real dollars at stake as well. Scholars estimate that nine out of ten prescription drugs are based on natural sources and that the total market value of plant-based medicines sold in OECD states was \$43 billion dollars in 1985 alone.<sup>87</sup>

Early TK proponents focused on preserving artistic aspects of cultural heritage as well as preventing deculturizing uses of and protecting the copyright and neighboring rights in expressions of folklore. In the 1960s, several African states recognized expressions of folklore within their copyright laws. This development represented one of the earliest formal legal efforts to regulate the use of "folklore" as distinct from tangible cultural heritage. Thereafter, the 1976 Tunis Model Law on Copyright in Developing Countries defined "folklore" as:

all literary, artistic and scientific works created on national territory by authors presumed to be nationals of such countries or by ethnic communities, passed from generation to generation and constituting one of the basic elements of the traditional cultural heritage.<sup>88</sup>

Unlike the copyright law of the United States, the Tunis Model Law included a paid public domain system and did not require fixation in a tangible form (for example, it protected orally transmitted works).<sup>89</sup>

In the forty years that followed, TK proponents shifted focus from folklore to broader conceptions of TK. This new concern reflected such developments as increased bioprospecting by multinational corporations, the growing importance of IP laws internationally (primarily via TRIPS), and a renewed interest in environmental sustainability (as evidenced by the U.N. Convention on Biodiversity) and the rights of indigenous peoples. The focus of the TK discourse thus shifted away from folklore to-

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Anja von Hahn, *Indigenous Peoples, Indigenous Knowledge and Indigenous Resources in International Law*, in *INDIGENOUS HERITAGE AND INTELLECTUAL PROPERTY* 5, 8-17 (Silke von Lewinski ed., 2004).

86. See Simon, *supra* note 10, at 112.

87. See IDRIS, *supra* note 31, at 244.

88. TUNIS MODEL LAW ON COPYRIGHT FOR DEVELOPING COUNTRIES § 18 (adopted by the Committee of Governmental Experts convened by the Tunisian Government in Tunis from February 23 to March 2, 1976, with the assistance of WIPO and United Nations Educational, Scientific, and Cultural Organization (UNESCO)).

89. *Id.* § 17.

ward commercial aspects of traditional knowledge, access to and control of biogenetic resources, necessity for prior informed consent, and fair compensation. Similarly, the legal focus shifted away from copyright and more toward patent, trade secret, human rights, and environmental laws.

In the last decade, the international community has become increasingly engaged in the TK debate. In 1996, Boyle wrote regarding the lack of engagement with TK concerns that “if things are changing, they are changing too slowly.”<sup>90</sup> But in 2003, anthropologist Michael Brown commented that the response to threats to native heritage has been strong and indigenous people have asserted their absolute rights over all aspects of their cultural heritage.<sup>91</sup> Indeed, TK has been taken up in numerous national and international venues,<sup>92</sup> as well as by indigenous peoples, non-governmental organizations (NGOs), and academics. Increasingly, these organizations tend to frame the TK discourse from a perspective of rights—both individual and collective rights, and in particular human rights.<sup>93</sup>

Rights entail exclusion when one person’s rights are asserted against another’s, which in turn fosters absolutism. This is readily apparent not only in the claims of supporters of the IP regime,<sup>94</sup> but increasingly hold-

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90. BOYLE, *supra* note 9, at 127.

91. MICHAEL BROWN, WHO OWNS NATIVE CULTURE? 209 (2003).

92. These venues include WIPO, UNESCO, and the WTO.

93. This treatment of intellectual property rights, with its individualist ideology, as human rights, and the the extension of this concept to the corporation may appear to be a natural extension of the modern personification of the corporation in law. In fact it represents the result of a concerted effort by corporations. See JOEL BAKAN, THE CORPORATION: THE PATHOLOGICAL PURSUIT OF PROFIT AND POWER 15-18 (2004). Bakan describes how the shift in treating the corporation itself as a real “person” subject to First and Fourteenth Amendment rights originally intended for living people was the result of lobbying efforts by corporations, which also coincided with public relations efforts to portray the corporation as a family. Bakan writes:

By the end of the nineteenth century, through a bizarre legal alchemy, courts had fully transformed the corporation into a “person,” with its own identity, separate from the flesh-and-blood people who were its owners and managers and empowered, like a real person, to conduct business in its own name, acquire assets, employ workers, pay taxes, and go to court to assert its rights and defend its actions. The corporate person had taken the place, at least in law, of the real people who owned corporations.

*Id.* at 16.

94. See, e.g., Kristin Dawkins, *Intellectual Property Rights and the Privatization of Life*, 4 FOREIGN POL’Y IN FOCUS, Jan. 1999, at 1-2. Dawkins relates the following story:

In April 1997, the U.S. State Department sent a letter to the Royal Thai Government (RTG) regarding draft Thai legislation allowing Thai

ers of and advocates for TK as well.<sup>95</sup> Notwithstanding the political merits of framing TK in terms of human rights, one of the potential costs of this approach is that it risks validating the claims of IP rights holders—mainly corporations.

Article 27.2 of the Universal Declaration of Human Rights and Article 15.1(c) of the International Covenant of Economic, Social and Cultural Rights both ground IP in a human rights framework and provide for “the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.”<sup>96</sup> Megan M. Carpenter’s recent article exemplifies the dominant rights approach to TK.<sup>97</sup> Carpenter notes that IP is under “intense debate in the emerging discourse surrounding intellectual property and human rights”<sup>98</sup> and that “[c]opyright laws, in their current formulation, are inadequate to protect the fruits of human creativity of indigenous peoples.”<sup>99</sup> Her diagnosis is that “[a]uthorship in the context of copyright laws has its grounding in Romantic Individualism, which can run directly contrary to authorship as it is conceived of by indigenous peoples.”<sup>100</sup> The solution for Carpenter is clear:

Copyright laws can, and must, be expanded in three ways so as to protect and maintain vitality of the artistic and literary works of indigenous cultures: incorporating collective and communal

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healers to register traditional medicines, thus keeping them within the public domain. The letter advised the RTG that “Washington believes that such a registration system could constitute a possible violation of TRIPs and hamper medical research into these compounds.” The State Department requested official responses to 11 questions, beginning with: “What is the relationship of the proposal to the granting of patent protection in Thailand?” and ending with: “Does the RTG envision a contractual system to handle relationships between Thai healers and foreign researchers in the future?”

*Id.* at 2.

95. See BROWN, *supra* note 91 (referring to these strong claims as seeking “total heritage protection”).

96. Universal Declaration of Human Rights, G.A. Res. 217(III)(A), at art. 27, U.N. Doc. A/810 (Dec. 10, 1948); United Nations, International Covenant on Economic, Social and Cultural Rights, G.A. Res. 2200A (XXI), at art. 15, U.N. GAOR, 21st Session, Supp. No. 16, U.N. Doc. A/6316 (Dec. 16, 1966) (entered into force on Jan. 3, 1976).

97. Megan M. Carpenter, *Intellectual Property Law and Indigenous Peoples: Adapting Copyright Law to the Needs of a Global Community*, 7 YALE HUM. RTS. & DEV. L.J. 51 (2004).

98. *Id.* at 51.

99. *Id.* at 54.

100. *Id.* at 58.

authorship; expanding originality requirements to reflect collective and communal authorship; and applying limits on the duration of protection in a broader community context.<sup>101</sup>

Carpenter justifies these changes by arguing that “all peoples should benefit” from IP laws.<sup>102</sup>

Although this assertion of rights is appealing, the basis for this assertion deserves careful scrutiny. A solution that relies on a banal assertion of “rights,” while perhaps politically useful, can no more provide a principled answer to the nature and scope of TK claims than it can define an optimal level of IP protection. Granting rights to a person or group necessarily entails costs in the form of restrictions on others.

Championing human rights in the context of TK rights for indigenous peoples is ultimately problematic. The Universal Declaration of Human Rights does not distinguish between industrial and indigenous creativity, but refers to “*the author*” (perhaps reflecting the Western individual author-centered bias).<sup>103</sup> Thus, assuming any conflict between the rights claims, appeals to human rights by developing states for the recognition of TK are likely to lend further credence to strong rights claims by Western interests. For instance, claims by developing states for TK rights are likely to run counter to developing states’ human rights claims for access to AIDS retroviral drugs free from IP constraints. After all, it is difficult to argue that the public domain of knowledge needs to be expanded by limiting IP rights, while arguing conversely that TK rights should be recognized and commoditized collectively within a bounded local or indigenous group, which necessarily effects a contraction of the public domain. This political battle could be won, but not without costs, including a lessened ability (both morally and pragmatically) for developing states to claim exceptions from or changes to TRIPS in the areas of pharmaceuticals.<sup>104</sup>

The dominance of the rights discourse and its tendency to mask distributive consequences while reproducing them on a different level is well

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101. *Id.* at 54.

102. *Id.* at 53.

103. Universal Declaration of Human Rights, *supra* note 96, art. 27.2 (emphasis added).

104. The Bellagio Declaration attempts to walk this line by seeking expansion of the public domain and rights for TK holders. *See* BOYLE, *supra* note 9, at 192; *see also* WTO, Ministerial Declaration of 14 November 2001, WT/MIN(01)/DEC/1, 41 I.L.M. 746, available at [http://www.wto.org/english/thewto\\_e/minist\\_e/min01\\_e/mindecl\\_e.htm](http://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm) (regarding the ongoing debate about the relationship between TRIPs and pharmaceuticals).

noted by anthropologist Marilyn Strathern.<sup>105</sup> In discussing the efforts of NGOs to differentiate among governments, multinationals, and indigenous peoples, she notes, “If claiming access to knowledge leads to functional social differentiation, its utility turns out, like any other resource, to be distributed among people in uneven quantities.”<sup>106</sup> While the IP discourse has largely ignored this distributive question, one of the powers of the TK discourse has been its foregrounding of the assumptions and distributive effects of the IP regime. Carpenter also addresses this point when advocating for community authorship and ownership of TK but also for limits on the duration of such rights.<sup>107</sup>

## B. The Nature of TK

The failure of the IP laws to fairly address TK is largely attributed to the different “nature” of TK. Not surprisingly, the proposed solutions, in the form of rights (whether referred to as *sui generis* or as modifications of IP laws to remove cultural bias), also rely on stated distinctions in the nature of knowledge and creativity. The depiction of TK as a mode of knowledge has largely been constructed through oppositions (this Section describes these oppositions, while the following Section critiques them). The central opposition in the IP/TK debate depicts industrial knowledge as individual in nature and TK as collective in nature. TK proponents have enlisted additional dichotomies: industrial knowledge is represented as being created “from thin air” while TK is connected to prior generations and cumulative; IP protects products while TK protects process; industrial knowledge is formal while TK is informal; and industrial knowledge is competitive while TK is cooperative.<sup>108</sup> As discussed in Section III.C below, the risk with such unrealistic (or romantic) views of creativity is that the legal prescriptions for TK may not satisfy the desired ends.

### 1. *TK is Described as Collective and Cooperative*

If, as Boyle argues, conceptions of Western IP focus on the author, TK is usually described as being owned communally. Thus, the most common difference asserted between traditional knowledge and the sorts of knowledge characteristic of industrial and post-industrial societies pits collective

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105. See, e.g., MARILYN STRATHERN, *PROPERTY, SUBSTANCE AND EFFECT* (1999).

106. *Id.* at 199.

107. See Carpenter, *supra* note 97, at 71-72.

108. See, e.g., SHIVA, *supra* note 10, at 21-39. The debate may also include more fundamental oppositions, such as local knowledge versus global knowledge, formalism versus flexibility, or individualism versus altruism.

creation and ownership against individual creation and ownership.<sup>109</sup> For example, the Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples calls for the development, in cooperation with indigenous peoples, of “an additional cultural and intellectual property rights regime incorporating . . . collective (as well as individual) ownership and origin.”<sup>110</sup> Similarly, the U.N.’s Principles and Guidelines for the Protections of the Heritage of Indigenous People states:

The heritage of indigenous peoples has a collective character and is comprised of all objects, sites and knowledge including languages, the nature or use of which has been transmitted from generation to generation, and which is regarded as pertaining to a particular people or its territory of traditional natural use.<sup>111</sup>

Also, a report prepared for WIPO on attempts to protect folklore at the international level describes the problem of the protection of folklore as being derived from the “impersonal, continuous and slow process of creative activity exercised in a given community.”<sup>112</sup> Finally, the U.N. Convention on Biological Diversity strongly supports TK protection and also characterizes TK as collective.<sup>113</sup>

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109. See, e.g., IDRIS, *supra* note 31, at 243 (putting forth the typical statement that “TK, as representative of cultural values, is generally held collectively”).

110. The Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples, at § 2.5, U.N. Doc. E/CN.4/Sub.2/AC.4/1993/CRP.5 (July 26, 1993), available at <http://aotearoa.wellington.net.nz/imp/mata.htm> [hereinafter Mataatua Declaration]. The Mataatua Declaration was the result of a meeting of more than 150 delegates from fourteen states, including indigenous representatives from Japan (Ainu), Australia, the Cook Islands, Fiji, India, Panama, Peru, the Philippines, Surinam, the United States, and New Zealand (Aotearoa).

111. U.N. Econ. & Soc. Council, Comm’n on Human Rights, Sub-Comm. on the Promotion & Prot. of Human Rights, *Report of the Seminar on the Draft Principles and Guidelines for the Protections of the Heritage of Indigenous People*, Annex I, ¶ 12, U.N. Doc. E/CN.4/Sub.2/2000/26 (June 19, 2000), available at <http://www.unhcr.ch/Huridocda/Huridoca.nsf/TestFrame/42263fd3915c047ec1256929004f1ffc?Opendocument>.

112. WIPO, *The Protection of Expressions of Folklore: The Attempts at International Level*, 56/57 INTELL. PROP. IN ASIA AND THE PAC., Jan.-June 1998, available at <http://itt.nissat.tripod.com/itt9903/folklore.htm>.

113. See Convention on Biological Diversity (CBD), Article 8(j): Traditional Knowledge, Innovations and Practices, <http://www.biodiv.org/programmes/socio-eco/traditional/default.asp> (last visited Nov. 2, 2005). Article 8(j) applies to “knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity . . . .” *Id.* The CBD website goes further to state that TK “tends to be collectively owned and takes the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices . . . .” *Id.*

Consistent with the view that TK is communally owned, advocates for the protection of rights in TK ownership worry about the risk of individuals claiming rights in the form of IP rights. Martin Khor, an economist and Director of the Third World Network, writes that companies or institutions exploiting TK in local communities “transform[] the rights of the communities (in most cases located in developing countries) into the private and monopoly rights of these institutions (in most cases located in developed countries).”<sup>114</sup> Such image comports with that put forward by the Indian scientist and environmentalist Vandana Shiva, who claims that India’s biodiversity “has always been a local community-owned and utilized resource for indigenous communities.”<sup>115</sup>

Related to its characterization as being collectively produced and thus communally owned, TK production is presented as a cooperative, as opposed to competitive, endeavor. For example, Idris points out that “[w]hile modern arts and sciences often place individual accomplishment over community development, TK systems celebrate the community’s cooperative effort.”<sup>116</sup> Similarly, Shiva writes that knowledge “is based on exchange within a community” whereas the patent regime allows knowledge to be treated as a form of capital to be used for competitive advantage.<sup>117</sup> The Mataatua Declaration calls for national and international agencies to “[d]evelop in full co-operation with indigenous peoples an additional cultural and intellectual property rights regime incorporating . . . [a] cooperative rather than competitive framework.”<sup>118</sup>

## 2. *TK is Described as Informal*

Just as TK is often characterized as “collective” and “cooperative,” it is also commonly oversimplified as being “informal.” The WIPO website refers to the relationship between intellectual property on the one hand and genetic resources, TK, and folklore on the other hand, stating that “there is already some overlap between the intellectual property system and more ‘informal’ means of protection in these areas.”<sup>119</sup> In a similar vein, Idris points to the oral transmission of TK and notes that it “remains largely un-

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114. MARTIN KHOR, INTELLECTUAL PROPERTY, BIODIVERSITY AND SUSTAINABLE DEVELOPMENT 14 (2002).

115. SHIVA, *supra* note 10, at 46.

116. IDRIS, *supra* note 31, at 242.

117. SHIVA, *supra* note 10, at 21.

118. Mataatua Declaration, *supra* note 110, § 2.5.

119. WIPO, Intellectual Property and Genetic Resources, Traditional Knowledge, and Folklore, [http://www.wipo.int/about-ip/en/studies/publications/genetic\\_resources.htm](http://www.wipo.int/about-ip/en/studies/publications/genetic_resources.htm) (last visited Nov. 2, 2005).

documented.”<sup>120</sup> Idris says this conflicts with the Western belief that “[u]nless information is developed under aseptic clinical conditions by scientific methods, it is sometimes viewed as ‘inferior.’”<sup>121</sup> Shiva goes even further by arguing that “[i]ndigenous knowledge systems are by and large ecological, while the dominant model of scientific knowledge, characterized by reductionism and fragmentation, is not equipped to take the complexity of interrelations in nature fully into account.”<sup>122</sup>

Indeed, existing IP laws work to the detriment of this informal aspect of knowledge characteristic of TK, if informal is equated with unwritten.<sup>123</sup> Hence requirements of “fixation” and complicated laboratory procedures are inimical to social practices of creativity that rely on oral transmission. Similarly, patent laws such as those in the U.S. that do not recognize prior art from outside the state as novelty-defeating unless it is in written form enable the granting of patents on inventions that are in fact not new.<sup>124</sup> Accordingly, more and more, efforts are being made to document TK, both for preservation of TK and to defeat patent claims.<sup>125</sup> However, sometimes references to informality insinuate imprecision or unarticulated norms; such characterizations are largely inaccurate, as the *Milpurrurru* case illustrates.<sup>126</sup>

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120. IDRIS, *supra* note 31, at 243.

121. *Id.* at 254.

122. SHIVA, *supra* note 10, at 22.

123. *See* JACK GOODY, *THE DOMESTICATION OF THE SAVAGE MIND 1* (1977). Goody writes:

[T]he problem [of the study of the way in which modes of thought have changed over time and space] has been complicated both by the categories and by the framework that have been used. The trouble with the categories is that they are rooted in a we/they division which is both binary and ethnocentric, each of these features being limiting in their own way. Sometimes we are still employing the simplistic categories of our folk taxonomy; where these have been abandoned, we substitute some polysyllabic synonym. We speak in terms of primitive and advanced, almost as if human minds themselves differed in their structure like machines of an earlier and later design.

*Id.*

124. *See* 35 U.S.C. § 102 (2005).

125. *See* SILKE VON LEWINSKI, *Final Considerations, in* INDIGENOUS HERITAGE AND INTELLECTUAL PROPERTY 379, 393-94 (2004) (describing the costs and benefits of TK database projects).

126. *See* *Milpurrurru v. Indofurn Party Ltd.* (1994) 54 F.C.R. 240, 245.

### 3. *TK is Described as Cumulative and Process-Focused*

TK is also conceived of as being incremental and cumulative. This conception approximates Western psychological understandings of innovation and creativity.<sup>127</sup> Accordingly “what can sometimes be perceived as an isolated piece of literature (a poem, for example) or an isolated invention (the use of a plant resource to heal wounds, for instance), is actually an element that integrates a vast and mostly coherent complex of beliefs and knowledge . . . .”<sup>128</sup> The Third World Network states that in contrast to the “one-shot concept of innovation which typifies industrial innovations,” the “knowledge of indigenous people and local communities is continuous as it modifies, adapts and builds upon the existing knowledge.”<sup>129</sup> The American Association for the Advancement of Science published a so-called handbook on TK that stresses both the communal and incremental aspects of TK.<sup>130</sup> Shiva describes as “myth” the concept of creativity and inventiveness at the heart of patent law because it “is based on an artificial construction of knowledge and innovation—that of knowledge being isolated in time and space, without being connected to the social fabric and contributions from the past.”<sup>131</sup> In opposition to this myth, Shiva posits that “[k]nowledge, however, by its very nature is a collective, cumulative enterprise.”<sup>132</sup> As a WIPO report states, the copyright law does not always protect folklore itself because the “continuous and slow process of creative activity exercised in a given community by consecutive imitation” means that there is often no “author” as defined in copyright law.<sup>133</sup> Perhaps even more broadly, given different cultural conceptions of time (for example, Hopi time as circular rather than linear), it is unclear how the linear duration of copyright and patent regimes might be modified to reflect these different conceptions.

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127. See *infra* Part VI.

128. IDRIS, *supra* note 31, at 243.

129. Third World Network, *Model Laws for the Protection of Biodiversity Knowledge in Developing Countries*, in GOOD PRACTICES AND INNOVATIVE EXPERIENCES IN THE SOUTH: SOCIAL POLICIES, INDIGENOUS KNOWLEDGE AND APPROPRIATE TECHNOLOGY: VOLUME 2 38 (Martin Kohr & Kim Li Lin eds., 2002).

130. Stephen Hansen & Justin VanFleet, *supra* note 14, at 3 (describing TK as “the information that people in a given community, based on experience and adaptation to a local culture and environment, have developed over time, and continue to develop”).

131. SHIVA, *supra* note 10, at 21.

132. *Id.*

133. WIPO Standing Comm. on Copyright and Related Rights, *Short Description of Possible Subjects for Future Review by the Standing Committee* 9, SCCR/8/2 (Aug. 28, 2002), available at [http://www.wipo.int/documents/en/meetings/2002/sccr/doc/sccr\\_8\\_2.doc](http://www.wipo.int/documents/en/meetings/2002/sccr/doc/sccr_8_2.doc).

Consider the following example of twin (*ere ibeji*) carvings as illustrative of the continuous and process-focused nature of creativity in one society, and the difficulties thus posed in terms of protecting such creativity through copyright law.<sup>134</sup> The Yoruba have one of the world's highest twinning rates and they attach special significance to twins. If twins are treated properly they can bring rewards to their family. As twins are thought to share one soul, if one twin dies there is fear the other twin will follow his or her sibling. The family with a deceased twin traditionally purchases a wooden figure from a carver who sculpts the figure more or less how he pleases. This figure undergoes ceremonies with a priestess after which it is delivered to the family, who ritually feeds it and adorns it with clothing and jewelry of spiritual significance. Over time, the dressing, feeding, and cleaning alter the original sculpture. A cumulative process such as this, in which a work is transformed over time, can raise significant questions about the "nature" of the work being protected, as well as the identity or identities of the "author."<sup>135</sup>

The above examples perhaps align with Western conceptions of artistic creativity reflected in the copyright laws, but more recently indigenous groups and developing states have focused on the attempts by corporations to obtain patents on claimed inventions that incorporate indigenous knowledge. On the one hand, a scientist in a modern laboratory facility may be able to develop a purified form or extraction of a plant used by people in one or more indigenous groups and obtain a patent on it in a relatively short period of time. On the other hand, members of indigenous communities purposefully cultivate and guide plant development over successive generations in a process of slow and cumulative change. In the latter instance, patent rights are unlikely to be available for a number of reasons, not least because of the gradual changes and the involvement of different people over multiple generations.<sup>136</sup>

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134. Brad Simon, *The Envisioning of Envisioning Africa*, 16 J. OF MUSEUM ANTHROPOLOGY 55 (1992).

135. Broad claims of community ownership are no more appropriate, in this cultural context, than assertions of "romantic authorship" for the carver under copyright law. Applying copyright norms to these figures requires identifying the work, at a given point in time, as a static product associated with a given author; and, in so doing, stripping these works of their highly specific cultural meanings.

136. See Hansen & VanFleet, *supra* note 14, at 12-13 (arguing that patents would most likely not be available in such a situation of cumulative change and multi-generational participation).

### C. Destructive Dichotomies

Broad claims of the oppositional differences described in Section III.B above should be assessed with suspicion. Associating modern society with individualism and traditional society with collectivism replays the schema common in early anthropology and recalls to mind Durkheim's focus on the collective representations of "primitive" societies.<sup>137</sup> As discussed below, opposing the "natures" of moderns and primitives has been rejected in current anthropology. Although some scholars claim that these classifications persist in vestigial form to the extent anthropological explanations view the focus on individual consciousness as specific to Western society and often ignore individual rationality and consciousness in the study of non-Western groups.<sup>138</sup>

This debate about modes of knowledge was, in the past, constituted by anthropologists in dichotomous terms. Jack Goody, in summarizing the literature, cites the following oppositions:

primitive	advanced
savage	domesticated
traditional	modern
'cold'	'hot'
(closed)	(open)
(developing)	(developed)
(pre-logical)	(logical)
mythopoeic	logico-empirical <sup>139</sup>

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137. See, e.g., EMILE DURKHEIM, *THE ELEMENTARY FORMS OF RELIGIOUS LIFE* 217-18 (Karen E. Fields trans., Free Press, 1995) (1912) ("Every emotion expressed resonates without interference in consciousnesses that are wide open to external impressions, each one echoing the others.").

138. See NIGEL RAPPORT & JOANNA OVERING, *SOCIAL AND CULTURAL ANTHROPOLOGY* 185 (2000) (claiming that this methodological approach leads anthropologists to treat their subjects as having less personal complexity than we attribute to ourselves).

139. GOODY, *supra* note 123, at 146-47.

In 1977, Goody wrote that these oppositions, while reflecting some differences in cognitive styles noted by anthropologists, namely in abstract science and history as against more concrete forms of knowledge and mythical thought, ultimately limit our understanding of these differences and their changes over time and space, particularly in terms of systems of writing versus oral tradition.<sup>140</sup> Rather than assert binary oppositions to understand differences in cognitive styles, Goody argues that attention should be paid to the “role of changes in the means and mode of communication” with emphasis on historical, sociological, and “psycho-biological” factors.<sup>141</sup>

The destructive nature of these dichotomies in terms of promoting the TK discourse can be seen in the conception of TK as cooperative versus IP as competitive, as introduced in Section III.B.2 above. While competition remains a central value in the West, this gloss reproduces the old social science view that non-Western societies form an organic whole, in which there is a *conscience collective*. This characterization fails to capture the nuances and complexities of the reality in both developed and developing countries. After all, there is also likely to be a large amount of cooperation in the major loci of innovation in the West, the corporation.

Opposing individual to communal and competitive to cooperative makes too broad a sweep, even if there is value in the concept of communal ownership. For example, the Australian case *Milpurrurru v. Indofurn Party Ltd.* illustrates why the individual/collective dichotomy is unlikely to provide helpful prescriptive guidance in protecting and encouraging TK.<sup>142</sup> In this case, where the works of several Aboriginal artists depicting sacred dreamtime designs were incorporated into carpet designs without the artists’ permission, the court made it patently clear that the artists were embedded in a socio-cultural context that gave them explicit rights and duties. The judge noted that “the skill of each of the artists is recognised

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140. *Id.* at 149.

141. *Id.* at 162. For a fascinating recent ethnographic example, see PATRICIA MARKS GREENFIELD, *WEAVING GENERATIONS TOGETHER: EVOLVING CREATIVITY IN THE MAYA OF THE CHIAPAS* 149 (2004) (concluding that variability in weaving patterns in a small Mayan village has changed dramatically since the author’s fieldwork began in the 1960s). At that time, Marks Greenfield found that creativity was exclusively a matter of community identity and tradition. By the 1990s, however, due in part to the rise of commerce and money, the proliferation of an “infinite array” of textile patterns led her to conclude, “What Western scholars call creativity—individual uniqueness—has arrived . . .” and that “[w]hat had been assumed to be a universal definition of creativity was proving, in the Zinacantec visual realm, to be historically contingent.” *Id.*

142. (1994) 54 F.C.R. 240, 245 (describing the culturally specific allocation of rights to create paintings depicting the dreamtime); see *supra* note 13 for description.

[sic] nationally and internationally as exceptional.”<sup>143</sup> At the same time the “rights” of the artists are subject to highly specific cultural constraints and expectations. The judge wrote:

Painting techniques, and the use of totemic and other images and symbols are in many instances, and almost invariably in the case of important creation stories, strictly controlled by Aboriginal law and custom . . . . The right to create paintings and other artworks depicting creation and dreaming stories, and to use pre-existing designs and well recognised totems of the clan, resides in the traditional owners (or custodians) of the stories or images. Usually that right will not be with only one person, but with a group of people who together have the authority to determine whether the story and images may be used in an artwork, by whom the artwork may be created, to whom it may be published, and the terms, if any, on which the artwork may be reproduced.<sup>144</sup>

The judge further noted that even Aboriginal law limits the reproduction of artwork within the local community, with factors affecting such limitations including “the clans concerned and the significance of the imagery and dreaming which is reflected in the particular artwork.”<sup>145</sup>

Opposing Western individualism to indigenous collectivity is a poor reflection of more nuanced social reality; and relying on this distinction is likely to lead to equally poor international legal regimes. Creativity is a social process with individual participants, and is conceived and structured differently in diverse societies. *Milpurrurru* illustrates that within Aboriginal social norms, individuals were granted rights, along with responsibilities, to produce works containing sacred symbols. These individuals were situated within a complex and larger social context, in which other members of the community had rights (traditionally) to punish infractions of highly particular customary norms. The next Part looks at findings in Western science, namely social and cognitive psychology, to dispel the myth that creativity, even in the West, is about romantic authors or genius inventors, notwithstanding our belief, and even felt experience that this is so.

#### **D. Conclusion**

In summary, the “nature” of traditional knowledge as asserted by many TK proponents has largely been constructed in overly oppositional

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143. *Milpurrurru*, 54 F.C.R. at 243.

144. *Id.* at 245-46.

145. *Id.* at 247.

terms. Such characterizations will likely fail to map onto the lived practices of diverse peoples. The cultural particulars relating to creativity and innovation are likely to be quite diverse and worthy of study in themselves, rather than assumed out of existence through false dichotomies. This variability is evidenced by the social practices illustrated in the Australian carpet case, the Yoruba twin carving tradition, and a range of culturally variable practices around cultivation and medical use of plants.

Moreover, the assertions of differences between TK and industrial knowledge replay a longstanding debate within the social sciences on the understanding of contrasting modes of thought. In the past this debate has largely been constituted in dichotomous terms that today's anthropologists have strongly rejected. Goody's warning in 1977 remains relevant as the current TK debate moves from political project to prescriptive law: "the polemic that is generated by treating theory as a matter of binary opposition does not always provide the best atmosphere for intellectual advance; unsatisfactory solutions are often provoked by unsatisfactory formulations . . . ." <sup>146</sup>

Yet proponents seeking to protect TK have largely accepted that the IP regime accurately matches the sort of knowledge production practices of the industrial West and sought to justify new protection for TK on the basis of collective, cooperative, informal, and process-focused kinds of knowledge production practices. To the extent that the "informal" characterization of TK reflects a fundamental difference arising from its oral nature, a key challenge remains to articulate a legal regime that preserves this informality rather than channels it into written forms. The drive to formality has already informed the efforts to document TK to defeat patents and is likely to continue as TK is taken up in international legal forums. As the TK discourse gains momentum, more consideration should be given to its potential downsides. The above assessment suggests that both the IP and the TK discourse enlist and reify unrealistic conceptions of creativity and replicate longstanding oppositions, which are often harmful to indigenous peoples. To the extent this is being done, institutions that become locked in oppositional discourse are not going to be the most effective agents for change. The next Part attempts to use insights from the psychology of creativity as a lens through which to view and critique IP and TK.

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146. Goody, *supra* note 123, at 161.

#### IV. A SCIENTIFIC CONCEPTION OF CREATIVITY

Although we may have the feeling that we do our cognitive work in isolation, we do our most important intellectual work as connected members of cultural networks. This gives our minds a corporate dimension that has been largely ignored until recently.<sup>147</sup>

This Part attempts to inform the TK and IP discussion with teachings from the science of creativity, which underpins innovation. Law Professor John Hanson and attorney David Yosifon write that “to best promote human understanding and well-being, legal theories must be anchored in a reality-based understanding of human thinking and behavior.”<sup>148</sup> Although one cannot expect any particular understanding of human nature to dictate what laws should be, our laws should be formulated in light of our best understanding.<sup>149</sup> A desire to understand the biological and psychological nature of human creativity should be at the heart of our intellectual property laws, since these laws are, after all, defined to foster “creations of the mind.”<sup>150</sup> In this Part, I make no distinction between “artistic” and “inventive” creativity, or between the domain of copyright and patent, because I have not found such a distinction made in the psychological literature, and because the psychological findings I discuss here relate to both. As discussed below, the absence of understanding of human creativity evidenced in the public discussions of IP and the blindness of the dominant economic rationale to these findings is startling and unjustifiable.

In the last two decades, creativity has been a subject of increasing focus within psychology.<sup>151</sup> However, economics has been all but silent on a

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147. MERLIN DONALD, *A MIND SO RARE: THE EVOLUTION OF HUMAN CONSCIOUSNESS* 298 (2002).

148. Jon Hanson & David Yosifon, *The Situation: An Introduction to the Situational Character, Critical Realism, Power Economics, and Deep Capture*, 152 U. PA. L. REV. 129, 183 (2003).

149. See, e.g., STEVEN PINKER, *THE BLANK SLATE* 173 (2002) (“For efforts at social change to be effective, they must identify the cognitive and moral resources that make some kinds of change possible. And for the efforts to be humane, they must acknowledge the universal pleasures and pains that make some kinds of change desirable.”).

150. WIPO, *About Intellectual Property*, <http://www.wipo.int/about-ip/en> (last visited Nov. 3, 2005).

151. TERESA M. AMABILE, *CREATIVITY IN CONTEXT: UPDATE TO THE SOCIAL PSYCHOLOGY OF CREATIVITY* 16 (1996) (stating that in 1983 there were only two researchers who had produced a significant amount of work on the social psychology of creativity, but since then many more researchers have focused on this issue); see also Robert J. Sternberg & Todd I. Lubart, *The Concept of Creativity: Prospects and*

theory of creativity and seemingly impervious to the influences of the psychology of creativity. As economist Gary Magee notes, economic theories “shed little light on the topics of invention, technological creativity and knowledge production.”<sup>152</sup> As another economist describes the situation:

“New ideas” are simply taken to be an exogenously determined function of “research effort” in the spirit of a humdrum conventional relationship between inputs and outputs. Essentially, this approach represents a theory of knowledge production that tries to do an end run around describing the creative act that produces new ideas.<sup>153</sup>

This blind spot in a social science based on the exchange of goods in the market by wealth-maximizing individuals is, not surprisingly, ostensibly made irrelevant in the IP model by granting “romantic authors” and “genius inventors” rights they can exchange on the free market. The lack of engagement by IP proponents, policymakers, and even scholars with the “nature” of creativity should give us pause as we expand these laws nationally and internationally.

#### A. Social Creativity

The literature on the psychology of creativity is copious.<sup>154</sup> It reveals that the classic economic incentive model and notions of romantic authors and genius inventors are, at best, impoverished simulacra of humanity and, at worst, fundamentally incorrect. More remarkably, the conception of creativity as framed in the TK discourse is revealed to be a more accurate characterization of human creativity.

An article entitled “Creative Cognition” framed the inquiry this way:

A question that naturally arises in considering human accomplishment is the extent to which it springs from the singular efforts of a few individuals whose minds work in special and mysterious ways versus the more distributed efforts of the vast bulk of humanity whose minds all work in roughly the same, plainly

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*Paradigms*, in HANDBOOK OF CREATIVITY 3 (Robert Sternberg ed., 1999) (describing creativity as a neglected research topic).

152. See Magee, *supra* note 17, at 2.

153. *Id.* (quoting M.L. Weitzman, *Hybridizing Growth Theory*, 85 AM. ECON. REV. 207, 209 (1996)).

154. See, e.g., HANDBOOK OF CREATIVITY (Robert Sternberg ed., 1999); TERESA M. AMABILE, *supra* note 151; GILLES FAUCONNIER & MARK TURNER, *THE WAY WE THINK: CONCEPTUAL BLENDING AND THE MIND'S HIDDEN COMPLEXITIES* (2003).

generative ways. Is cumulative progress the province of a small set of geniuses or should the glory be spread more broadly?<sup>155</sup>

Although the IP regime, intent on fitting reality into its models, has resolved this question in favor of the singular efforts of individuals, the trajectory in the science of creativity, intent on fitting its models to reality, has shifted toward a distributed model of creativity. Unlike the commonly held view that “creativity is limited to a certain class of gifted or specially talented people” inscrutable to outside understanding, the psychology of creativity emphasizes that the “creative capacity is an essential property of normative human cognition and that the relevant processes are open to investigation.”<sup>156</sup>

The key global finding of these investigations is that creativity is much more affected by social factors and unconscious processes than is reflected in the IP laws. This “fundamental attribution error,” and its implications for the IP regime, are taken up in detail in Part VI below.

### 1. *Social Factors*

The study of the psychology of creativity has yielded strong evidence that broad social or systemic factors are crucial to creativity. According to several psychologists, these extra-individual aspects of creativity may even be a necessary aspect of the definition of creativity. Accordingly, a systems approach to creativity recognizes that while originality and divergence of thought may be desirable as personal traits, without public recognition they do not constitute creativity. As psychologist Mihaly Csikszentmihalyi writes regarding creativity tests:

The underlying assumption is that an objective quality called “creativity” is revealed by the products, and that judges and raters can recognize it. But we know that expert judges do not possess an external, objective standard by which to evaluate “creative” responses. Their judgments rely on past experience, training, cultural biases, current trends, personal values, and idiosyncratic preferences. Thus, whether an idea or product is creative or not does not depend on its own qualities, but on the effect it is able to produce in others who are exposed to it. Therefore it follows that what we call creativity is a phenomenon that is con-

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155. Thomas B. Ward et al., *Creative Cognition*, in HANDBOOK OF CREATIVITY 3, 189 (Robert Sternberg ed., 1999) (“We do not pretend to have the answer to this question in its grandest sense, but we do have the perspective that the capacity for creative thought is the rule rather than the exception in human cognitive functioning.”).

156. *Id.* at 190.

structured through an *interaction between producer and audience*.<sup>157</sup>

This belief that “creativity is not the product of single individuals, but of social systems making judgments about individuals’ products”<sup>158</sup> holds that creativity can be located only where the cultural domain, the social field and the individual meet.<sup>159</sup> New variations depend on the domain because “it is impossible to introduce a variation without reference to an existing pattern.”<sup>160</sup> In this model, the domain transmits information to the individual who produces a novel variant, which must then be selected by the social field for inclusion into the domain.<sup>161</sup> For a change to be deemed creative, it must alter the way people think, feel or act—and this “presupposes a community of people who share ways of thinking and acting.”<sup>162</sup>

Although some individuals are more likely than others to make changes—either because of their personal qualities or because of better access to the domain—given social configurations of inclusion and exclusion, most novel ideas will evaporate, as they will not be adopted “unless they are sanctioned by some group entitled to make decisions as to what should or should not be included in the domain.”<sup>163</sup> Csikszentmihalyi calls such groups “gatekeepers.”<sup>164</sup> Their role is rarely questioned, no doubt because we intuitively think of creativity as a fundamentally individual trait. Yet, as Csikszentmihalyi points out, “[i]n physics, the opinion of a very small number of leading university Professors was enough to certify that Einstein’s ideas were creative.”<sup>165</sup> This example suggests that some groups or institutions may be able to “develop protective boundaries around their knowledge.”<sup>166</sup>

The focus on the domain and the field, as well as the individual, leads to a host of provocative questions and hypotheses. Some examples of how culture is expected to increase the incidence of creativity in this systems perspective include written mechanisms of information storage, ease of accessibility of information, diffusion of information, degree of differen-

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157. Mihaly Csikszentmihalyi, *Implications of a Systems Perspective for the Study of Creativity*, in HANDBOOK OF CREATIVITY 313, 314 (Robert Sternberg ed., 1999).

158. *Id.* at 315.

159. *Id.* at 314-315.

160. *Id.* at 314.

161. *Id.* at 315.

162. *Id.* at 316.

163. *Id.* at 315.

164. *Id.*

165. *Id.*

166. *Id.* at 317.

tiation within the culture, and the openness of the culture to other cultures.<sup>167</sup> The social context could also be expected to influence the incidence and nature of creativity such that value placed on innovation, type of economic structure, increased external threats and internal strife, and increased social mobility are all expected to affect innovation within a society.<sup>168</sup> The point here is not to assess these claims or to apply them to the literature on the cultural differences in creativity, which is a separate but important topic.<sup>169</sup> Rather, notwithstanding the individual differences in creative capacity, “in the last analysis, it is the community and not the individual who makes creativity manifest.”<sup>170</sup> It is not, however, the community as an undifferentiated mass with a collective consciousness.

The psychologist Merlin Donald, in tracing the hypothetical evolution of human culture and cognition from mimetic to mythic and then to theoretic stages,<sup>171</sup> writes:

Collectivity has thus become the essence of human reality. Although we may have the feeling that we do our cognitive work in isolation, we do our most important intellectual work as connected members of cultural networks. This gives our minds a corporate dimension that has been largely ignored until recently. The word “corporate” usually refers to institutional entities, such as banks and governments. This is not so anomalous a label as it might seem because corporations are unified in a cognitive sense, just like the body of living organisms. But unlike organisms, which are locked in on themselves, corporations can distribute their intellectual work over many minds and employ various external symbolic devices, such as writing systems and computers, to facilitate this distribution process. They can develop corporate perceptions, ideas, agendas, and even personalities. Individual minds are thus integrated into a corporate cognitive

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167. *Id.* at 317-18.

168. *Id.* at 319-23.

169. See Todd I. Lubart, *Creativity Across Cultures*, in HANDBOOK OF CREATIVITY 339 (Robert Sternberg ed., 1999) (stating that analysis of creativity in diverse cultures shows that creativity is context dependent in that culture is implicated in defining the nature of creativity and the creative process (for example, product focused in the West versus process focused in the East), channeling creativity, and both facilitating and inhibiting the overall level of creativity); see also, Dharm P.S. Bhawuk, *Culture's Influence on Creativity: The Case of Indian Spirituality*, 27 INT'L J. OF INTERCULTURAL REL. 1 (2003) (arguing that culture, *Zeitgeist*, and genius have reciprocal relationships in shaping creativity and exploring this framework to creativity in modern Indian spirituality).

170. Csikszentmihalyi, *supra* note 157, at 333.

171. DONALD, *supra* note 147, at 259-300.

process, in which single individuals rarely play an indispensable role.<sup>172</sup>

We are nonetheless often blinded to the socially distributed, and to a large extent collective (although not in the Durkheimian sense of a single shared *conscience collective*), nature of our cognition. It is yet another example of the fundamental attribution error taken up in Part VI. As Donald describes this broader situation:

It is fairly easy to visualize the distributed work of great numbers of laborers, such as those who built the pyramids, invaded Gaul, or built thousands of Model T Fords. But it is difficult to imagine how that same metaphor applies to mental work. Nevertheless, the invisible mental labors of generations of scholars and composers, stock exchanges, research institutes, software sweatshops, and bureaucracies are also distributed, just like those of an assembly line. Distributed cognitive systems employ thousands of human beings for various collective agendas. Workers in such systems are, in their collective and professional identities, nodes in a distributed network . . . . The best an individual can hope for is a small degree of uniqueness, perhaps by becoming the conduit of new collisions of ideas or conjoining vectors on thoughts that have never before been brought together.<sup>173</sup>

With this more enlightened analytical framework for understanding creativity, the treatment of the works in *Milpurrruru*<sup>174</sup> under copyright law can now be re-assessed. Not only did the applicable copyright law fail to cognize the relevant cultural dimensions of the harm caused by the imposition of Western conceptions of originality, art and property, but it also seems descriptively false, in light of what Western science teaches about the nature of creativity. However else we may judge the art and cultural practices of Aboriginal people, the above case suggests we need to at least consider viewing the legal norms of the Aboriginal people as more cognitively correct than those norms commonly found in the West to the extent that the former explicitly make salient broader social factors of creativity. This is neither to accept the prescriptions of Aboriginal customary law (which required death for those who violated the cultural restrictions) nor to romanticize it, but only to point out its recognition of the embeddedness of individual creativity within a broader social context—no less true for Aboriginals than for modern (or post-modern) Westerners.

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172. *Id.* at 298.

173. *Id.* at 299.

174. *See supra* note 13.

## 2. *Perverse Incentives*

Harvard Business School Professor Teresa M. Amabile has spent years conducting experiments on the social psychology of creativity, a field she helped create.<sup>175</sup> She has focused much of her work on motivation, which was first investigated in relation to creativity in the 1960s.<sup>176</sup> This research suggests that creativity is fostered by a person's involvement with the task and hindered by an over-concern with the ego.<sup>177</sup> As she describes it, "The identification of two types of motivation—one conducive to creativity and one harmful—was a breakthrough in research on the forces driving creativity."<sup>178</sup> However, this research lay dormant while investigators focused on personality characteristics thought to be central to creativity.<sup>179</sup> In the 1980s, Amabile proposed a hypothesis of creativity, which posits that the "intrinsically motivated state is conducive to creativity, whereas the extrinsically motivated state is detrimental."<sup>180</sup> Intrinsic motivation is defined as the desire to engage in an activity primarily for its own sake whereas extrinsic motivation focuses on meeting a goal external to the work itself, "such as attaining an expected reward."<sup>181</sup> Assessing the incorporation of this theory by other creativity researchers, Amabile and Collins write "most current theories that have considered the role of motivation in creativity agree that intrinsic motivation is beneficial to creativity."<sup>182</sup>

Interestingly, several experiments have shown that certain kinds of extrinsic motivation are *detrimental* to creativity. One experiment showed that competing for prizes for the maker of the "best" products undermined creativity.<sup>183</sup> Another study found that people who produced collages under expectation of expert evaluation were "significantly less creative than those who did not expect their work to be evaluated."<sup>184</sup> In another experiment, poems were judged to be less creative when the writers focused on extrinsic reasons for writing than when they did not focus on extrinsic

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175. AMABILE, *supra* note 151, at xi.

176. Mary Ann Collins & Teresa M. Amabile, *Motivation and Creativity*, in HANDBOOK OF CREATIVITY 297, 299 (Robert Sternberg ed., 1999).

177. *Id.* at 298-99.

178. *Id.* at 299.

179. *Id.*

180. *Id.* (quoting TERESA M. AMABILE, THE SOCIAL PSYCHOLOGY OF CREATIVITY 91 (1983)).

181. *Id.* at 299-300.

182. *Id.* at 300.

183. *Id.* at 302.

184. *Id.*

motivation.<sup>185</sup> The aforementioned studies may be challenged and their application to patent law questioned, but those concerned with human creativity, including IP advocates, cannot in good faith ignore the possibility that patents, designed as extrinsic motivators, might actually inhibit individual creativity.

Although some studies have demonstrated the positive effects of extrinsic motivation, such studies usually used specific instructions on *how* to be creative.<sup>186</sup> The “Intrinsic Motivation Hypothesis,” which is now known, after years of studies confirming it, as the “Intrinsic Motivation Principle” states:

Intrinsic motivation is conducive to creativity; controlling extrinsic motivation is detrimental to creativity, but informational or enabling extrinsic motivation can be conducive, particularly if initial levels of intrinsic motivation are high.<sup>187</sup>

Amabile and Collins advise that “[t]he most straightforward way to preserve intrinsic motivation and enhance creativity is to reduce the emphasis on such extrinsic constraints in the social environment.”<sup>188</sup> Further, Amabile suggests that “high levels of intrinsic motivation are particularly important when the emphasis is on novelty” and that extrinsic concerns are likely to be especially detrimental in that context.<sup>189</sup>

This central insight gleaned from myriad experiments merits repeating: While intrinsic motivation fosters creativity, extrinsic motivations (e.g., rewards) inhibit individual creativity. It may appear that this finding challenges the very underpinning of the IP regime, which as Merges notes “is fundamentally about incentives to invent and create.”<sup>190</sup> If extrinsic rewards are a hindrance to individual creativity (all of these studies focus on individual subjects), then the idea that the IP regime is to be judged based on a balancing of the social benefits of economic incentives for *increased* creativity with the social costs of limiting the spread of creativity embeds a false premise that increased economic incentives foster creativity. This premise may be only partially false, however, as these studies, focused on individual creativity, do not directly apply to corporate forms of creativity, and it may be the case that the IP regime’s monopoly rights impede indi-

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185. *Id.* at 303.

186. *Id.* at 303-04.

187. *Id.* at 304. (quoting TERESA M. AMABILE, CREATIVITY IN CONTEXT: UPDATE TO THE SOCIAL PSYCHOLOGY OF CREATIVITY 119 (1996)).

188. *Id.* at 306.

189. *Id.* at 305.

190. MERGES ET AL., *supra* note 20, at 10.

vidual creativity while they foster corporate power, including the power to innovate, as discussed in Part V. Even so, the economic assumption that extrinsic incentives necessarily foster creativity must be rejected as reflecting and perpetuating a naïve and largely false understanding of human creativity.

### **B. The Creative Unconscious and Conceptual Blending**

Just as studies in social psychology affirm that social factors (beyond extrinsic rewards) play a far larger role in creativity than acknowledged in the West or reflected in its IP regime, cutting-edge cognitive science instructs that most “individual” creative processes occur unconsciously through a process called “conceptual blending.” As cognitive scientists Gilles Fauconnier and Mark Turner describe it, “conceptual blending choreographs vast networks of conceptual meaning, yielding cognitive products that, at the conscious level, appear simple” but “[t]he way we think is not the way we think we think.”<sup>191</sup>

As conceived by Fauconnier and Turner, conceptual blending involves two or more “small conceptual packets constructed as we think and talk, for purposes of local understanding and action.”<sup>192</sup> A third mental packet, the “generic space,” maps onto each of the inputs and contains the shared elements of the two initial input spaces. A fourth mental space, the “blend,” receives selective projections from the first two input spaces. This blend develops emergent structures, not present in either of the input spaces, through processes of composition, completion, and elaboration.<sup>193</sup>

Conceptual blending is a process thought to underlie much of human creativity.<sup>194</sup> Yet even in this “micro” approach to creativity, culture rears its head. According to Fauconnier and Turner:

Although it can be hard to come up with good projections, once the culture has them they are easily learned, precisely because cultures have invented systems of form, such as language, whose purpose is to prompt for various kinds of imaginative work like selective projection. Finding a blend for which the culture has no previous recipe can involve considerable amounts of unconscious cognitive exploration, but using the formal prompts pro-

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191. FAUCCONNIER & TURNER, *supra* note 154, at v.

192. *Id.* at 40.

193. *Id.* at 17-38.

194. *Id.* at 38 (“What has occurred, then, is a convergence toward the essential idea that there is a single mental operation involved in creativity in a number of different domains.”).

vided by culture to reconstruct such a blend once it has been found is much easier.<sup>195</sup>

In short, creativity is intimately related to the unconscious *and* to culture. Yet the dominant economic underpinnings of the IP regime are feeble because they incorrectly focus on culturally neutral individual, conscious choice and disposition, tempered only by extrinsic economic incentives.

### C. Conclusion

Creativity is more significantly affected by social factors and unconscious processes than the IP model of the rational actor as romantic author suggests. The IP model foregrounds individual creativity when creativity is fundamentally social. To the extent that creativity is an individual accomplishment, it is largely achieved through unconscious universal cognitive processes such as conceptual blending and not through individual dispositions arrived at through introspection. Finally, the current IP model calls for extrinsic incentives, which research shows inhibit creativity.

The conception of TK as socially-embedded creations (but not as communal creations that are completely and uniformly distributed in a social group), as based on cumulative innovations, and as connected to the larger environment meshes far more closely with the emerging scientific understanding of creativity. However, an argument could also be made that the relation of much TK to myth, such as the role of the dreamtime in the designs at issue in *Milpurruru*,<sup>196</sup> reflects—in culturally specific terms—a greater awareness of the unconscious factors central to all creativity than the prevalent IP model reflects.

## V. CORPORATE CREATIVITY

New ideas are the precious currency of the economy, but generating them doesn't have to be a mysterious process. The image of the lone genius inventing from scratch is a romantic fiction. Businesses that constantly innovate have systematized the production and testing of new ideas, and the system can be replicated by practically any organization.<sup>197</sup>

As discussed above, IP law and theory have thus far turned a blind eye to scientific insights about creativity. Corporations, however, have not.

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195. *Id.* at 73.

196. See *Milpurruru v. Indofurn Party Ltd.* (1994) 54 F.C.R. 240.

197. Andrew Hargadon & Robert I. Sutton, *Building an Innovation Factory*, in HARVARD BUSINESS REVIEW ON INNOVATION 55 (2001).

Corporations that promote IP conceptions of creativity externally simultaneously promote TK-like conceptions of creativity internally. While the irony of this may be blithely ignored, its existence is irrefutable. There are two important points to note about corporate creativity. First, despite the theoretical indeterminacy and empirical uncertainty of the role of the IP regime in fostering creativity (either individual or writ large onto developing states), the IP regime undoubtedly benefits corporations over all other groups. Second, corporations are well aware of and utilize the insights from social and cognitive psychology in fostering creativity among their workforce. As a result, corporations wield immense power over both the production of creativity and its profits.

### A. Corporations Benefit

Intellectual property laws are being strengthened, lengthened, and globalized with corporations as the primary beneficiaries. Lessig traces the expanding ambit of protection in copyright law through an increasing duration (from an average of 32.2 years in 1972 to 95 years today), a broadening scope (from regulating publishers to regulating users), and an emerging practice of treating almost all electronic uses as potentially infringing “reproduction[s].”<sup>198</sup> He argues that this expansion, in connection with market consolidation, curbs individual freedom.<sup>199</sup>

Although the evidence proving the incentive model is at best uncertain, it is clear that the expanding IP system supports the interests of corporations, primarily multinational ones.<sup>200</sup> The 1999 UNDP Human Development Report found that companies from developed states hold 97% of all patents worldwide, that over 80% of the patents granted in developing states are owned by residents in the developed world, and that the top five biotechnology companies control over 95% of gene transfer patents.<sup>201</sup> The story of how several multinational corporations in the United States formed the Intellectual Property Committee to lobby the United States government to include strong intellectual property protection as part

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198. LESSIG, *supra* note 1, at 131-73.

199. *Id.* at 169.

200. *See, e.g.,* Hansen & VanFleet, *supra* note 14, at 5 (arguing that “there has been a clear bias” in the IP regime in favor of the creative efforts of corporations by allowing them to derive benefits “from their use of indigenous knowledge with disregard for the moral rights and material (financial) interests of indigenous peoples themselves”).

201. 1999 UNDP Human Rights Development Report 68, *available at* <http://hdr.undp.org/reports/global/1999/en> [hereinafter UNDP Human Rights Development Report].

of the World Trade Organization (WTO) is well documented.<sup>202</sup> These corporations assisted the United States negotiators and teamed up with their industry counterparts in Europe and Japan to leverage their common interests. As Peter Drahos comments, “[m]ultinationals had better information about the strategic use of intellectual property portfolios in various markets around the world than did most governments.”<sup>203</sup>

In his book *A Global Political Economy of Intellectual Property Rights*, May argues that corporations, as legal individuals benefit more from IP rights than real individuals.<sup>204</sup> He states, “[t]hough some individuals may still be able to build considerable power based on their work or individuality, in most circumstances it remains the knowledge using and reproducing companies who benefit most from the commodification of knowledge.”<sup>205</sup> The IP regime allows these companies to maximize their gains through monopoly rents. Simultaneously, the promise of these gains and the dominance of corporations in the economy leads most individuals to transfer their rights to corporations. Accordingly, “[o]ne of the effects of the current settlement has been to maintain the imbalance between real individuals and legally constituted individuals while allowing the latter to claim the benefits which are justified through the ‘rights’ of the former.”<sup>206</sup>

As May states, “the emergence of property furthers the interests of specific groups in society: those in possession of such resources that can be utilized to accumulate more resources, the nascent capitalists.”<sup>207</sup> Neo-classical economics posits that such corporations have every incentive to internalize benefits and externalize costs. And “[a]s has been the case in the history of property, there has been a diminution of the possibility of a public domain of knowledge.”<sup>208</sup> Given the focus on the “individual” in the IP narrative, May asserts that “any recognition of the justice of non-individualised [sic] interests is rendered invisible, or merely residual after the more important (owners’) interests have been dealt with.”<sup>209</sup>

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202. See, e.g., Peter Drahos, *Global Property Rights in Information: The Story of TRIPS at the GATT*, 13 PROMETHEUS, June 1995, at 6-9.

203. Peter Drahos, *Negotiating Intellectual Property Rights: Between Coercion and Dialogue*, in GLOBAL INTELLECTUAL PROPERTY RIGHTS 161, 169 (Peter Drahos & Ruth Mayne eds., 2002).

204. MAY, *supra* note 1, at 163.

205. *Id.*

206. *Id.* at 164.

207. *Id.* at 21.

208. *Id.* at 50.

209. May, *Fishing with Dynamite*, *supra* note 68.

If IP rights are so one-sided in terms of individuals vis-à-vis corporations, it is important to ask how the IP regime is perpetuated. I explore this question in the subsequent Section. The answer will also go far in explaining why developing states went along with TRIPS.

## B. Corporations Manipulate Social Factors of Creativity

Corporations expend significant resources to influence the social factors in their organizations to stimulate creativity.<sup>210</sup> A few examples of the application of the insights from the psychology of creativity suffice to demonstrate the corporate awareness of the social factors in creativity. Andrew Hargadon and Robert I. Sutton describe in *Building an Innovation Factory* how corporations can use “knowledge brokering” to create new ideas from old ones. Knowledge brokering consists of capturing ideas from a wide variety of sources, keeping the ideas alive through use, imagining new uses from old ideas (physical layout can increase interaction), and turning promising concepts into real products and processes.<sup>211</sup>

Dr. Jay L. Brand notes that “[r]ecently, psychologists have begun to appreciate the larger contexts in which creativity occurs and the roles these play in the manifestation of creative processes.”<sup>212</sup> After summarizing recent research, he notes that “creativity rarely, if ever, involves completely new or original concepts or ideas” but rather depends on integrating “existing information into unusual syntheses or juxtapositions, together with only incremental novelty.”<sup>213</sup> The Western conception of the “isolated genius with special powers who consistently stuns the world with great insights, inventions or ideas . . . has likewise not enjoyed much empirical support.”<sup>214</sup> In its place is a recognition of “the many influences that together produce the ability to build on past accomplishments, approach problems in novel ways and entertain multiple—perhaps even conflicting—alternative solutions.”<sup>215</sup>

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210. This is reflected on the shelves of bookstores which bear such titles as the following: CORPORATE CREATIVITY: ROBUST COMPANIES AND THE ENTREPRENEURIAL SPIRIT (Raymond W. Smilor & Robert Lawrence Kuhn eds., 1984); PAUL THORNE, ORGANIZING GENIUS: THE PURSUIT OF CORPORATE CREATIVITY (1992); ANJALI HAZARIKA, DARING TO DREAM: CULTIVATING CORPORATE CREATIVITY THROUGH DREAMWORK (1997); ALAN ROBINSON, CORPORATE CREATIVITY: HOW INNOVATION AND IMPROVEMENT ACTUALLY HAPPEN (1997).

211. Hargadon & Sutton, *supra* note 197, at 55-56.

212. Jay L. Brand, *The Cognition of Creativity*, I&S Continuing Education Series, Mar. 2001, available at <http://www.isdesignet.com/Magazine/Mar'01/ceu.html>.

213. *Id.*

214. *Id.*

215. The following are some of the examples provided by Brand:

Amabile wrote that “[n]ot all motivation is created equal” and that “an inner passion to solve the problem at hand leads to solutions far more creative than external rewards, such as money.”<sup>216</sup> After describing the three components of *individual creativity* (expertise, creative thinking skills, and motivation) Amabile asks, “Can managers influence these components?” and responds, “The answer is an emphatic yes . . . through workplace practices and conditions.”<sup>217</sup>

The point is simple but profound. Corporations are well aware of the situational factors in creativity, and they take advantage of them internally. Corporations generally do not use patents as incentives for their employees; they use a much broader and deeper range of situational influences, of which incentives for an individual are only a small part, if incentives are used at all. Even without intentional effort, corporations—with their large and diverse workforce, institutional knowledge, and focus on problem solving—lay a situational foundation for much creativity within cultural parameters. This creativity, however, like all thinking, is confined within the scope of the problem being addressed. In the case of corporations, charged by the law to maximize shareholder value, this leads to a focus on short-term gain. Even those who advocate corporate social responsibility

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1. Creativity usually comes from an extensive, diverse knowledge base rather than from eccentric or inherently gifted individuals. . . . Increasing the diversity of workers’ cultural and ethnic backgrounds and their areas of expertise and the use of interdisciplinary, cross-functional teams should enhance creativity within your organization.

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5. Creativity may depend on group interaction. . . . Explanations of creativity tend more and more to rely on the importance of the broader social context in which it occurs.

. . . .

9. Creativity depends critically on the initiation and maintenance of activity, usually over extended periods of time. . . .

. . . .

12. Some evidence suggests that daydreaming and fantasy may be related to creativity. . . . To increase the likelihood of creativity, the effectiveness and efficiency of repetition and “standard operating procedures” must be balanced with time and flexibility to explore and innovate for its own sake.

*Id.*

216. Teresa M. Amabile, *How to Kill Creativity*, in HARVARD BUSINESS REVIEW ON BREAKTHROUGH THINKING 1, 4 (Teresa M. Amabile et al. eds., 1999).

217. *Id.* at 4.

often do so in the name of larger profits, and they too adopt a relatively short time horizon.<sup>218</sup>

Corporations seek to maximize their profit opportunities (and, accordingly, externalize as many of their costs as possible). This is accomplished, in part, through increased production. It is also accomplished through the manipulation of market behavior. The concepts of scarcity and abundance are the Janus faces of market logic. Corporations act as if they are satisfying (and to some degree do satisfy) material needs through perpetual innovation and production. To a greater extent, however, corporations define and expand our needs by fostering a sense of emptiness and scarcity that results in a dependence on consumption that replaces craft and other creative traditions. May argues that IP laws create scarcity of public knowledge by privatizing it just as these IP laws foster corporate wealth.<sup>219</sup> Increases in material production to meet these ever expanding needs of consumers could lead to a self-fulfilling prophecy: a scarcity of material resources (from overproduction) and a scarcity of individual creativity (why be creative when you can buy what you need?). As the economic anthropologist Marshall Sahlins showed, however, the perception of scarcity is not a human universal.<sup>220</sup> Moreover, the quantity of products to consume is no more an indicia of human creativity (or freedom, or happiness) than the number of patents or copyrights. In fact, as Professor Barry Schwartz argues, based on psychological evidence, too many options increase depression, stress, and anxiety.<sup>221</sup> The question should be: Whom is the IP regime serving? It is not safe to assume it is serving the interests of societal, let alone individual, creativity.

The negative effects of IP on human creativity notwithstanding, the most direct and undeniable result of the IP regime is to foster the concen-

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218. See, e.g., *The Good Company: A Survey of Corporate Social Responsibility*, ECONOMIST, Jan. 22, 2005, at 15 (stating that a rational and self-interested firm should worry about its reputation and consider “sacrifices today for the sake of gains tomorrow, or five years from tomorrow,” thereby suggesting that five years is a long-term view) (emphasis added).

219. MAY, *supra* note 1, at 8 (“While it may be possible to argue, as many critics of IPRs [intellectual property rights] do, that to commodify knowledge, makes ideas artificially scarce and their use less frequent—and, from a social point of view, less valuable, this claim is for the most part ignored [in discussions of intellectual property rights].”) (citation omitted).

220. MARSHALL SAHLINS, *STONE AGE ECONOMICS* 4 (1972) (“The market-industrial system institutes scarcity, in a manner completely unparalleled and . . . nowhere else approximated. Where production and distribution are arranged through the behavior of prices, and all livelihoods depend on getting and spending, insufficiency of material means becomes the explicit, calculable starting point of all economic activity.”).

221. BARRY SCHWARTZ, *THE PARADOX OF CHOICE: WHY MORE IS LESS* 3 (2004).

tration of wealth in large corporations. These corporations use this wealth to increase profits, and though this is sometimes done through increased innovation, at best, this innovation will be of a particular kind: it will facilitate short-term profit (or otherwise enhance the corporation). The concomitant globalization of the IP regime and the deeper penetration of market relations into previously non-market domains are likely to extinguish modes of creativity that do not serve short-term profit motives.

### C. Conclusion

The prior Part endeavored to demonstrate that the IP regime expresses, at best, an impoverished conception of creativity when viewed in light of findings from the psychology of creativity. This Part showed that large corporations, in their internal practices, possess a surprisingly more accurate conception of creativity. The teachings from the psychology of creativity discussed above—whether at the macro- or the micro-level—can be manipulated for corporate gain. It is this broader conception which corporations harness to their ends—sometimes, but by no means always, to our benefit. The argument is not that the IP laws have no relation to creativity but that their effects on creativity are ambivalent and largely overrun by a host of broader economic, psychological, and social factors. TK and IP proponents concerned with fostering creativity for human betterment should engage more openly with what science instructs about the nature of creativity and focus less on treating IP as a conflict over competing, absolutist, and mutually irreconcilable rights claims. This could lead to a legal regime that better promotes creativity.

## VI. TOWARD A PSYCHOLOGICAL CRITIQUE OF IP RIGHTS

We are now threatened with the prospect of our being only consumers, able to consume anything from any point in the world and from every culture, but of losing all originality.<sup>222</sup>

In this Part, I apply the “critical realist” insights of Hanson and Yosi-fon to the IP regime. Doing so helps to expose a hitherto unrecognized aspect about how the IP model is sustained—not only in light of the theoretical and empirical criticism discussed above, but even by those seemingly harmed by it. By enlisting cognitive bias, corporations promote their monopoly rights while they also control the factors influencing creativity; both in the name of the public good. To the extent the TK discourse provides a more psychologically veridical view of creativity, it has the poten-

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222. CLAUDE LEVI-STRAUSS, MYTH AND MEANING 20 (1995).

tial to function as a more realistic, and also more radical, critique of IP than the recent critiques of Boyle, Lessig, and May.

**A. Summarizing *The Situation* (Part 1): The Fundamental Attribution Error**

In *The Situation: An Introduction to the Situational Character, Critical Realism, Power Economics, and Deep Capture*, Hanson and Yosifon undertake an ambitious multifaceted project.<sup>223</sup> This project commences with two puzzling questions. First, why do legal economists who analyze the functioning of virtually all human activity and posit selfish interests to individuals fail to apply that same analysis to their own field?<sup>224</sup> Second, why, despite strong and often unrebutted criticism of law and economics from prominent legal scholars, does law and economics continue to expand as the dominant legal school of thought?<sup>225</sup>

The answers, they argue, relate to the fundamental attribution error, which leads humans to “underestimate the role of situational influences, and to overestimate the influence of individual dispositions in explaining people’s behavior.”<sup>226</sup> This bias is even reflected by those who criticize the field of law and economics.<sup>227</sup> Hanson and Yosifon set out not to critique the “rational actor” but to conceptualize human behavior more realistically in its broader social context, or as they refer to it, “the situation.” As they describe her, the “situational character” finds herself interpolated into action:

On a given stage, among other characters, with dialogue and plot proceeding apace around her, and subject to the powerful (if less visible) influence of scripts, props, backdrops, and directors. . . . To be sure, such a character will often behave as if she is a dispositional actor, but alter the stage, the script, and so on, and you will see the pervasive role of situation as the actor’s behavior conforms to it.<sup>228</sup>

Their claim is that people significantly overestimate the frequency and ease with which they perceive, choose, and act.<sup>229</sup> Because so much of

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223. Hanson & Yosifon, *supra* note 148.

224. *Id.* at 133-34.

225. *Id.* at 139-41.

226. *Id.* at 136.

227. *Id.* at 148.

228. *Id.* at 155.

229. *Id.* at 173-74. They explain:

We humans tend to perceive disposition as dominating situation even though evidence from social science strongly suggests the reverse; this

Hanson and Yosifon's approach, and my approach to the IP model, depends on the validity of certain cognitive biases, this Section provides a brief introduction to these biases.

In 1997, psychologist Lee Ross drew on earlier insights that "behavior engulfs the field" because, being the most salient element in a social setting, it "leads observers to over-attribute behavior to dispositional factors—such as abilities, traits and motives—and underestimate the influence of situational factors."<sup>230</sup> That is, in watching another person, our attention is directed to his behavior (movement, speaking) and not background factors (social context, roles, or situational pressures).<sup>231</sup> Ross believed this was so common, and so often led us to make incorrect judgments, that he named it "the fundamental attribution error."<sup>232</sup> A wealth of psychological studies has subsequently affirmed the pervasive robustness of this bias.<sup>233</sup>

Our "folk model"<sup>234</sup> of the mind, dominant at least in the West, leads to certain blind spots that further entrench the dispositional bias. The cognitive anthropologist Roy D'Andrade has identified the five major parts of the Western model of the mind as perception, thought, feeling, wish, and intention.<sup>235</sup> These classes of mental events are thought to relate to each other in a chain of direct causation from perception to thought, then to feeling, to wish, to intention, and finally to action. At the center of the model is the "self," and "a major characteristic of the folk model is that

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is, again, the fundamental attribution error. The objective here is not to prove or to claim that disposition plays no role in our behavior, or even that it does not sometimes play a very important role. Rather, the objective is to make clear what social science reveals about just how surprisingly slight that role is most of the time—at least as compared with what most of us believe and, perhaps want to believe. . . .

*Id.*

230. SCOTT PLOUS, *THE PSYCHOLOGY OF JUDGMENT AND DECISION MAKING* 180 (1993).

231. SUSAN T. FISKE & SHELLEY E. TAYLOR, *SOCIAL COGNITION* 67 (1991).

232. PLOUS, *supra* note 230, at 180.

233. *Id.* at 180-88 (describing an experiment with seminary students who refused to help a person in need because they were late to deliver a lecture (on the story of the Good Samaritan!), in which helping behavior was correlated with the situational factor of hurriedness, not the dispositional factor of religiosity); *cf.* Daniel M. Wegner, *The Mind's Best Trick: How We Experience Conscious Will*, 7 *TRENDS IN COGNITIVE SCIENCES*, Feb. 2003, at 65 (suggesting that rather than consciousness causing behavior, consciousness and behavior may both be caused by some third antecedent force).

234. ROY D'ANDRADE, *THE DEVELOPMENT OF COGNITIVE ANTHROPOLOGY* 158 (1995) (describing a "folk model of mind" as "the representation of what happens inside people . . . that results in their doing what they do").

235. *Id.* at 160-69.

most of the things that happen in the mind are thought to be conscious.”<sup>236</sup> In the folk model “there does not appear to be a real unconscious, only a kind of myopia about certain mental states,” and the self “is thought to be able to control actions” such that for everything one does “so one could have decided to do differently.”<sup>237</sup>

The fundamental attribution error is so prevalent that several researchers have considered it “an automatic outcome of perceptual experience.”<sup>238</sup> However, the social psychologists Susan T. Fiske and Shelley E. Taylor argue that it is not an automatic response. First, they note that it needs to be learned. As evidence, they point to findings that children do not explain human behavior in dispositional terms, but, rather, in concrete situational terms.<sup>239</sup> Second, the fundamental attribution error is not universal in its strength.<sup>240</sup> Assessing a review of the findings on the cross-cultural nature of the attribution process, the authors conclude that “although the fundamental attribution error is a ubiquitous part of Western causal inference, it is not as dominant in non-Western cultures.”<sup>241</sup>

With the fundamental attribution error in mind, we can return to Hanson and Yosifon’s argument. At the risk of greatly reducing the breadth and depth of their article, their elucidation of the above questions proceeds as follows: (1) social psychology has provided copious evidence that human action is far more a result of situational reactions than dispositional actions, and yet for a variety of reasons humans (especially in the West) are biased toward viewing the world dispositionally and reaching conclusions that correspond with this worldview;<sup>242</sup> (2) the rational actor model at the heart of economics (in which the individual acts out of self-interest to maximize preferences) is fundamentally dispositional;<sup>243</sup> (3) law and economics partly holds sway because the dispositional story its proponents tell (of rational market mediated actors), and even the criticism of the field, enlists the bias of the fundamental attribution error; and (4) to the extent that seemingly dispositional actions are more accurately understood

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236. *Id.* at 163.

237. *Id.*

238. FISKE & TAYLOR, *supra* note 231, at 68.

239. *Id.*

240. Hanson & Yosifon, *supra* note 148, at 250-51 (arguing that studies suggest dispositionism appears universal, but it is more elaborated in the West, and hence socially, or situationally, influenced).

241. FISKE & TAYLOR, *supra* note 231, at 68.

242. Hanson & Yosifon, *supra* note 148, at 136-37.

243. *Id.* at 139 (“Legal economists are correct to presume the profound influence of the profit motive over the behavior of individuals and institutions in our society, but are mistaken to locate that influence dispositionally rather than situationally.”).

as situational reactions, the economists who rely on dispositional attributions may be consistently misguided.<sup>244</sup>

Thus, the first question of why legal economists posit selfish and rational interests to individuals but fail to see the success of their own field in similar terms can be understood as a self-affirming manifestation of the human tendency to attribute explanation to narrow dispositional causes instead of the more important situational or social forces.<sup>245</sup> That is, legal economists view others as dispositionally (typically selfishly) motivated because they can plausibly infer such information from people's conduct.<sup>246</sup> Further, as Hanson and Yosifon state, "[l]egal economists, likewise, see themselves (and others in their movement) as dispositionally driven, but their own purposes are presumed less crass, in part because...they are motivated to attribute their success and their competitors' concomitant failures to disposition, not situational, forces."<sup>247</sup>

The second question of why the field of law and economics continues to hold sway in legal academia despite well-stated criticisms is partly elucidated through the same bias, representing a move away from a situational explanation. Both critics and proponents of the law and economics approach accept the idea that there is a "tournament of ideas," in which "competitors are presumed to win or lose because of dispositional factors" and "the operation and dynamics of the tournament itself is presumed to be independent of broader situational influences."<sup>248</sup> This dispositionally-biased view is reinforced by a human motivation to believe the institutions to which we belong are just, even when we are made worse off by them.<sup>249</sup> In short, the fundamental attribution error and other cognitive biases go far

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244. *Id.*

245. *Id.* at 138-39.

246. *Id.* at 161. (In short, they write, "economists are situationally sensitive in only the narrowest sense—taking into account the way in which price might influence people's actions based on their willingness to pay, but refusing to look at the situational backdrop to that disposition.").

247. *Id.* at 138.

248. *Id.* at 148 ("The metaphor of a tournament on marketplace highlights the presumption that competition on the merits is the driving force and that the victor is determined through successful competitive engagements, full stop. Any forces exogenous to the tournament are rarely identified, much less systematically analyzed.").

249. *Id.* at 144. *See generally* Brenda Major & Toni Schmader, *Legitimacy and the Construal of Social Disadvantage*, in *THE PSYCHOLOGY OF LEGITIMACY: EMERGING PERSPECTIVES ON IDEOLOGY, JUSTICE, AND INTERGROUP RELATIONS* 176, 179 (John T. Jost & Brenda Major eds., 2001) ("[P]eople show a pronounced tendency to perceive the status quo as legitimate or just. . . . System justification theories predict that this tendency will lead members of disadvantaged groups to construe their social outcome in ways that justify and legitimize their disadvantaged position.").

in explaining why economists treat the success of their movement through a positive dispositionist bias (and not the negative one they attribute to their critics), and why critics of law and economics also treat that movement's success as meritorious and reflecting critics' own dispositional failures.

## **B. IP and the Fundamental Attribution Error**

Before returning to the remainder of Hanson and Yosifon's argument and its conclusions, this Section relates the IP model to the argument outlined above. First, though, I will recall the cast to the stage. In Part II, I illustrated how the IP model is expanding domestically and globally, despite theoretical and empirical criticisms of it. At the heart of the IP model, as many of its critics have recently pointed out, is the concept of the "romantic author" or "genius inventor." In this vein, copyright scholar Peter Jaszi writes, "[t]he persistence of the notion of 'authorship' in American copyright law makes it difficult for any new legal synthesis, which would focus on the reality of collective creativity, to emerge."<sup>250</sup> In Part IV I applied recent teachings from social and cognitive psychology to show that the process of human creativity does not match the views of the IP model, but better fits the understanding of creativity expressed in the TK discourse—namely that creativity is cumulative, emergent, social, and profoundly affected by situational influences. This understanding does not, of course, obviate the need for a legal regime that fosters creativity, but it does point to the harmfully narrow range of considerations in current discussions of and justifications for the expanding IP regime. I also showed that large corporations are fully aware of these insights from cognitive psychology and spend copiously to influence a wide range of variables to foster the creativity they want. Incentives (let alone IP laws) have minor, or even negative, roles. With the stage set, one part of the answer to the conundrum of the IP regime's success despite unanswered criticism rapidly falls into place.

The IP model of creativity is as unrealistic in describing what we know of the nature of creativity as it is dispositional. Said another way, its unreality is due in large part to its reliance on dispositionism. It follows that if individuals are dispositionally biased, then those individuals, whether they benefit from the IP regime or not, will be biased to accept IP laws as more natural and intuitive than they are because these laws foreground dispositional concepts of the romantic author and the genius inventor. Further, in

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250. Peter Jaszi, *On the Author Effect: Contemporary Copyright and Collective Creativity*, in *THE CONSTRUCTION OF AUTHORSHIP* 29, 31 (Martha Woodmansee & Peter Jaszi eds., 1994).

our folk model of mind, it reasonably follows that the promise of incentives in the form of limited monopoly rights<sup>251</sup> will foster individual creativity. That is, dispositional bias leads people to accept both the description of creativity and the role of incentives at the heart of the IP laws *even though both are likely incorrect*. The Western folk model of creativity is incorrect because the latest science shows that creativity is not entirely or even primarily dispositional. The role of incentives central to the IP regime is equally incorrect because extrinsic incentives, far from having the impact we intuitively expect, inhibit individual (if not corporate) creativity.

A caveat is in order before proceeding forward. My argument is not that the potential for economic remuneration via limited monopoly rights is likely to have no effect (at least for corporations who, as discussed in Part V, own the vast majority of patents and copyrights worldwide), nor that people like Thomas Edison are uncreative, or more broadly, that people never act dispositionally. Rather, the argument is that we systematically overstate the extent to which we (Thomas Edison no less than any of us) act dispositionally (as romantic authors or genius inventors) and underestimate the influence of the situational factors in human action (including creativity), and their manipulability. Further, to the extent our dispositional views of action *seem* to reflect reality, when this is not due to self-affirming bias, self-fulfilling prophecies, or other cognitive biases, it is often because of the stability of the situation, not disposition.<sup>252</sup>

### 1. *The Dominant IP Incentive Model Revisited*

Given the theoretical criticism of the economic theory of IP, why has it dominated, and why has it been perceived as “neutral?”<sup>253</sup> William Fisher, in critiquing the reigning utilitarian theory of IP law that prioritizes economic incentive, points out that, in contrast to social planning and personhood perspectives in IP, which are seen as “illiberal” and “paternalistic,”

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251. I say “promise of incentives” because the granting of a patent or the existence of a copyright assures no compensation, but only monopoly rents to the extent the commodity embodying the invention or work of authorship is successful in the market.

252. Hanson & Yosifon, *supra* note 148, at 139 (“The point—and this is a big one—is that even though individuals and institutions may behave *as if* their goal were to maximize wealth, such behavior may actually reflect the social stage of interactions (the situation) more than it does the dispositions of the actors.”) (emphasis added).

253. Fisher, *supra* note 22, at 169 (describing as “the most popular” the utilitarian model, which “requires lawmakers to strike an optimal balance between, on one hand, the power of exclusive rights to stimulate the creation of inventions and works of art and, on the other, the partially offsetting tendency of such rights to curtail widespread public enjoyment of those creations”).

“the utilitarian and labor-desert approaches, especially the former, have enjoyed an aura of neutrality, objectivity, and above all determinacy.”<sup>254</sup> Fisher suggests “[t]hat aura helps to explain why courts . . . have sought guidance most often from economic arguments and least often from social-planning arguments.”<sup>255</sup> However, Fisher as well as other scholars who have criticized the economic approach have failed to explain *why* it appears more neutral than other models, or, more to the point, *why* it is dominant. Extending Hanson and Yosifon’s argument here, I believe the individual bias of the IP regime plays into the “fundamental attribution error,” and that they are mutually reinforcing.

The fundamental attribution error has purchase in explaining several issues that initially appeared unrelated and that do not lend themselves to individual explanations. An important part of the answer to the question of the dominance of the utilitarian IP model is largely the same as the answer to the continued dominance of law and economics: The dispositional bias of the IP regime’s core concept of the individualistic and rational author and inventor responsive to extrinsic incentives, no less than in the field of law and economics, enlists the fundamental attribution error that most humans already manifest. The fundamental attribution error leads to dispositionist presumptions in law, economics, and social policy.<sup>256</sup> And the IP model, especially in its economic incentive form, is a dispositionist model *par excellence*.

## 2. *TRIPS and Developing States Revisited*

All WTO members accepted TRIPS despite the seemingly certain benefit stronger IP laws would bring to large corporations and the likely negative effects they would have on developing states. In fact, corporations were responsible for getting IP law on the international trade agenda and defining the framework in TRIPS in the first place. This begs the question why developing states signed TRIPS at all.<sup>257</sup> The first reason is

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254. *Id.* at 194.

255. *Id.*

256. Hanson & Yosifon, *supra* note 148, at 287-88.

257. *See, e.g.*, MASKUS, *supra* note 54, at 183-86 (estimating that TRIPS will result in static rent transfers to the United States in the amount of \$5.8 billion and noting that “the overwhelming share of rents transferred by stronger global patent rights would accrue to the United States” and that “[a]mong developing countries, the gross outward transfer would rise with the size of the economies and the extent to which patents were strengthened”); DRAHOS & BRAITHWAITE, *supra* note 6, at 11. They explain:

No one disagrees that TRIPS has conferred massive benefits on the US economy, the world’s biggest net intellectual property exporter, or that it has strengthened the hand of those corporations with large

coercion, reflecting larger charges of the “democracy deficit” at the WTO. As Shiva suggests:

In fact, TRIPs was not negotiated by GATT members. It was imposed by MNCs [multinational corporations] who used the US government to force it on other members. It is the most blatant example of the undemocratic, non-transparent nature of the WTO. The basic framework for the TRIPs patent system was conceived and shaped in a joint statement presented to the GATT Secretariat in June 1998 by the Intellectual Property Committee (IPC) of USA and industry associations of Japan and Europe. IPC is a coalition of thirteen major US corporations dedicated to the finalization of TRIPs in their favor. The members of IPC are corporations like Bristol Myers, Dupont, General Electric, General Motors, Hewlett Packard, IBM, Johnson and Johnson, Merck, Monsanto, Pfizer, Rockwell and Warner.<sup>258</sup>

Shiva describes how the IPC convinced industry groups in Europe and Japan, as well as the GATT Secretariat, that an international IP regime at the WTO was feasible and should be based on the laws of the more advanced countries. In Shiva’s view, TRIPs was not a product of democratic processes within the international community, but rather represented “the imposition of values and interests of northern MNCs on the diverse societies and cultures of the world.”<sup>259</sup>

A similar answer is given by Drahos and Braithwaite, who argue the TRIPs regime represents a democracy deficit wherein the interests of a small number of U.S., European, and Japanese corporations captured the trade agenda and then caused their governments to impose it through trade power on developing states.<sup>260</sup>

The second view, supported by many policymakers, is that TRIPs was part of the “package deal” of the WTO. In return for strong IP laws, de-

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intellectual property portfolios. It was the US and the European Community that between them had the world’s dominant software, pharmaceutical, chemical and entertainment industries, as well as the world’s most important trademarks. The rest of the developed countries and all developing countries were in the position of being importers with nothing really to gain by agreeing to terms of trade for intellectual property that would offer so much protection to the comparative advantage the US enjoyed . . . .

*Id.*

258. SHIVA, *supra* note 10, at 95-96.

259. *Id.*

260. DRAHOS & BRAITHWAITE, *supra* note 6, at 12 (“The resistance of developing countries was crushed through trade power . . .”).

veloping states obtained the Agriculture Agreement. Lessig, in discussing copyright piracy in developing states acknowledges the role of coercion in the imposition of international copyright laws, but asserts that states must be held accountable for their sovereign choices.<sup>261</sup> But, as Drahos and Braithwaite point out, in support of the first view, “[t]he WTO agreement on Agriculture, however, does not confer anything like the benefits on developing countries that TRIPS does on the US and the European Community.”<sup>262</sup> In addition, given that TRIPS covers plants, Drahos and Braithwaite note that developing countries will increasingly have to pay more for inputs they buy from agrochemical companies and thus have “signed away at least some of their comparative advantage in agriculture.”<sup>263</sup>

The first view has much to support it.<sup>264</sup> TRIPS would not have been adopted but for the money and influence of a small number of large corporations.<sup>265</sup> Yet this explanation cannot explain TRIPS on its own. First, as the “package deal” proponents note, the states that signed the WTO did so in the apparent belief, however mistaken, that trading TRIPS for the Agriculture Agreement was a fair compromise. If coercion had been the only factor at play, then presumably TRIPS could have been negotiated without any countervailing trade-offs. What needs to be explained is not the negotiation of the trade-off, but why the benefits and costs of TRIPS were so miscalculated. Second, despite initial resistance by developing states, their resolve lessened dramatically.<sup>266</sup> John Jackson, a prominent trade scholar, notes:

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261. LESSIG, *supra* note 1, at 64 (“If a country is to be treated as a sovereign, however, then its laws are its laws regardless of their source.”).

262. DRAHOS & BRAITHWAITE, *supra* note 6, at 11.

263. *Id.*

264. JOHN H. JACKSON, *THE WORLD TRADING SYSTEM* 310-11 (1997) (describing the proponents of IP obligations as primarily from industrialized states and forming “a very strong and sophisticated coalition that developed policy advocacy, both at the national government levels . . . and at the international level”).

265. DRAHOS & BRAITHWAITE, *supra* note 6, at 10 (“During the course of an interview in 1994 with a senior U.S. trade negotiator he remarked to us that ‘probably less than 50 people were responsible for TRIPS.’”); *see also* Jeffrey L. Dunoff, *The WTO In Transition: Of Constituents, Competence and Coherence*, 33 *GEO. WASH. INT’L L. REV.* 979, 1003 (2001) (“[T]he pressure for including intellectual property rights (IPRs) into the trading system was led by the software and pharmaceutical industries which argued, *inter alia*, that WIPO lacked an adequate enforcement mechanism, and that lax enforcement of IPRs distorted international trade.”).

266. JACKSON, *supra* note 264, at 311 (“[N]evertheless, by . . . 1991 there seemed to be an enormous change in attitudes . . . of developing countries which led many such countries to be willing ultimately to accept the IP Agreement . . .”).

One of the developments that was perhaps not entirely foreseen at the outset of the [Uruguay Round] negotiation, was that as time went on, the controversy was less and less between developing countries and industrial countries, and more and more between the industrial societies, such as the tensions between the United States and Europe and other industrial countries, concerning some particulars of patent or copyright protection.<sup>267</sup>

These seemingly inexplicable aspects of TRIPS's acceptance could partly be explained by the fundamental attribution error and what critics have deemed to be base-rate neglect on the part of the policymakers. The fundamental attribution error caused negotiators to overestimate the role of IP laws in fostering creativity. Again, the cross-cultural evidence of dispositionism hints that it is a universal human bias, and that it is more dominant in the West and subject to situational influence and learning.

The dispositionist approach of IP is, not surprisingly, part of the discourse of economic development in which IP is viewed as an "enchanted tool" for growth. As discussed in Part II, IP proponents claim that strong IP rights will foster economic development through increased incentives for innovation in developing states. In particular, this narrative states that an increase in protection will foster foreign direct investment, result in technology transfer, and lead to the production of medicines and technology more relevant to the third world. An example is the WIPO book *Intellectual Property: A Power Tool for Economic Growth* which asserts that, "international acceptance and utilization of IP tools means that there will be more innovation and therefore more creative change and cultural and economic growth."<sup>268</sup> This story applied to the level of the state mirrors the individual incentive model from the initial justification of intellectual property protection; however, the balancing schema is ignored and stronger is just better.

Other justifications for increased IP rights in developing states are even more explicit in their appeal to dispositionism. Thus, a speaker at a World Bank panel on IP and economic development is reported to have commented, "[I]t is quite clear that legal rules [of IP] influence the economic behavior of individuals."<sup>269</sup> Similarly, in *Intellectual Property and Economic Development*, Robert Sherwood argues that strong intellectual property rights can provide a host of benefits for individuals in developing

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267. *Id.* at 312.

268. IDRIS, *supra* note 31, at 4.

269. World Bank, *Intellectual Property Rights and Economic Development: An Agenda for The World Bank Group*, <http://www.worldbank.org/html/fpd/technet/sem-sums/march5.htm> (last visited Nov. 4, 2005).

states: more corporate training, more exposure within a corporation to its technology, and a more rewarding career;<sup>270</sup> yet he notes that developing states have nonetheless resisted strengthening their IP laws largely out of “a simple lack of knowledge.”<sup>271</sup>

Recall Carlos from Part II, the fictional Peruvian welder who has an idea for a new clamp. As the story goes, Carlos’ fate, along with that of his country, depends on the existence of IP laws. His story illustrates the presumed power of IP to foster economic growth.<sup>272</sup> And indeed it has a ring of plausibility and intuitiveness to it. It is the same story used to justify IP in the West. Not because it is true, but because of the fundamental attribution error; we *perceive* it as truer and more salient than it is.

At the same time, base-rate neglect of the current distribution of patents could have led policymakers in developing states to underestimate the impact of the initial distribution of inventions and works of authorship protected by the IP laws. Base-rate neglect can occur when “a reliance on representativeness leads people to ignore . . . the relative frequency with which an event or fact occurs.”<sup>273</sup> The United States and other proponents of TRIPS had a comparative advantage in the sorts of creativity protected by TRIPS. This is true not only theoretically, but also factually. After all, the vast percentage of patents (whether granted in the developed or developing states) are owned by companies from developed states.

Companies with patents obviously benefit by having those patents recognized in new jurisdictions. But the implications are even more profound: any legal recognition of property where it was not recognized before will have disparate effects wherever the thing “propertized” is unevenly distributed. Yet, focusing on process and “best practices” for development and criticizing TRIPS primarily for its process defects, such as Shiva and Drahos do, “[f]oreground[s] problems of *participation* and *procedure* at expense of distribution, implicitly legitimizing the existing distributions of wealth, status and power.”<sup>274</sup> Given that corporations in developed states own 97% of the world’s patents,<sup>275</sup> it is difficult to imagine a less evenly distributed intellectual property rights system.

The more patents a company holds, the more freedom it likely has to develop follow-on innovations, not only because it has the know-how and

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270. SHERWOOD, *supra* note 32, at 191-92.

271. *Id.* at 193.

272. *Id.* at 196-97.

273. PLOUS, *supra* note 230, at 115-16.

274. David Kennedy, *The International Human Rights Movement: Part of the Problem?*, 15 HARV. HUM. RTS. J. 101, 109 (2002) (emphasis in original).

275. See UNDP Human Rights Development Report, *supra* note 201.

technology, but also because it has an arsenal of patents to assert offensively against putative competitors and defensively to carve out a wider moat of research freedom. This can create strong barriers to entry for new players.

These second-order cascading effects are difficult to measure and cognize. The importance of this difference in base-rate distribution, and its perpetuation through TRIPS, was underestimated, partly because of the “representativeness” of the dispositionist account of creativity. And the different base-rates (i.e., the current distribution of IP rights) and their effects in further entrenching the status quo are likely to be undervalued precisely because of the salience of the IP romantic author/genius inventor model. Even the equivocal economic evidence is likely to foster dispositionism because “causal ambiguities that fog our experiences allow, and often encourage it.”<sup>276</sup>

Again, the point is not that potential economic incentives of the IP regime would have no effect; rather, their effect on creativity and economic development is likely to be far less than assumed. And, with respect to developing states confronting more powerful situational factors, such as the large percentage of people living on less than one dollar a day, funds directed toward implementing the IP system could have been better spent to create far greater effects on development (e.g., research, universities, or water sanitation).<sup>277</sup> After all, the relative surplus of labor and the dearth of capital render the many capital-intensive and labor-reducing inventions typical of patent law of questionable benefit in the first place for the poorest of the developing states.<sup>278</sup> Furthermore, there are definite costs imposed on domestic industry due to limiting technological inputs, because the foreign companies that control the related rights often choose not to market their products or decide their products are too costly for wide distribution.

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276. Hanson & Yosifon, *supra* note 148, at 175.

277. See MASKUS, *supra* note 54, at 173 (estimating Egypt’s TRIPS compliance costs to be approximately \$800,000 with annual training of \$1,000,000).

278. See, e.g., CYPHER & DIETZ, *supra* note 33, at 417. They observe:

It has long been the claim of the structuralist economists that the TNCs employ capital-intensive production systems which are inappropriate in poorer nations where labor is both abundant and relatively cheap, and where the real rate of unemployment and underemployment may be alarmingly high. . . . Thus with more capital-intensive production techniques in use, TNCs contribute to urban unemployment and underemployment.

*Id.*

The IP system, and in particular the patent system, works by permeating market relations. At the same time, large corporations can charge more for products protected by IP. The TRIPS debate was framed in both “moral”<sup>279</sup> and incentive terms; it was *not* framed in terms of distribution. But as Professor David Kennedy points out regarding international law-making in general, “[politicians] err when they isolate politics within a shrinking public sphere, when they assume governance must be built while markets grow naturally. . . . Our foreign policy professionals have systematically underestimated the opportunities for engagement with the background worlds of private law, market institutions, [and] cultural difference.”<sup>280</sup> While the fundamental attribution error turns people away from these and other situational factors, Hanson and Yosifon show corporations are well aware of their power in influencing these factors no less than creativity itself, as already argued in Part V.

### C. Summarizing *The Situation* (Part 2): Power Economics and Deep Capture

Hanson and Yosifon do not stop at revealing the dispositionist tilt of law and economics and the role the fundamental attribution error plays in supporting its dominance. They further draw on the findings that dispositionism is learned and manipulable<sup>281</sup> while the “situation” far more often influences behavior. Given the apparent power of the situation in influencing individual behavior, they inquire “how this stage is set, who has the power to set it,” and whose interests the staging serves.<sup>282</sup>

“Power” is often left unexplained in economic theory, with economists justifying the omission by claiming that power is hard to operationalize. Hanson and Yosifon, however, provide a more concrete notion of power in economics through their concept of the situation. Analyzing a situation with a view toward recognizing dispositional bias reveals “the power of staging over acting.”<sup>283</sup> As noted in Milgram’s experiments, much of a situation can be managed and constructed to influence us in ways that, because of our dispositional bias, we often fail to perceive. Because power is

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279. DRAHOS & BRAITHWAITE, *supra* note 6, at 61 (describing an op-ed piece in The New York Times written by the then chairman and president of Pfizer International alleging that United States knowledge and inventions were being stolen by (primarily developing) states because their laws did not provide the scope of protection (primarily for patents) that United States law afforded).

280. David Kennedy, *The Forgotten Politics of International Governance*, 2 EUR. HUM. RTS. L REV. 117, 124 (2001).

281. Hanson & Yosifon, *supra* note 148.

282. *Id.* at 149.

283. *Id.*

valuable to those who wield it, and insofar as power can be exercised (often unobserved) through situational variables, Hanson and Yosifon argue that the control of those variables will trade like anything else in a market because “[w]hat we know from economics is that markets will eventually discover and exploit profit-enhancing opportunities for power.”<sup>284</sup> “Market forces guarantee the exercise of power through situational manipulation—that is the essence of power economics.”<sup>285</sup> In short:

Power economics predicts that we are living within an ongoing Milgram experiment, in which we, the subjects, perceive our acts to be free and dispositionally motivated, but in which the experimenters—large business entities—wield far greater influence over our movements through situational manipulations than we tend to recognize.<sup>286</sup>

Thus, as the neoclassical economists have claimed, the “situation” will be sold through largely unseen market processes to those able to pay—not because corporations are dispositional (let alone rational) actors, but because of a host of stable situational factors.<sup>287</sup>

Hanson and Yosifon define deep capture as the “self-serving influence that the relatively powerful tend to exert over all the exterior and interior situational features that materially influence the maintenance and extension of that power—including those features that purport to be, and that we experience as independent, volitional, and benign.”<sup>288</sup> They claim that large corporations have the ability to deeply capture our institutions and ourselves, and that they achieve this by advocating a dispositionist worldview. They argue that “a dispositionist worldview benefits both individual corporations and the shared corporate interest, and that corporations therefore individually and jointly will act to promote it.”<sup>289</sup>

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284. *Id.* at 198-99.

285. *Id.* at 198.

286. *Id.* at 200.

287. *Id.* at 199 n.254 (arguing that corporations tend to behave as if their sole or primary goal is to maximize profits not because they have dispositions, but because they participate in market competitions which work to eradicate those firms and managers that do not effectively maximize profit).

288. *Id.*

289. *Id.* at 226. Their argument is distilled as follows: (1) the ability to influence situations will tend toward those with the ability to pay; (2) corporations share a single common interest of maximizing profits; (3) corporations are effective at exploiting the most efficient means of influencing people and institutions, and they effectuate this through situational influences such as advertising, lobbying, marketing, and public relations; and (4) our well-being is often perceived to be dependent on corporations doing

Corporations do so because dispositionism tends to justify corporate profit-seeking as *socially beneficial*, for if consumers are dispositional (act according to stable preferences) then it reasonably follows that free market transactions can best satisfy those preferences. Thus, “[a]s profit-maximizing entities, corporations act to maximize social welfare by serving consumers’ supposed dispositional preferences” and “[p]rofit is the substantiation of those welfare-enhancing transactions and is therefore, by definition, good.”<sup>290</sup> This dispositionism minimizes the regulation of corporations because regulation is perceived as impinging on consumer choice while dispositionism purports to place consumers in charge of their own choices, even bad ones.<sup>291</sup>

The power that corporations wield over the situation is trebly insidious. First, it remains largely undetected because of our tendency to fall prey to the fundamental attribution error. Second, by focusing on disposition, we presume there is a consistent and level playing field, a neutral situation, and dispositionally deserved outcomes. Third, we perceive that we have a stake in the system, and tend to defend it as natural in the face of criticism.<sup>292</sup> In response to the hypothetical question of the significance of the fundamental attribution error and a situational approach, Hanson and Yosifon respond:

[T]hose in power have significant stakes in promoting, among other things, a generally dispositionist framing of an issue. Those stakes have, indeed, led to investments attempting to influence the situation, including the production and distribution of legal-theoretic knowledge that is strongly dispositionist in orientation [i.e., law and economics]. Taken together, those elements suggest that the fundamental attribution error is playing an immense and influential role in our policymakers’ worldviews and in their policies.<sup>293</sup>

#### **D. The Power of IP and the Deep Capture of Creativity**

If it is generally true, as Hanson and Yosifon assert, that “the deep capture of ‘knowledge’ is not accomplished without the deep capture of

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well. The article provides numerous examples illustrating that corporations are well aware of the power of the situation, and spend vast amounts of money manipulating it.

290. *Id.* at 227.

291. *Id.*

292. *Id.* at 323 n.685 (pointing to social psychology studies that provide evidence that a threat to existing systems “activates a general motive to justify . . . the system, as is,” even those harmed by it).

293. *Id.* at 286-87.

knowledge production, and that is also part of the unseen situation,<sup>294</sup> this appears especially true in the situation of the expansion of the laws meant to govern mental creations. To the extent corporations foster the dispositionist worldview, they will be able to further leverage IP laws to their economic benefit. They have been quite successful so far. Other critics of IP have made claims about the historical author conception, the coercion into accepting TRIPS, the increasing control of corporations over innovation, and the indeterminacy and contradictions of the theories justifying IP. In one sense this Article attempts to add to that literature.

In another sense, however, this Article further explains the continued pull of the IP laws in the developed world and increasingly in the rest of the world, despite their adverse effects. The situational factors that direct corporations to maximize profits over other values will continue to channel them to promote these laws wherever they do business. And by enlisting cognitive biases, the further entrenchment of the IP regime is likely to continue to appear to many as technical, politically neutral, intuitive, and socially beneficial.<sup>295</sup> But it is hopefully now easier to see both why these laws are not neutral and why they are experienced as true. Any reform effort that fails to grapple with the extent of our own cognitive biases and errors is likely to fail.

## E. Conclusion

The TK discourse is largely focused on the incremental and cumulative, social and ecological nature of knowledge production; in short, on its situational nature. Further, unlike the IP discourse, the TK discourse foregrounds distributional issues and reveals culturally contingent assumptions embedded in the IP discourse. It also appears, based on findings from cognitive and social psychology (both likely to be biased toward Western subjects), that the TK discourse contains some fundamental truths about creativity and innovation that the IP discourse gets wrong.

The further inculcation of the IP system (in conjunction with the market system) is likely to penetrate and drive out different modes of knowledge production that do not entail short-term profit-seeking. The IP system

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294. *Id.* at 324.

295. The development discourse itself, in which the “solution” to a society’s problems is narrowly conceived in terms of economic growth within which the justification for strong IP in developing states is framed, has been subject to recent criticism. *See, e.g.*, ARTURO ESCOBAR, ENCOUNTERING DEVELOPMENT (1994) (arguing that the large scale economic planning approach to development had led to more hunger and poverty); OSWALDO DE RIVERO, THE MYTH OF DEVELOPMENT (2001) (arguing that many so-called developing states are not on the road to progress and instead should focus on basic needs like food, water, and energy).

does not foster creativity (in fact, it may well inhibit creativity). Furthermore, it enlists and incites our dispositionist bias in order to foster corporate wealth through monopoly rights while simultaneously justifying profit-seeking as socially beneficial.

To be certain, the argument is not that indigenous peoples are “romantic savages” to be “preserved” or that they are incapable of donning the garb of the West by adopting free-market values. As David Kennedy advises, “We should judge the global market, like the global political order, by the distribution it effects among today’s overlapping cultural, political and economic groups.”<sup>296</sup> The issue, challenge, and indeed the potential gift is to take the TK critique of the IP regime seriously. However natural, intuitive, and socially beneficial this IP regime appears and even *feels* to us, there is much more to the situation. Those outside of it, including many TK proponents, are more likely to see it clearly.

The TK discourse is articulated in a stereotypical and limiting opposition to the dominant IP discourse. History instructs that this particular dichotomy is unlikely to serve indigenous people well, especially if it is universalized on an international scale and subsequently overwrites a diverse range of highly specific local practices in the name of “community rights.” The TK discourse provides an important and unique critique of the IP regime. At the same time, the polarization of the debate minimizes possible short-term moves within the IP regime that could benefit indigenous peoples and developing countries, such as making full use of the phase-in periods, defining inventions narrowly, or not requiring fixation for copyright.<sup>297</sup>

The current “rights” frame, in which competing powers (states, NGOs, indigenous groups) assert rights in a range of international fora on behalf of indigenous people, will also entail costs, and these may be underestimated, especially by less powerful actors. Although disputes often involve a mix of power, rights, and interests, a refocusing on interest-based approaches to the conflict (for example, mediation) between the treatment of TK and industrial knowledge in global exchange is likely to be more beneficial to indigenous peoples and developing states than an exclusive reliance on rights or power-dominated approaches.<sup>298</sup> For example, a prolif-

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296. Kennedy, *supra* note 280, at 124.

297. See CARLOS M. CORREA, INTELLECTUAL PROPERTY RIGHTS, THE WTO AND DEVELOPING COUNTRIES 223-52 (2001) (proposing a range of options in the implementation of TRIPS by developing states).

298. See WILLIAM L. URY ET AL., GETTING DISPUTES RESOLVED 7-20 (1993) (arguing that resolving disputes through a focus on interests is generally cheaper, leads to

eration of dialogues between indigenous healer groups and multinational pharmaceutical companies could lead to increased mutual learning and respect, and provide for myriad local and contextually appropriate resolutions. The longer-range task is an inclusive international legal regime that is as informed by diverse local practices and norms as by fundamental human attributes of creativity. The current IP regime falls well short of that goal. Reaching shared understandings, however, is surprisingly feasible given that, beneath their conflicting ideologies and oppositional characterizations, both MNCs and indigenous groups share more practices of creativity than they may realize.

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better outcomes, puts less strain on relationships, and leads to lower recurrence of disputes that does a focus on rights or power).

# PEER-TO-PEER NETWORKS, TECHNOLOGICAL EVOLUTION, AND INTELLECTUAL PROPERTY REVERSE PRIVATE ATTORNEY GENERAL LITIGATION

By David W. Opderbeck<sup>†</sup>

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## I. INTRODUCTION

No black flags with skull and crossbones, no cutlasses, cannons, or daggers identify today's pirates. You can't see them coming; there's no warning shot across your bow. Yet rest assured the pirates are out there because today there is plenty of gold (and platinum and diamonds) to be had. *Today's pirates operate not on the high seas but on the Internet, in illegal CD factories, distribution centers, and on the street.*

—Recording Industry Association of America<sup>1</sup>

What's happening with global, peer-to-peer networking is not altogether different from what happened when the American colonists realized they were poorly served by the British Crown: The colonists were obliged to cast off that power and develop an economy better suited to their new environment. . . . No law can be successfully imposed on a huge population that does not morally support it and possesses easy means for its invisible evasion.

—John Perry Barlow<sup>2</sup>

Is the Recording Industry Association of America (RIAA) akin to a law-abiding merchant vessel overrun by pirates, or is it more like a frigate of the East India Tea Company anchored in Boston Harbor, unloading its monopoly wares on over-taxed colonists yearning for freedom? If you are a music industry executive, a rock star, a college student, or perhaps a copyright law professor, you may have a strong opinion about this question. Otherwise, you probably feel ambivalent about it.

The RIAA is now engaged in a titanic struggle to change public ambivalence concerning peer-to-peer (P2P) music file swapping. Although the RIAA shut down early P2P services such as Napster using conventional legal theories of contributory copyright infringement, it initially had no such success against less centralized networks, including the Grokster network. Faced with exponential growth in P2P file sharing—or piracy, depending on your perspective—the RIAA began suing individual end users of P2P networks.

Recently the United States Supreme Court cleared the way for continued litigation against Grokster under an intent-based standard that may

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1. Recording Industry Association of America, Anti-Piracy, <http://www.riaa.com/issues/piracy/default.asp> (last visited May 12, 2005) (emphasis in original).

2. John Perry Barlow, *The Next Economy of Ideas*, WIRED, Oct. 2000, at 240.

well result in liability to *Grokster*.<sup>3</sup> The *Grokster* opinion, however, likely is merely a momentary shift in the momentum of the P2P fight. P2P technology will continue to flourish, in ever-more ubiquitous and decentralized varieties, and content providers such as the RIAA will need to keep fighting for the hearts and minds of the public.

As Justice Breyer noted in his concurrence in *Grokster*, absent a further erosion of Supreme Court precedent or legislative action, direct end-user infringement litigation will remain a key “teaching tool” for intellectual property enforcement.<sup>4</sup> Indeed, the RIAA acknowledged this fact the day after the *Grokster* decision, when it filed a new round of individual cases against over seven hundred “John Does,” unidentified users it believes are sharing copyrighted content on P2P networks.<sup>5</sup> Announcing the new individual suits, RIAA Chairman and CEO Mitch Bainwol stated that “the Supreme Court provided a real shot in the arm to legitimate online music services and unanimously injected moral clarity into this debate . . . . Our efforts to defend the rights of record labels, musicians, songwriters and others in the music community from theft will certainly continue and likely be strengthened in the weeks and months ahead.”<sup>6</sup> Likewise, RIAA President Carey Sherman stated that the RIAA’s litigation and public relations efforts were proceeding against “a clear backdrop of what is right and what is wrong—what is legal and what is illegal. . . .”<sup>7</sup>

But is end-user litigation an appropriate “teaching tool” with respect to intellectual property norms? When we refer to large-scale litigation as a “teaching tool,” we typically are referencing the “private attorney general” action. Using procedures such as permissive joinder, multidistrict litigation, and class actions, individual “private attorneys general” who have been harmed by toxic substances, subjected to consumer fraud, damaged by inadequate securities disclosures, or deprived of their civil rights can pool their resources to obtain some measure of relief and, perhaps most importantly, to effect change where legislative action seems unlikely due to regulatory capture.

The RIAA individual end-user lawsuits bear many of the hallmarks of “private attorney general” litigation. They are brought by private plaintiffs

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3. *Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd.*, 125 S. Ct. 2764 (2005).

4. *Id.* at 2794 (Breyer, J., concurring).

5. See Press Release, RIAA, RIAA Continues Enforcement of Rights With New Lawsuits Against 784 Illegal File Sharers (June 29, 2005), available at <http://www.riaa.com/news/newsletter/062905.asp>.

6. *Id.*

7. *Id.*

to enforce laws that would go unenforced if left to government action. They are intended in large part to change future conduct and modify public perception and norms, rather than merely obtain remedies for past conduct. Like many traditional private attorney general actions, the RIAA end-user lawsuits also involve large numbers of claims that are aggregated into single cases managed by one judge and typically are resolved through formulaic settlements that provide nominal relief to the named parties.

However, the RIAA cases differ from prototypical private attorney general litigation in important ways. Most significantly, the classic private attorney general litigation model pits individual litigants with few resources against large, wealthy corporate defendants. In contrast, in the RIAA litigation, large, wealthy corporate entities are aggregating claims against individuals who can ill-afford the costs of litigation. I call this a “reverse private attorney general” action.

Intellectual property is the toxic tort of the coming decades.<sup>8</sup> The reverse private attorney general action is likely to gain increasing prominence in the intellectual property arena. All content industries are concerned about what they consider digital piracy over P2P and other online networks. The content industries gained a powerful weapon against such “piracy” with the Digital Millennium Copyright Act, which supplements the already formidable Copyright Act with broad subpoena powers and prohibitions on circumvention of encryption measures and trafficking in circumvention technology. Indeed, in addition to the music industry, the film and satellite television industries are already engaged in reverse private attorney general litigation.

Each of the current intellectual property reverse private attorney general cases is fascinating in itself, but together they raise important broad policy questions about the status of intellectual property rights, the nature of intellectual property norms, and the creation of intellectual property law in our culture. As an empirical matter, is intellectual property reverse private attorney general litigation an efficient means of changing social norms? As a normative matter, should intellectual property reverse private attorney general litigation be encouraged?

The empirical data concerning the RIAA litigation suggest that the RIAA end-user cases have failed to change the norms of P2P file sharing. Instead, the data suggest rapid technological evolution. As the RIAA’s tac-

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8. For a general discussion of toxic tort and other aggregate litigation, see Howard M. Erichson, *A Typology of Aggregate Settlements*, 80 NOTRE DAME L. REV. 1769 (2005).

tics have changed, P2P technology has kept pace, making it ever more difficult to identify and bring suit against individual file-sharers. This technological adaptation reflects the synergy between P2P end users (file sharers) and P2P application coders. It is a textbook example, to use Lawrence Lessig's phrase, of "West Coast Code" trumping "East Coast Code."<sup>9</sup> Because the "West Coast Code" of P2P applications continues to adapt to the RIAA's norm-changing efforts, the RIAA end-user litigation is both ineffective and grossly inefficient.<sup>10</sup>

The RIAA litigation also raises serious normative concerns. Most individual defendants named in aggregated actions will choose to accept form settlements rather than to incur litigation expenses, even if they possess potentially meritorious defenses. This results in injustice to the individual litigants, and defeats the important boundary-mapping function of intellectual property litigation.<sup>11</sup> Moreover, the aggregation of individual end-user suits removes some key policy issues, including questions about fair use and the proper valuation of music copyrights, from the legislative forum, where they might receive a more thorough public hearing.

In this Article, I use the RIAA litigation as a vehicle to explore the procedural and substantive concerns raised by intellectual property reverse private attorney general litigation. Part II of this Article reviews private attorney general theory and explores the traditional efficiency justifications for private attorney general actions. Part III describes the rise of the RIAA litigation, and explains why the RIAA litigation can be classified as reverse private attorney general litigation. Part IV discusses the norms of P2P file sharing and application coding, presents empirical data, including a regression analysis of file sharing connectivity data, indicating how the RIAA litigation has affected (or not affected) P2P activity, and explores the normative concerns arising out of the RIAA litigation and the use of intellectual property private attorney general litigation in general. Part V explains why private attorney general litigation will become more significant to intellectual property enforcement absent changes in the procedural and substantive law. Part VI discusses some changes in the law that might stem the tide of such litigation, and suggests that a regulatory model of copyright, along with other changes such as a right of digital first sale,

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9. LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE 53 (1999).

10. For a discussion of efficiency arguments relating to the RIAA litigation, see *infra* Part IV.

11. For a discussion of the boundary mapping function of intellectual property litigation, see *infra* Section V.C.3.

would provide adequate remuneration to copyright holders while limiting reverse private attorney general litigation.

## II. THE PRIVATE ATTORNEY GENERAL

### A. Private Attorney General History

The phrase “private attorney general” was coined by Judge Jerome Frank in *Associated Industries v. Ickes*, a 1943 Second Circuit case.<sup>12</sup> The issue in that case was whether Associated Industries, an association of coal consuming firms, had standing to challenge a coal price increase approved by the National Coal Commission. The Bituminous Coal Consumers’ Counsel, an official body with statutory authority to challenge decisions of the Commission, had not challenged the price increase.<sup>13</sup> Judge Frank reasoned that, if Congress could authorize the Attorney General to represent the public, it also could authorize “any non-official person, or . . . designated group of non-official persons . . . to bring a suit . . . even if the sole purpose is to vindicate the public interest. Such persons, so authorized, are, so to speak, private Attorney Generals.”<sup>14</sup>

The private attorney general concept became prominent in early civil rights and environmental law.<sup>15</sup> Most environmental law statutes passed since the 1970s include “citizen suit” provisions.<sup>16</sup> Courts have recognized implied rights of action by individual citizens to enforce federal civil rights statutes.<sup>17</sup>

The concept expanded with the growth of mass tort and consumer class action litigation since the 1980s. Both the class action mechanism under Federal Rule of Civil Procedure 23<sup>18</sup> and the rules governing federal

12. 134 F.2d 694, 699 (2d Cir. 1943), *vacated as moot*, 320 U.S. 707 (1943).

13. *Id.*

14. *Id.* at 704.

15. See Jeremy A. Rabkin, *The Secret Life of the Private Attorney General*, 61 LAW & CONTEMP. PROBS. 179, 187-94 (1988) (describing the development of the private attorney general concept in civil rights and environmental litigation).

16. See Matthew C. Stephenson, *Public Regulation of Private Enforcement: The Case for Expanding the Role of Administrative Agencies*, 91 VA. L. REV. 93, 93-102 (2005) (discussing the constitutionality of environmental “citizen suit” provisions).

17. See *id.* at 103-06 (discussing case law concerning private rights of action in civil rights cases).

18. Federal Rule of Civil Procedure 23(a) provides that:

One or more members of a class may sue or be sued as representative parties on behalf of all only if (1) the class is so numerous that joinder of all members is impracticable, (2) there are questions of law or fact

multidistrict litigation<sup>19</sup> have enhanced the reach of individual lawsuits.<sup>20</sup> Class action and multidistrict litigation has significantly impacted the sale and marketing of products including asbestos, tobacco, life insurance, prescription drugs, and breast implants.<sup>21</sup> Most recently, the private attorney general concept has gained importance under the federal securities laws and false claims statutes.<sup>22</sup>

## B. Private Attorney General Theory

Private attorney general theory initially focused on questions of influence and access. As the Supreme Court stated in a 1963 civil rights case, *NAACP v. Button*, private attorney general litigation facilitated “the distinctive contribution of a minority group to the ideas and beliefs of our

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common to the class, (3) the claims or defenses of the representative parties are typical of the claims or defenses of the class, and (4) the representative parties will fairly and adequately protect the interests of the class.

19. The federal multidistrict litigation rules are found at 28 U.S.C. § 1407 (2001). They provide that “when civil actions involving one or more common questions of fact are pending in different districts, such actions may be transferred to any district for coordinated or consolidated pretrial proceedings.” *Id.* § 1407(a). Transfer may be effected by initiation of the Judicial Panel on Multidistrict Litigation or upon motion by a party. *Id.* § 1407(c).

20. Class actions and multidistrict litigation are not precisely in the same category as traditional private attorney general actions, in which a statute authorizes an individual to sue to redress a public harm. However, “class actions are closely identified with the role of the private attorney general, especially when the emphasis is on financial feasibility and financial incentives.” Bryant Garth et al., *The Institution of the Private Attorney General: Perspectives from an Empirical Study of Class Action Litigation*, 61 S. CAL. L. REV. 353, 368 (1988). The same is true of multidistrict litigation, in which the plaintiff’s coordinating counsel typically stand to gain the most from a global settlement.

21. See, e.g., Dominica C. Anderson & Kathryn L. Martin, *The Asbestos Litigation System in the San Francisco Bay Area: A Paradigm of the National Asbestos Litigation Crisis*, 45 SANTA CLARA L. REV. 1 (2004) (describing current issues in asbestos litigation); Richard O. Faulk, *Dispelling the Myths of Asbestos Litigation: Solutions for Common Law Courts*, 44 S. TEX. L. REV. 945 (2003) (describing asbestos litigation “crisis”); Andrei Sirabionian, Comment, *Why Tobacco Litigation Has Not Been Successful in the United Kingdom: A Comparative Analysis of Tobacco Litigation in the United States and the United Kingdom*, 25 N.W. J. INT’L. L. BUS. 485 (2005) (describing history of tobacco litigation); James M. Wood, *The Judicial Coordination of Drug and Device Litigation: A Review and Critique*, 54 FOOD & DRUG L.J. 325 (1999) (describing and critiquing use of mass tort management rules in pharmaceutical drug and device litigation).

22. See Pamela H. Bucy, *Private Justice*, 76 S. CAL. L. REV. 1, 23-32, 43-54 (2002) (discussing “hybrid” private actions under federal securities laws and qui tam actions under the False Claims Act).

society” and served as “a form of political expression.”<sup>23</sup> This “social advocacy” justification for private attorney general litigation gradually migrated towards a more neutral “balance” justification.<sup>24</sup> The “balance” justification emphasized the role private attorneys general, particularly those benefiting from government or private foundation funding, play in leveling the playing field on behalf of underrepresented groups.<sup>25</sup>

More recently, law and economics scholarship has focused on the need for private attorney general litigation where the costs of individual litigation and direct governmental regulation are prohibitive in relation to the expected benefits.<sup>26</sup> The economic effect of private attorney general litigation is an important issue because of the externalities associated with a decision to litigate. In the United States, a litigant typically bears her own direct costs of litigation, and her decision whether to litigate accounts for those costs. However, the litigation decision also entails negative externalities in the form of costs incurred by involuntary litigants (such as the defendant) and costs to the public of operating the court system.<sup>27</sup> The litigation decision may likewise entail positive externalities in the form of deterrence of harmful conduct by others who do not wish to be sued.<sup>28</sup> One measure of the efficiency of a legal system is the combination of a private litigant’s need for redress and the positive externalities of the litigation balanced against the negative externalities of the action.<sup>29</sup>

With respect to private attorney general litigation in particular, the question is whether the prospect of attorneys fees—awarded either by statute or as part of a class action or multidistrict litigation settlement—provides an appropriate incentive to bring meritorious cases that might otherwise never be filed or whether it instead creates a perverse incentive to file non-meritorious cases.<sup>30</sup> Presumably the potential positive external-

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23. 371 U.S. 415, 431 (1963).

24. Garth et al., *supra* note 20, at 359-60.

25. *Id.*

26. *Id.* at 360-61.

27. See Steven Shavell, *The Fundamental Difference Between the Private and the Social Motive to Use the Legal System*, 26 J. LEGAL STUD. 575 (1997).

28. *Id.*

29. *Id.*

30. See Garth et al., *supra* note 20, at 368 (“[C]lass actions are closely identified with the role of the private attorney general, especially when the emphasis is on financial feasibility and financial incentives.”); *Id.* at 396 (“The current image of the private attorney general promotes fee shifting as a private market model for encouraging certain types of meritorious litigation. The main concerns in the debate appear to be whether attorneys get too much or too little in profit incentives.”).

ities of litigation are more significant in private attorney general litigation, which by definition has some nexus with the public interest beyond the individual litigants' claims. However, some scholars, such as Steven Shavell, question whether this rationale ever applies to private litigation, since "private parties are primarily concerned with their selfish benefits from litigation" and will sell the public interest short to obtain a favorable judgment or settlement.<sup>31</sup>

Other criticisms of the private attorney general concept focus on whether it provides incentives to find and stop otherwise undeterred wrongdoing or whether it instead incentivizes wasteful duplication of existing law enforcement efforts. As Professor John Coffee has noted, private attorney general claims are supposed to "generate deterrence, principally by multiplying the total resources committed to the detection and prosecution of the prohibited behavior."<sup>32</sup> However, the risks of private attorney general litigation cause many lawyers who handle such cases to "piggyback" on cases in which public agencies, such as the Securities and Exchange Commission or Federal Trade Commission, have already invested resources in uncovering the wrongdoing.<sup>33</sup>

Nevertheless, Professor Coffee suggests that private enforcement can sometimes play "an important failsafe function."<sup>34</sup> Absent private enforcement, powerful wrongdoers might capture the regulatory process and impede enforcement.<sup>35</sup> Private enforcement both reflects and institutionalizes social norms about appropriate behavior that should not be entirely subject to the political and budgetary uncertainties of government enforcement agencies.<sup>36</sup> Coffee suggests that the perverse incentives fostered by the current method of handling large private attorney general cases could be mitigated by creating a property right in the underlying action

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31. Shavell, *supra* note 27, at 578-79.

32. John C. Coffee, Jr., *Rescuing the Private Attorney General: Why the Model of the Lawyer as Bounty Hunter is Not Working*, 42 MD. L. REV. 215, 218 (1983).

33. *Id.* at 221-22. Coffee suggests that risk aversion, the prospect of collusive settlements, and search costs are the principal reasons why private attorneys general typically do not engage in much truly original litigation but instead tend to piggyback on existing government actions. *Id.* at 234.

34. *Id.* at 227; see also John C. Coffee, Jr., *Understanding the Plaintiff's Attorney: The Implications of Economic Theory for Private Enforcement of Law Through Class and Derivative Actions*, 86 COLUM. L. REV. 669 (1986).

35. Coffee, *supra* note 32, at 227.

36. *Id.*

and having the court select qualified lead counsel to manage the property right through Coasian bargaining.<sup>37</sup>

Empirical analysis seems to support the view that private attorney general litigation is economically efficient only in limited types of cases. For example, a study of class actions filed in the Federal District Court for the Northern District of California examined how the incentives provided by the class action mechanism related to the ideals of the private attorney general concept. As to the “creativity” of the legal claims, the study showed that litigation initiated by private attorneys who rely on fee awards to stay in business tended to piggyback onto existing government investigations, whereas litigation initiated by publicly funded legal services offices typically would not have been brought otherwise.<sup>38</sup> The study also suggested that private attorneys were more likely than public legal aid attorneys to trade systemic injunctive relief for a monetary award that would result in larger fees.<sup>39</sup> The authors of the study identify this as a contrast between “mercenary” and “social advocate” models of the private attorney general.<sup>40</sup> They suggest that the “social advocate” model has a place because it complements existing governmental regulatory activity, but that the “mercenary” model is more difficult to justify.<sup>41</sup>

Other commentators have noted that lawyers who handle private attorney general actions often have mixed motives.<sup>42</sup> Although plaintiff’s attorneys in such cases certainly seek large fee awards, they often also are motivated by concerns of fairness and social justice.<sup>43</sup> In particular, they often view themselves as moral crusaders on behalf of common people against greedy, faceless corporations.<sup>44</sup> Moreover, regardless of an individual attorney’s motives, private attorney general actions often constitute part of a broader effort towards social change. In addition to the economic efficiency of private attorney general litigation, then, it is useful to determine whether private attorneys general play an important public law function.

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37. *Id.* at 274-84.

38. Garth et al., *supra* note 20, at 375-78.

39. *Id.* at 381-82.

40. *Id.* at 377.

41. *Id.* at 387-88.

42. Howard M. Erichson, *Doing Good, Doing Well*, 57 VAND. L. REV. 2087 (2004).

43. *Id.* at 2089-91.

44. *Id.*

### III. REVERSE PRIVATE ATTORNEY GENERAL LITIGATION AND THE RIAA END-USER CASES

In contrast to traditional forms of private attorney general litigation, recently larger corporate entities have used mass litigation tools in efforts to effect social change. In some ways, this is similar to the use of class action devices by plaintiffs who seek certification of a class of defendants—the “reverse class action.”<sup>45</sup> Thus, I call these cases “reverse private attorney general” actions. But while most reverse class actions represent claims by individuals against similarly situated corporate defendants—for example, in product liability cases, claims against all the distributors of a defective product—reverse private attorney general actions entail claims against large numbers of individuals. In this Part, I describe the RIAA litigation, which is the paradigmatic example of reverse private attorney general litigation in the intellectual property context.

#### A. Technological Background

##### 1. *The Early Internet*

In order to understand the RIAA litigation and its relationship to file sharing norms, it is important to obtain a picture of how P2P technology has evolved. P2P networking traces its roots back into the soil of ancient internet history. The original ARPANET consisted of direct connections between a small number of hosts without a client/server architecture.<sup>46</sup> As the internet began to grow, most files were transferred directly between computers using FTP and Telnet, both P2P applications.<sup>47</sup> The Usenet system initially grew out of a Unix file sharing protocol.<sup>48</sup> As traffic increased, it became more difficult to locate the IP addresses of host computers with which a user desired a connection. The Domain Name System

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45. For a description of “reverse” or defendant class actions, see Robert R. Simpson & Craig Lyle Perra, *Defendant Class Actions*, 32 CONN. L. REV. 1319 (2000); Note, *Defendant Class Actions*, 91 HARV. L. REV. 630 (1978); 2 NEWBERG ON CLASS ACTIONS § 4:65 (4th ed. 2002).

46. Nelson Minar & Marc Hedlund, *Peer-to-Peer Models Through the History of the Internet*, in PEER-TO-PEER: HARNESSING THE POWER OF DISRUPTIVE TECHNOLOGIES (Andy Oram ed., 2001), available at <http://www.oreilly.com/catalog/peertopeer/chapter/ch01.html>.

47. *Id.*

48. *Id.* Usenet is an online discussion system involving posts and threaded replies. Usenet, WIKIPEDIA: THE FREE ENCYCLOPEDIA, <http://en.wikipedia.org/wiki/Usenet> (last visited Oct. 19, 2005).

(DNS) was developed to solve this problem.<sup>49</sup> Thus, many of the key features of today's internet—the ability to locate other sites at which files and information can be exchanged—grew from a P2P environment.

The increasing commercialization of the internet in the 1990s changed the network's architecture.<sup>50</sup> The current client/server model arose to satisfy the needs of the many individual users who flocked to the Net starting in 1994.<sup>51</sup> Most individual users wanted to obtain information from the internet, but were not interested in publishing information. In addition, many commercial users began employing firewalls and dynamic IP addresses to avoid the threat of incoming internet traffic. In this context, a client/server model was better suited to manage bandwidth and handle user needs.<sup>52</sup>

## 2. *Centralized P2P Applications—Napster*

The advent of personal broadband internet access through DSL and cable modems made the P2P model viable for individual users. Individuals with DSL or cable connections possessed the bandwidth needed to transfer files rapidly to other users. This trend was dramatically accelerated by the Napster application. Napster allowed users to publish information about files they had available for others to use and to find information about files available from others.<sup>53</sup>

The original Napster application accomplished this through a semi-centralized architecture. Napster maintained servers which held a list of files located on individual host computers. Users connected to the Napster server and gained access to this list. Upon selecting a file from the list, the user was connected directly to the host computer containing that file. The Napster server did not contain copies of the user files. This generation of

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49. *Id.* The Domain Name System stores internet addresses in a distributed database which provides an IP address for each hostname. DNS, WIKIPEDIA: THE FREE ENCYCLOPEDIA, <http://en.wikipedia.org/wiki/Dns> (last visited Oct. 19, 2005).

50. *Id.*

51. *Id.*

52. *Id.*

53. For a discussion of the original Napster architecture, see *A&M Records, Inc. v. Napster, Inc.*, 114 F. Supp. 2d 896, 905-08 (N.D. Cal. 2000), *aff'd*, *A&M Records, Inc. v. Napster, Inc.*, 239 F.3d 1004 (2001); Timothy James Ryan, Note, *Infringement.com: RIAA v. Napster and the War Against Online Music*, 44 ARIZ. L. REV. 495, 500-01 (2002).

P2P applications, then, served as sort of a broker between host computers.<sup>54</sup>

### 3. *Hybrid Architecture: Supernodes (Grokster) and BitTorrent*

After Napster shut down, P2P networks with a less centralized architecture became popular. These networks, which included Grokster, use no central server. Instead, high-bandwidth computers connected to the network become “supernodes” where information about other hosts and the files these hosts have available can be accessed by individual peer computers.<sup>55</sup> There is no single locus of information on this sort of network. Rather, there are numerous focal points, which constantly shift as supernodes come online or go offline.<sup>56</sup>

The BitTorrent protocol can represent another hybrid form of network. BitTorrent is an open source file sharing protocol that is particularly efficient for large files, such as digital movies and music.<sup>57</sup> For large files, such as digital movies, the file is broken into smaller packets, which may be distributed to different peers.<sup>58</sup> The BitTorrent protocol creates a “torrent” file, which contains data about the underlying file, and a “tracker” that specifies the location of related torrent files. Tracker files are located on tracker servers, which coordinate the downloading of BitTorrent files. When the file is downloaded, the torrent file is updated to indicate that the file is now available on another computer. The BitTorrent protocol, however, does not facilitate easy searching for available files; a prospective user must know the location of a torrent file or find a file through a web-search.<sup>59</sup>

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54. For a representative illustration of this architecture, see CacheLogic, Understanding Peer-to-Peer: Caching in Detail, <http://www.cachelogic.com/p2p/p2punderstanding.php#> (“Centralised Networks” tab) (last visited Oct. 30, 2005).

55. For a discussion of the Grokster architecture, see *Grokster*, 125 S. Ct. at 2771-75; Andrew J. Lee, Note, *MGM Studios, Inc. v. Grokster, Ltd. & In re Aimster Litigation: A Study of Secondary Copyright Liability in the Peer-to-Peer Context*, 20 BERKELEY TECH. L.J. 485, 490-92 (2005).

56. For a representative illustration of this architecture, see CacheLogic, Understanding Peer-to-Peer: Caching in Detail, <http://www.cachelogic.com/p2p/p2punderstanding.php#> (“Hybrid Networks” tab) (last visited Oct. 30, 2005).

57. See BitTorrent, WIKIPEDIA: THE FREE ENCYCLOPEDIA, <http://en.wikipedia.org/wiki/Bittorrent> (last visited Oct. 19, 2005).

58. *Id.*

59. *Id.*

#### 4. *Distributed Server Architecture: eDonkey*

The third generation P2P client is fully distributed.<sup>60</sup> The eDonkey client, for example, utilizes neither a single central server nor supernodes.<sup>61</sup> The eDonkey server software was released into the P2P community, so that users throughout the network could choose to become servers.<sup>62</sup> Any computer on the network can act as an indexing server.<sup>63</sup>

This type of architecture is self-healing (an attack on a portion of the network will not disable other portions) and presents no meaningful targets for contributory infringement or direct infringement claims by copyright owners. Although it might be possible to sue the proprietors of web portals that promote networks like eDonkey, it is practically impossible to litigate against server nodes themselves, as every of the millions of nodes on the network is a server. And, although it might be possible to attack providers of client software, the open source nature of such software, and its potential use for legitimate applications, likely will render any such attacks ineffective.<sup>64</sup>

### B. The Failures and Successes of P2P Gatekeeper Litigation

As Tim Wu has observed, copyright enforcement traditionally has relied to a significant extent on regulating “gatekeepers” rather than individual end users.<sup>65</sup> A gatekeeper is an entity or technology that controls access to a copyrighted work. The copyright gatekeeper strategy is efficient because copyright aversion strategies depend on ready access to aversion technology. If aversion technology is too costly, the costs of aversion will

60. See Lee, *supra* note 55, at 490-92.

61. See Brian Loban, *Between Rhizomes and Trees: P2P Information Systems*, 9 FIRST MONDAY, Oct. 2004, [http://www.firstmonday.org/issues/issue9\\_10/loban](http://www.firstmonday.org/issues/issue9_10/loban).

62. Slyck.com, *Slyck's Guide to eDonkey 2000*, <http://www.slyck.com/edonkey2k.php> (last visited Nov. 1, 2005).

63. Loban, *supra* note 61, stated that on the eDonkey network:

In effect, individual ‘servants’ have to connect to a few main active servers but the networks are decentralised, in the sense that there are many more independent servers (spread throughout the world) via which the peers search and retrieve. The independent servers, which make up the respective networks are, nevertheless, linked to each other (inter-server communication). Anyone with sufficient processing power can run an OpenNap or eDonkey server (*i.e.*, independent server communities clustered together create sub-networks within their respective networks).

64. For a discussion of how open source norms affect the dynamics of P2P application development, see *infra* Section III.F.

65. Tim Wu, *When Code Isn't Law*, 89 VA. L. REV. 679, 711-12 (2003).

exceed the costs of compliance. Most would-be infringers will then choose to comply. On the other side of the coin, the costs of enforcement against a handful of gatekeepers are significantly lower than enforcement efforts against large numbers of end users.<sup>66</sup> This is exactly the strategy the RIAA initially pursued with the *Napster* and *Grokster* cases.

The RIAA's first gatekeeper case, against the centralized Napster network, was successful.<sup>67</sup> This victory, however, was soon eclipsed by protracted litigation over second generation P2P architecture. By 2002, many file sharers had begun using the second generation of P2P architecture employed by networks such as Grokster.<sup>68</sup> Once again, the RIAA sought to cut off the threat at its head, using theories of vicarious and contributory copyright infringement to turn off the Grokster network servers. This time, however, the RIAA's attempts to shut down offending P2P networks faltered before finding recent success in the Supreme Court.<sup>69</sup>

The RIAA's effort to shut down Grokster and other FastTrack clients demonstrates to some extent an understanding of end-user file sharing behavior. File sharers were not simply enamored of the Napster application;

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66. See generally Joni Lupovitz, *Beyond Betamax and Broadcast: Home Recording From Pay Television and the Fair Use Doctrine*, 2 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 69 (1992) (discussing copyright gatekeeper litigation involving home videotaping and the Betamax); see also Wendy J. Gordon, *Fair Use as Market Failure: A Structural and Economic Analysis of the Betamax Case and its Predecessors*, 82 COLUM. L. REV. 1600 (1982).

67. See *A&M Records, Inc. v. Napster, Inc.*, 114 F. Supp. 2d 896 (2000), *aff'd*, 239 F.3d 1004 (2001) (granting preliminary injunction to prevent continued use of the Napster network for infringement).

68. See *infra* Part IV (reporting connectivity data); cf. Brendan Koerner, *Why is Napster Shut Down but Grokster Still Running*, SLATE, Mar. 8, 2002, <http://slate.msn.com/id/2062959> (noting difficulty of successfully litigating against Grokster and KaZaA and the networks' popularity); Greg Lefevre & Casey Wian, *Napster Shutdown Seen as Potential Boon to Competitors*, CNN.COM, July 27, 2000, <http://archives.cnn.com/2000/LAW/07/27/napster.backlash> (reporting on potential for P2P network growth in aftermath of *Napster* decision).

69. In 2003, a California district court denied the RIAA's claim for preliminary injunctive relief against the proprietors of the Grokster software. Partly because the Grokster software utilized distributed supernodes, and there was no central server housing a list of files, the court found that Grokster did not effectively control end-user activity and was not liable for user infringement. *Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Inc.*, 259 F. Supp. 2d 1029, 1041-43 (2003), *aff'd*, 380 F.3d 1154 (9th Cir. 2004), *rev'd*, 125 S. Ct. 2764 (2005). This decision was affirmed by the Ninth Circuit on August 19, 2004. *MGM Studios*, 380 F.3d at 1160. On June 27, 2005, the United States Supreme Court reversed the Ninth Circuit and remanded the *Grokster* case for trial on the issue of defendants' liability for intentionally inducing infringement. 125 S. Ct. at 2782-83.

instead, they had internalized sharing norms that transcended any particular application or network. As a result, after Napster shut down, end users migrated to other networks. The same appears to be true with respect to the FastTrack network and its clients, including Grokster, as the empirical data in Section III.D below illustrates. Moreover, although the Supreme Court's *Grokster* opinion represents ground gained by the RIAA against file sharing software developers, it by no means ends the war. Indeed, outlines of potential future litigation tactics have been drawn in the concurring opinions by Justice Breyer and Justice Ginsberg.<sup>70</sup> Thus, even with the perhaps ephemeral *Grokster* Supreme Court victory, the RIAA has continued, and must continue, to focus on end-user litigation designed to change file sharing norms.

### C. The End-User Lawsuits

The district court and Ninth Circuit *Grokster* decisions momentarily crippled the RIAA's efforts to control P2P file sharing. Because the RIAA was unable to control the technology, it instead focused on influencing

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70. Writing for the Court, Justice Souter sidestepped arguments raised by the parties and amici about the nature and extent of noninfringing uses that would avoid an imputation of bad intent under *Sony*. *Grokster*, 125 S. Ct. at 2778-79 ("It is enough to note that the Ninth Circuit's judgment rested on an erroneous understanding of *Sony* and to leave further consideration of the *Sony* rule for a day when that may be required."). However, Justice Ginsburg, in a concurring opinion joined by Justice Kennedy, suggested that the plaintiffs should prevail even under the *Sony* standard of imputed liability. *See id.* at 2783 (Ginsburg, J., concurring). In Justice Ginsburg's view, since P2P software is "overwhelmingly used to infringe" and there is no "reasonable prospect that substantial or commercially significant noninfringing uses [are] likely to develop over time," the intent to induce infringement can be imputed through distribution of P2P software itself. *Id.* at 2786. Justice Breyer, in a concurrence joined by Justices Stevens and O'Connor, disagreed with Justice Ginsburg's analysis of *Sony*. *Id.* at 2787 (Breyer, J., concurring). Justice Breyer concluded that the *Sony* test for imputed intent is simply whether the technology at issue "is capable of substantial or commercially significant noninfringing uses," and that *Grokster* passes that test. *Id.* at 2788. Justice Breyer noted that the relative quantity of lawful and unlawful file sharing activity over the *Grokster* network is equivalent to the quantity of lawful and unlawful uses of home video recording technology reflected in the *Sony* record. *Id.* Justice Breyer further noted that lawful uses of P2P technology, including uses that are as yet unforeseen, likely will increase significantly as public domain information becomes more widely available in digital form. *Id.* at 2789-90 ("As more and more uncopyrighted information is stored in swappable form, it seems a likely inference that lawful peer-to-peer sharing will become increasingly prevalent"). On November 7, 2005, the RIAA plaintiffs announced a settlement with *Grokster* under which the existing *Grokster* service shut down. *See* Press Release, RIAA, Music Industry Announces *Grokster* Settlement (Nov. 7, 2005), available at [http://www.riaa.com/news/newsletter/110705\\_2.asp](http://www.riaa.com/news/newsletter/110705_2.asp).

end-user behavior. To this end, in September 2003 the RIAA began suing individual end users of P2P software in conjunction with a massive public relations campaign aimed at ending music sharing.<sup>71</sup>

### 1. *The DMCA and John Doe Actions*

The RIAA filed the first round of such suits against individuals identified by their internet service providers pursuant to subpoenas issued under the Digital Millennium Copyright Act (DMCA).<sup>72</sup> The relevant provisions of the DMCA authorize a copyright owner to serve a subpoena on an internet service provider (ISP) requiring the provider to identify an alleged infringer.<sup>73</sup> However, in *RIAA v. Verizon Internet Services, Inc.*, the D.C. Circuit held that, in the context of the DMCA's safe harbors for online service providers, the DMCA subpoena provisions were intended to require service providers to disclose subscriber information only when the subscriber allegedly is storing infringing materials on the provider's servers, not when the service provider merely acts as a conduit for P2P file sharing.<sup>74</sup> Thus, the *Verizon* court's holding curtailed the RIAA's strategy of using the DMCA to identify litigants.<sup>75</sup>

The current individual user suits are instead filed as "John Doe" actions in districts in which servers controlled by the users' ISPs are located. As of May 2005, sixteen such actions have been filed—essentially one new action each month since the *Verizon* decision—against over 9,500 "John Doe" defendants in federal district courts throughout the country.<sup>76</sup>

### 2. *How the End-User Litigation is Like Mass Tort Litigation*

At first glance, the RIAA end-user litigation appears to be nearly the opposite of mass tort litigation. Not only does it involve intellectual property rather than torts, but the structure of the litigation is inverted. Mass torts typically involve numerous consumers suing big business, whereas the RIAA litigation involves big business suing numerous consumers. But

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71. See Press Release, RIAA, Recording Industry Begins Suing File Sharers Who Illegally Offer Copyrighted Music Online (Sept. 8, 2003), available at <http://www.riaa.com/news/newsletter/090803.asp>.

72. See *RIAA v. Verizon Internet Servs., Inc.*, 351 F.3d 1229 (D.C. Cir. 2003).

73. 17 U.S.C. § 512(h)(1) (2000).

74. *Verizon*, 351 F.3d at 1236-37.

75. For other cases applying the *Verizon* court's reasoning to deny enforcement of DMCA subpoenas issued in P2P cases, see *In re Charter Commc'ns, Inc. Subpoena Enforcement Matter*, 393 F.3d 771 (8th Cir. 2005), and *In re Subpoena to Univ. of N. Carolina at Chapel Hill*, 367 F. Supp. 2d 945 (M.D.N.C. 2005).

76. See Appendix for a table listing all the actions reported by the RIAA.

on closer examination, the RIAA cases resemble mass tort litigation in several respects. Groups of ostensibly related cases are centralized in one court; the suits are not filed as discrete actions relating to each set of transactions; and discovery is managed, at least initially, on a collective basis.

The grouping of ostensibly related cases is a key component of case management in mass tort and other large-scale private attorney general litigation. The *Manual for Complex Litigation*, for example, advises judges to consolidate related cases before a single judge and to coordinate discovery proceedings in consolidated cases.<sup>77</sup> The federal rules concerning multidistrict litigation permit the transfer of related actions to a single district by the judicial panel on multidistrict litigation, either on the panel's own initiative or at the request of a party.<sup>78</sup> Such "MDL" proceedings are a staple of mass tort, consumer fraud, and securities litigation.<sup>79</sup> In some respects, MDL proceedings and other types of aggregate litigation serve as surrogates for class actions where class certification may not be available.<sup>80</sup> Often, aggregate litigation proceedings envelop one or more putative class actions as well as related individual actions. Such aggregate litigation has become a significant part of the big litigation game.<sup>81</sup> High profile plaintiffs' counsel jockey for key management positions over the litigation in the same way they seek appointment as class counsel in a

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77. MANUAL FOR COMPLEX LITIGATION (FOURTH) § 10.123 (2004).

78. 28 U.S.C. §§ 1407(a)-(c) (2000).

79. See Erichson, *supra* note 8, at 1774. Erichson notes:

To justify the investment required to litigate mass torts and other complex litigation effectively, plaintiffs' lawyers seek to represent large numbers of clients to reduce the per-plaintiff cost of litigating and to maximize returns on sunk costs. By taking advantage of economies of scale, mass litigators can pursue claims on behalf of large numbers of plaintiffs, some of whose claims otherwise would have negative value. The amplified stakes of collective representation permit plaintiffs' lawyers to invest in the litigation at a much higher level than individual representation would justify. Thus, non-class mass litigation often resembles class actions in the sense that numerous plaintiffs depend on counsel with whom they have no meaningful individual relationship and whose loyalty is directed primarily to collective interests.

*Id.*

80. Federal Rule of Civil Procedure 23 requires a showing of numerosity, commonality, and typicality. See FED. R. CIV. P. 23(a). There are no such stringent requirements for transfer to an MDL court. Rather, the standard for transfer is simply that the related actions "involve[] one or more common questions of fact" and that transfer "will be for the convenience of parties and witnesses and will promote the just and efficient conduct of such actions." 28 U.S.C. § 1407(a) (2000).

81. See Erichson, *supra* note 8, at 1774.

class action.<sup>82</sup> The aggregate litigation is managed in a coordinated fashion towards a global settlement that largely extinguishes the defendant's liability and provides a substantial fee to plaintiffs' counsel.<sup>83</sup> This occurs regularly in high-stakes private attorney general litigation, in which the prospect of some sort of fee shifting across a large number of aggregated claims is the principal reason counsel bring cases.<sup>84</sup>

Similarly, the RIAA usually files 200 or more individual cases in a single aggregated action against end users,<sup>85</sup> selecting venue based on the physical location of the servers controlled by the defendants' ISPs.<sup>86</sup> The defendants initially are listed as "John Does," and the allegations in the complaint are based on IP addresses traced to the local ISP's servers.<sup>87</sup>

After filing the "John Doe" complaint, the RIAA member plaintiff files a motion for leave to take immediate discovery, including the issuance of subpoenas under Federal Rule of Civil Procedure 45 for service on the ISP compelling disclosure of the identities and activity logs of the persons associated with the IP addresses.<sup>88</sup> Although court approval is not typically required for the issuance of third party discovery subpoenas in federal cases, the federal trial courts in most districts do not permit any discovery to occur prior to a preliminary scheduling conference with the Magistrate or District Judge pursuant to Rule 16(b).<sup>89</sup> An order for expedited discovery allows the RIAA plaintiff to serve subpoenas requiring the disclosure of file sharer identities before the court has established any formal discovery plan. In some instances, courts have approved a form of

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82. See, e.g., Mark P. Robinson, Jr., *MDL, Class Actions, and Competing Interests of State Litigation*, Winter 2001, ATLA-CLE, at 357 (2001) (describing strategic issues facing counsel in pharmaceutical products litigation with respect to MDL proceedings).

83. *Id.*

84. See *supra* Section II.B; see also John C. Coffee, Jr., *Understanding the Plaintiff's Attorney: The Implications of Economic Theory for Private Enforcement of Law Through Class and Derivative Actions*, 86 COLUM. L. REV. 669 (1986).

85. See Appendix for a listing of RIAA "John Doe" cases.

86. See, e.g., *Sony Music Entm't, Inc. v. Does 1-40*, 326 F. Supp. 2d 556, 557-59 (S.D.N.Y. 2004) (describing John Doe complaint).

87. See *id.*

88. See *id.* Federal Rule of Civil Procedure 45(a)(1)(C) authorizes the issuance of subpoenas requiring a non-party "to attend and give testimony or to produce and permit inspection and copying of designated books, documents or tangible things in the possession, custody or control of that person, or to permit inspection of premises, at a time and place therein specified."

89. Federal Rule of Civil Procedure 45(a)(3) allows an attorney to issue a subpoena without prior court approval. Rule 16(b) requires the court to hold a scheduling conference after the parties have completed their required initial disclosures under Rule 26.

discovery order permitting expedited service of discovery subpoenas on ISPs in any “current and future” cases “related to” the initial complaint.<sup>90</sup>

Some courts also have issued discovery orders that include a customized “Notice Regarding Issuance of Subpoena,” which the ISP is required to distribute to any individuals identified under the subpoena. This “Notice” states that it is “intended to inform you of some of your rights and options,” advises the individual that he or she may file a motion to quash the subpoena, and notes that “[t]he record companies are willing to discuss the possible settlement of their claims against you. . . . Defendants who seek to settle at the beginning of a case may be offered more favorable terms by the record companies.”<sup>91</sup>

Once individual defendants are identified, the complaint is amended to name them personally.<sup>92</sup> Many defendants so identified are not residents of the forum state.<sup>93</sup> However, by subscribing to an ISP with servers in the forum state and downloading files through those servers, personal jurisdiction in the forum state arguably exists. Even if a motion to dismiss for lack of personal jurisdiction or based on *forum non conveniens* might be possible, many, if not most defendants settle rather than incur significant litigation costs.<sup>94</sup>

The settlements reached with individual defendants have averaged approximately \$3,000.<sup>95</sup> Settling defendants must accept a standard, non-

90. See, e.g., *Elektra Entm't Group, Inc. v. Does 1-6*, No. 04-1241, 2004 U.S. Dist. LEXIS 22673 (E.D. Pa. Oct. 12, 2004) (authorizing expedited service of subpoenas for disclosure of file sharer identities on University of Pennsylvania and stating that “[t]his ruling applies to all current and future cases filed in the Eastern District of Pennsylvania that are related to the above-captioned case”).

91. *Id.*

92. See, e.g., Plaintiff’s Memorandum of Law in Support of Ex Parte Relief Permitting Plaintiff to Conduct Limited Expedited Discovery Upon RCN Corp., *Elektra Entm't Group v. Does 1-7*, No. 04-607 (GEB) (D.N.J. Feb. 17, 2004), available at [http://www.eff.org/IP/P2P/RIAA\\_v\\_ThePeople/JohnDoe/20040217\\_NJ\\_Memo\\_Supp.pdf](http://www.eff.org/IP/P2P/RIAA_v_ThePeople/JohnDoe/20040217_NJ_Memo_Supp.pdf) (describing “John Doe” procedure to be used in an RIAA case).

93. See, e.g., *Sony*, 326 F. Supp. 2d at 567 (reciting evidence that many “Doe” defendants likely were not residents of the forum state, but holding that arguments concerning personal jurisdiction were premature).

94. For a discussion of the settlement dynamics in RIAA end-user cases, see Assaf Hamdani & Alan Clement, *The Class Defense*, 93 CALIF. L. REV. (forthcoming 2005) (manuscript at 17-19), available at [http://www.law.harvard.edu/programs/olin\\_center/corporate\\_governance/papers/Hamdani\\_et%20al\\_3.pdf](http://www.law.harvard.edu/programs/olin_center/corporate_governance/papers/Hamdani_et%20al_3.pdf).

95. See *Transcript of Q&A With RIAA President Cary Sherman*, DAILY TEXAN, Mar. 25, 2004, available at <http://www.dailytexanonline.com/media/paper410/news/2004/03/25/Focus/Transcript.Of.Qa.With.Riaa.President.Cary.Sherman-641217.shtml>.

negotiable settlement agreement and release. The form settlement agreement requires the defendant to acknowledge that he or she distributed and/or reproduced copyrighted works owned or controlled by the plaintiffs, and “[w]ithout admitting or denying liability,” to “acknowledge that such conduct is wrongful.”<sup>96</sup> The defendant must also agree “not to infringe . . . any other sound recording protected under federal or state law, whether now in existence or later created, that is owned or controlled by any of the Record Companies.”<sup>97</sup>

By filing large groups of bundled claims under the “John Doe” procedure, obtaining information subpoenas in the central forum for essentially all the discovery relevant to each defendant’s file trading activity, and then settling individual claims on standardized terms, the RIAA litigation bears all the hallmarks of an aggregate or mass tort proceeding, and particularly of large-scale private attorney general actions. Moreover, the standard form notices provided to individually identified defendants—in some cases, remarkably, by the ISPs that were required to disclose their identities—resemble the notices individual class members receive in class action litigation. Defendants are advised that they may either seek a settlement or effectively “opt out” of the settlement process by moving to quash the subpoena or otherwise defend the claim.

The form settlements depart in some ways, however, from typical class action and aggregate private attorney general settlements, particularly in that they are far less friendly to the defendants. A defendant in a mass tort or consumer fraud case typically provides some nominal relief to individual class members, pays the plaintiffs’ attorneys’ fees, and perhaps changes some of its business practices.<sup>98</sup> Often, the settlement milieu in-

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Mr. Sherman acknowledged in the interview that “[t]his is not a revenue-generating exercise. [We’re trying to] send a message that the activity is illegal and can have consequences.” *Id.*

96. Form Settlement Agreement, prepared by Mitchell Silberberg & Knupp LLP, available at [http://www.eff.org/IP/P2P/RIAA\\_v\\_ThePeople/JohnDoe/Form\\_of\\_Doe\\_Settlement\\_Agreement.pdf](http://www.eff.org/IP/P2P/RIAA_v_ThePeople/JohnDoe/Form_of_Doe_Settlement_Agreement.pdf) (last visited Nov. 2, 2005).

97. *Id.* ¶ 3.

98. See, e.g., Erichson, *supra* note 8; Steven B. Hantler & Robert E. Norton, *Coupon Settlements: The Emperor’s Clothes of Class Actions*, 18 GEO. J. LEGAL ETHICS 1343 (2005) (providing empirical analysis of settlements by Fortune 500 companies from 1988 to 1998); Thomas M. Hefferon & Douglas A. Thompson, *Class Action Update: The Increasing Scrutiny of Class Settlements and Other Developments*, 60 BUS. LAW. 797 (2005) (discussing settlement methods in class actions); Christopher R. Leslie, *A Market-Based Approach to Coupon Settlements in Antitrust and Consumer Class Action Litigation*, 49 UCLA L. REV. 991 (2002).

cludes settlements with state and federal regulators over similar conduct.<sup>99</sup> The relief provided to any individual class member usually is relatively small. As discussed in Part II above, the social value of such settlements, to the extent there is any, primarily resides in the defendant's changed conduct and the deterrence of other similar conduct. In exchange, the defendant usually obtains a far-ranging release of past and future claims that have been, or could have been, asserted by present and absent class members.<sup>100</sup> In many instances, the broad releases obtained by defendants in aggregate litigation settlements allow them to avert bankruptcy or regulatory shut-down.<sup>101</sup>

In contrast, nearly the entire focus of the RIAA form settlements is on the defendant's conduct. The individual defendant obtains only a narrow promise—not even termed a “release”—against further lawsuits from downloading or uploading activity occurring before the settlement date. The individual defendant, in return, promises never to infringe again. And, perhaps more significantly, the individual defendant acknowledges his or her conduct was “wrongful,” regardless of his or her actual liability. The defendant wears the scarlet “I” of the infringer for life, and the broader community is duly warned about the evils of infringement.<sup>102</sup>

Although many trial courts endorse the RIAA litigation strategy by issuing broad discovery orders and approving form settlements, not all trial courts have been so sanguine about the RIAA's tactics. Some courts have severed individual cases under the rules of permissive joinder.<sup>103</sup> Those

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99. See Seth M. Wood, Note, *The Master Settlement Agreement As Class Action: An Evaluative Framework for Settlements of Publicly Initiated Litigation*, 89 VA. L. REV. 597 (2003).

100. See Erichson, *supra* note 8, at 1784-95 (describing various common types of settlements in aggregated actions); Tobias Barrington Wolff, *Preclusion in Class Action Litigation*, 105 COLUM. L. REV. 717, 766-67 (2005) (discussing releases in class settlements compared to doctrines of claim and issue preclusion).

101. See Erichson, *supra* note 8, at 1778 (noting that bankruptcy is one major alternative to a global settlement of aggregated mass claims).

102. There is no doubt that the end-user litigation is intended primarily to send a message rather than to obtain remedies. As recently characterized in a RIAA press release, “We will continue to send a strong message to the users of these illicit networks that their actions are illegal, they can be identified and the consequences are real.” Press Release, RIAA, Music Industry Targets 765 Internet Thieves in New Round of Lawsuits (July 28, 2005), available at <http://www.riaa.com/news/newsletter/072805.asp>. In addition, as discussed in Part VI below, the “scarlet I” may result in the defendant being ostracized from the “legitimate” online community under the DMCA's safe harbor provisions.

103. See, e.g., Order, *Interscope Records v. Does 1-25*, No. 6:04-cv-197-Orl-22DAB (M.D. Fla. Apr. 27, 2004) (adopting Magistrate's severance recommendation); see also

courts that have questioned joinder in the RIAA cases have noted that the RIAA complaints purport to aggregate the claims concerning the alleged infringement of thousands of disparate works, the copyrights to which are held variously by numerous different plaintiffs, by hundreds of individual defendants acting independently.<sup>104</sup> Additionally, some courts have raised administrative concerns, including that the RIAA plaintiffs can avoid paying individual filing fees by aggregating claims against Doe defendants, and that aggregating large numbers of Doe claims upsets a local district's ability to manage its docket to ensure speedy resolution of civil disputes for all litigants.<sup>105</sup>

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Order, *BMG Music v. Does 1-203*, No. 04-650 (E.D. Pa. Mar. 5, 2004) (requiring severance); Report to and Request of the Assignment Committee at 1, *Priority Records LLC v. Does 1-8*, No. C 04-1136 WDB (N.D. Cal. Apr. 8, 2004) (noting "significant concerns regarding improper joinder of plaintiffs and defendants, as well as the Court's jurisdiction over DOE defendants"); Order at 3, *Motown Record Co., L.P. v. Does 1-252*, No. 1:04-CV-439-WBH (N.D. Ga. Aug. 16, 2004) ("Defendants . . . argue that they have been mis-joined, and the Court is inclined to agree," but deferring decision until individual defendants present joinder argument). All of these documents are available on the Electronic Frontier Foundation Website, <http://www.eff.org/IP/P2P/riaa-v-thepeople.php> (last visited Nov. 2, 2005). For a discussion of the rules of permissive joinder, see for example, *United Mine Workers v. Gibbs*, 383 U.S. 715, 724 (1966); *Alexander v. Fulton County*, 207 F.3d 1303, 1323 (11th Cir. 2000); *Mosley v. Gen. Motors Corp.*, 497 F.2d 1330, 1333 (8th Cir. 1974).

104. See, e.g., Order at 8-9, *Arista v. Does 1-100*, No. 1:04-CV-2495-BBM (N.D. Ga. Feb. 1, 2005) ("Although there is some overlap between the songs at issue, even the majority of those appear to vary from Defendant to Defendant. It appears as a consequence that separate trials, witnesses, and evidence will be necessary for each Defendant's case, and it further appears that there are no common questions of fact between the Defendants."); see also Order at 2, *BMG v. Does 1-203*, No. 04-650 (E.D. Pa. Mar. 5, 2004) ("The claims against the different Defendants will require separate trials as they may involve separate witnesses, different evidence, and different legal theories and defenses, which could lead to confusion of the jury"), *motion for reh'g denied in part*, Order at 2, *BMG Music v. Does*, No. 04-650 (E.D. Pa. Apr. 2, 2004) ("Each claim involves different property, facts, and defenses"); Report and Recommendation at 7, *Interscope Records v. Does 1-25*, No. 6:04-cv-197-Orl-22DAB (M.D. Fla. Apr. 1, 2004) ("Due to the lack of an[y] uniformity between the Defendants, and the absence of any evidence attesting to joint action other than Defendants' use of 'Fast Track,' and the lack of any connective nexus among the Defendants, Plaintiffs have not satisfied the preconditions for permissive joinder . . .").

105. See, e.g., Order at 10-13, *Arista v. Does 1-100*, No. 1:04-CV-2495-BBM (N.D. Ga. Feb. 1, 2005) (allowing joinder despite concerns that "[p]laintiffs' joinder of the Doe Defendants may be an attempt to improperly avoid full payment of the per-case filing fee" and that "[t]he consolidation of 100 individual cases into one case, even for a short period of time, raises some concern" regarding the "just, speedy and inexpensive resolution of civil disputes" on the court's docket).

#### IV. THE RIAA LITIGATION, THE EMPIRICAL DATA, AND INTELLECTUAL PROPERTY NORMS

If individual P2P litigation is a teaching tool primarily intended to change social norms about file sharing, then it is important to identify precisely what norms are at play. A careful study of the file sharing community reveals that file sharing norms are only one part of the picture. The norms of P2P application coding are a significant additional component in the file sharing community's choice of strategies in response to the RIAA lawsuits. This Part discusses the norms at play in the P2P litigation and presents empirical data concerning the litigation's effect on file sharing norms.

##### A. Copyright Compliance and the Norms of File Sharing and P2P Software Coding

The P2P wars are a paradigmatic example of how social norms interact with regulatory compliance. A simple model of regulatory compliance suggests that individuals comply with the law when the expected costs of punishment exceed the expected benefits of the illegal conduct.<sup>106</sup> This basic calculus, however, is inadequate for several reasons. Law and norms scholars have suggested it overlooks the impact of social norms on compliance,<sup>107</sup> as social norms may compel compliance even where the prospect of punishment is remote. A typical explanation for why most American citizens pay their full share (or nearly their full share) of personal income taxes, even though the probability of prosecution for improper deductions is low, is a social norm against "cheating" on income taxes.<sup>108</sup> Social norms may also reduce the likelihood of compliance. In many parts of the United States, for example, highway speed limits are routinely ignored, in part because many people do not believe speeding is a serious moral or legal issue.

Others have observed that investments in efforts to escape punishment will greatly affect compliance.<sup>109</sup> Such efforts may include evasion—"an investment in decreasing the odds of being punished for violating a

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106. Wu, *supra* note 65, at 689.

107. *Id.*; see also Eric A. Posner, *Law and Social Norms: The Case of Tax Compliance*, 86 VA. L. REV. 1781 (2000); Tom R. Tyler, *Why People Obey the Law*, 50 CAMBRIDGE L.J. 174 (1990).

108. Tyler, *supra* note 107, at 22.

109. Wu, *supra* note 65, at 690; see also Gary S. Becker & George J. Stigler, *Law Enforcement, Malfeasance and Compensation of Enforcers*, 3 J. LEGAL STUD. 1 (1974).

law”<sup>110</sup>—and “avoision”—“efforts to exploit the differences between a law’s goals and its self defined limits.”<sup>111</sup> Bank robbers (at least smart ones) wear masks and use getaway cars to evade arrest.<sup>112</sup> Sometimes social norms and evasion strategies reinforce each other, as in the case of radar detectors that enable speeders to evade police radar traps.<sup>113</sup> Avoision strategies tend to be more sophisticated, such as the overly aggressive use of an estate planning “loophole” to hide an otherwise taxable transfer of money.<sup>114</sup>

In addition, those subject to regulation may employ change strategies as an alternative or adjunct to evasion and avoision.<sup>115</sup> A change strategy is an effort to change the law, through legislation, litigation, or both.<sup>116</sup> Change strategies present several related problems for those who disagree with a law. First, public choice theory suggests that legislative change strategies will only succeed if they are pursued by a sufficiently powerful interest group.<sup>117</sup> Moreover, because change strategies are costly, the choice of a change strategy creates a collective action problem; many who would benefit from the change will choose to free-ride on the efforts of those who seek to effect it.<sup>118</sup> Finally, change strategies give rise to rent-seeking competition, in which different interest groups struggle to gain influence, often resulting in a sub-optimal level of regulation and generating significant waste.<sup>119</sup>

End users of copyrighted materials, at least in contexts such as popular music and films, lack the resources and bargaining position to pursue avoision or change-based aversion strategies. Aversion strategies that focus on doctrinal change are difficult because copyright regulation is subject to a high degree of regulatory capture by the content industries.<sup>120</sup>

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110. Wu, *supra* note 65, at 692.

111. *Id.*

112. *Id.*

113. *Id.*

114. *Id.*

115. *Id.* at 694-95.

116. *Id.* at 693-95.

117. *Id.*

118. *Id.* at 697.

119. *Id.* at 705-06

120. See, e.g., Jessica Litman, *Copyright, Compromise, and Legislative History*, 72 CORNELL L. REV. 857 (1987) (noting that the 1976 Copyright Act “evolved through a process of negotiation among authors, publishers, and other parties with economic interests in the property rights the statute defines”); Deborah Tussey, *UCITA, Copyright, and Capture*, 21 CARDOZO ARTS & ENT. L.J. 319 (2003).

Avoision strategies also are difficult for the individual consumer in the copyright context. A commercial licensee of copyrighted products—for example, a company that licenses business software—might be able to engage in avoision strategies such as aggressive license interpretation or tough negotiating practices to avoid the full implications of an unfavorable license.<sup>121</sup> In contrast, individuals who want to listen to music, watch movies, or read books have no commercial leverage with which to negotiate. Thus, individuals who wish to avoid copyright compliance must rely on aversion strategies.

The RIAA end-user litigation can be viewed as an effort to increase the costs of aversion. It may be, in fact, that this strategy has succeeded in diverting some casual music consumers to pay-per-download services such as iTunes.<sup>122</sup> For such consumers, the \$1 per song cost of an iTunes download may be lower than the costs associated with the risk of an RIAA end-user lawsuit, as well as the relative inconvenience, learning curve, and spyware and virus threats inherent in P2P music networks.<sup>123</sup> Millions of file sharers, however, continue to pursue aversion strategies.<sup>124</sup> In response, the RIAA is attempting to increase the costs of aversion further by suing individual file sharers. However, it is technologically and practically infeasible to sue every individual for every violation.<sup>125</sup> Instead, the RIAA must focus primarily on changing the norms of file sharing. But what are the relevant norms?

As Tim Wu has noted, P2P networks reflect the norm that home-based, noncommercial copying is acceptable.<sup>126</sup> This norm alone, however, is not enough to support P2P file sharing on the scale at which it now occurs. P2P networks should entail significant collective action problems. It is not necessary to make files available for uploading in order to

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121. Even then, the availability of avoision strategies depends heavily on the relative positions of the parties. A large pharmaceutical company might avoid certain license restrictions imposed by a small vendor of specialized software if the vendor relies on the company for a significant portion of its revenues. A small company, in contrast, likely will have no leverage against a large software proprietor such as Microsoft.

122. For a discussion of iTunes, see *infra* Section V.C.3.

123. See Robert Lipschutz & John Clyman, *P2P Programs: Popular and Perilous*, PC PITSTOP, <http://www.pcpitstop.com/spycheck/p2p.asp> (last visited Nov. 2, 2005); see also MICROSOFT.COM, *The Benefits and Risks of Peer-to-Peer File Sharing*, June 7, 2005, [http://www.microsoft.com/athome/security/online/p2p\\_file\\_sharing.msp](http://www.microsoft.com/athome/security/online/p2p_file_sharing.msp).

124. See *infra* Section IV.B for empirical data concerning file sharing activity.

125. See *infra* Section IV.B discussing that there are over four million file sharers typically connected to P2P networks at any given time.

126. Wu, *supra* note 65, at 722-23.

download files from others. We might expect most users to free ride on the small number of users who upload, with the result that the network would not sustain itself on a large scale over time. Although studies suggest that most users do, in fact, free ride on the uploading efforts of others, a significant number also upload, and the practice of file sharing is thriving.<sup>127</sup> Why would a rational, self-interested user undertake the trouble, expense, and possible legal risk inherent in uploading?

Lior Strahilevitz has explained uploading as its own norm rooted in “charismatic code.”<sup>128</sup> P2P applications are coded such that they make it appear as though most users are sharing files for upload.<sup>129</sup> For example, most applications keep running tallies of the number of files available for sharing and provide discussion boards that create a sense of community among those using the network.<sup>130</sup> These practices reinforce the norm of reciprocity that often arises in loosely-knit groups.<sup>131</sup>

If the norm of charismatic code were the only social convention in play, the RIAA end-user litigation might have met with greater success. The apparently rapid decline in connections to the FastTrack network following the initial end-user lawsuits could have resulted in a cascade effect, in which users abandoned file sharing as they observed less sharing by others. There was, however, another set of norms in play: that of the P2P application coders.<sup>132</sup>

P2P applications are created from a curious mix of motives. Daniel Gervais has observed that P2P technology has evolved because the existence of a market, fueled by a social norm in favor of copying, motivates technologists to create the technology that will facilitate such copying.<sup>133</sup> However, the lure of profits is only one possible motivation for coding a file sharing application. Another, perhaps more significant, motivation is the open source culture out of which much of the innovation in P2P soft-

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127. *Id.*

128. Lior Jacob Strahilevitz, *Charismatic Code, Social Norms, and the Emergence of Cooperation on File-Swapping Networks*, 89 VA. L. REV. 505, 510 (2003).

129. *Id.* at 550-51.

130. *Id.* at 552-54.

131. *Id.* at 558-73. The norm of reciprocity may reflect “guilt alleviation”—the alleviation of unresolved indebtedness after having received a gift from someone by reciprocating with a similar gift. *Id.* at 562-67. In addition, the feedback effects of multiple users reciprocating with each other across a network may intensify the reciprocity norm in some online communities. *Id.* at 567-71.

132. See Wu, *supra* note 65, at 747-51.

133. Daniel J. Gervais, *The Price of Social Norms: Towards a Liability Regime for File-Sharing*, 12 J. INTELLECTUAL PROP. L. 39, 51-52 (2004).

ware is arising.<sup>134</sup> Like the file sharing community, the open source coding community thrives on a sort of charismatic code. Among the key components of any open source community is the presence of psycho-social rewards for sharing code.<sup>135</sup> Such rewards usually are mediated by a quasi-mythic figure—often the founder of a given open source project—who has implicit authority to “bless” good contributions and define the canon of the project.<sup>136</sup> Moreover, these rewards typically are rooted in a “hacker” culture that values elegant problem solving and a “gift” culture that values the diffusion of such solutions.<sup>137</sup> This “hacker” culture is heir to an anti-institutional tradition born on the primeval internet in the late 1960s and early 1970s,<sup>138</sup> and its “gift” culture reflects the same type of “reciprocity” norm inherent in file sharing communities.

In the case of P2P applications, the psycho-social rewards and cultural milieu of open source coding are further reinforced by an enthusiastic and equally anti-institutional user community. A successful P2P project allows tens of millions of users to subvert what is perceived as an unjust institution—the content industry’s control over distribution of creative works—as it demonstrates the coders’ acumen. This is open source catnip.

The norms of file sharing, then, are only part of the picture. The full view incorporates the unique symbiosis of file sharing and open source coding norms. It is a “perfect storm” of norms. It is unlikely that any feasible end-user litigation strategy RIAA could pursue in the face of this storm would succeed in changing these norms. Indeed, the empirical data presented in the next sub-section demonstrate that RIAA’s existing strategy has miserably failed.

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134. Popular P2P clients such as Bittorrent, as well as a number of clients that connect to the rapidly growing eDonkey network (which also includes a plug-in for Bittorrent), are open source projects. See Bittorrent, WIKIPEDIA: THE FREE ENCYCLOPEDIA, <http://en.wikipedia.org/wiki/Bittorrent> (last visited Nov. 2, 2005); see also entry for eDonkey Network, WIKIPEDIA: THE FREE ENCYCLOPEDIA, [http://en.wikipedia.org/wiki/EDonkey\\_Network](http://en.wikipedia.org/wiki/EDonkey_Network) (last visited Nov. 2, 2005). For other examples of the open source culture’s interface to P2P technology, see Shareaza, <http://shareaza.sourceforge.net> (last visited Nov. 3, 2005) (“Shareaza has been released under an open source license. That means people like you can help make Shareaza into the ultimate peer-to-peer client.”).

135. See Yochai Benkler, *Coase’s Penguin, or, Linux and the Nature of the Firm*, 112 YALE L.J. 369, 423-44 (2002); David W. Opperbeck, *The Penguin’s Genome, or Coase and Open Source Biotechnology*, 18 HARV. J.L. & TECH. 167 (2004).

136. Opperbeck, *supra* note 135, at 192-95.

137. *Id.*

138. *Id.* at 192.

## B. Empirical Data

### 1. Attitudinal Surveys

Early attitudinal studies confirm the intuition that many people do not have ethical qualms about sharing copyrighted music. For example, a July 2003 Pew Internet and American Life survey found that 21% of the internet population (26 million people) shared files over P2P networks and that two-thirds of file sharers were unconcerned about copyright laws.<sup>139</sup>

After the first wave of individual P2P lawsuits, these numbers changed. A January 2004 Pew Internet and American Life Survey indicated that music file downloads decreased to 14% of internet users (18 million people), and that usage of popular P2P networks had declined significantly.<sup>140</sup>

Based on the Pew surveys, it seemed that the RIAA strategy was working. At least one other survey, however, suggested otherwise. A January 2004 NPD Group research study showed a 14% *increase* in households and individual consumers engaging in P2P music downloading in November 2003 compared with September 2003.<sup>141</sup> It is possible that the different results of the NPD study are attributable to methodology: while the Pew studies were telephone surveys of adult computer users, the NPD study's sample universe included teenagers thirteen years of age and older, and the NPD survey methodology involved continuous real-time monitoring of 40,000 personal computers as well as a mailed survey.<sup>142</sup> The Pew surveys may also have suffered from response bias—respondents who continued to use P2P networks may have been less willing to admit P2P network use over the telephone after the RIAA litigation started. The

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139. Mary Madden & Amanda Lenhart, Pew Internet Project Data Memo: Music Downloading, File-sharing and Copyright (July 2003), *available at* [http://www.pewinternet.org/pdfs/PIP\\_Copyright\\_Memo.pdf](http://www.pewinternet.org/pdfs/PIP_Copyright_Memo.pdf). This was a telephone survey with a sample of 2,515 adults, conducted March 12-19 and April 29-May 20, 2003. *Id.* at 1.

140. Lee Rainie & Mary Madden, Pew Internet Project and comScore Mediametrix Data Memo: The State of Music Downloading and File-Sharing Online (Apr. 2004), *available at* [http://www.pewinternet.org/pdfs/PIP\\_Filesharing\\_April\\_04.pdf](http://www.pewinternet.org/pdfs/PIP_Filesharing_April_04.pdf). This was a telephone survey of 1,358 internet users conducted Feb. 3-Mar. 1, 2004 and compared data from a Nov. 18-Dec. 14, 2003 survey. *Id.* at 1. The 2004 survey showed declining usage of the following P2P networks: Kazaa (15% decline), WinMX (25% decline), Bearshare (9% decline), and Grokster (59% decline). *Id.*

141. Press Release, NPD Group, The NPD Group Notes Recent Increase in Peer-To-Peer Digital Music File Sharing (Jan. 16, 2004), *available at* [http://www.npd.com/press/releases/press\\_040116.htm](http://www.npd.com/press/releases/press_040116.htm).

142. *Id.*

Pew surveys also may have suffered from age bias, as the most active music file sharers typically are teenagers and young adults.

More recent surveys suggest that attitudes about file sharing are difficult to change. A survey of college students released by the Business Software Alliance in June 2005, indicates that P2P use has dropped 23% since 2003, and that 70% of students who are aware of industry enforcement efforts are less likely to engage in file sharing because of fear that they might get caught.<sup>143</sup> However, only 32% of students believe it is always improper to swap or download copyrighted materials on P2P networks, while 22% believe swapping or downloading is acceptable for “low value” items, 19% believe it is always acceptable, and 27% are undecided.<sup>144</sup> And, seven out of ten students surveyed reported downloading copyrighted music without paying for it.<sup>145</sup> Another recent attitudinal survey revealed that 67% of undergraduate college students are “in favor” of music and movie file sharing or find it “acceptable.”<sup>146</sup>

## 2. *Connectivity Data*

Attitudinal surveys and monitored samples can be illuminating, but even the most well-designed surveys and monitoring programs, which represent extrapolations from a small sample of the relevant population, can suffer from biases in methodology and data collection. Fortunately, with P2P networks, we are able to monitor usage patterns of nearly the *entire* population. This is because most P2P networks report aggregate connectivity data. A review of such connectivity data indicates that total P2P network usage has increased significantly, and that the RIAA litigation has

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143. MICHAEL GROSS, BUSINESS SOFTWARE ALLIANCE, HIGHER EDUCATION AND UNLICENSED SOFTWARE EXPERIENCE—STUDENT AND ACADEMICS SURVEY 2 (2005) [hereinafter GROSS, STUDENT AND ACADEMICS SURVEY], available at <http://www.definetheline.com/resources/BSA-Ipsos-Education-Survey-June2005.pdf>. The survey was conducted for BSA by Ipsos, a public relations and public policy research firm and was based on internet-based online interviews with over 1,000 college students and telephone interviews with 200 college faculty and administrators. See Press Release, Business Software Alliance, Nationwide Survey Shows Most College Students Believe It's Okay to Download Digital Copyrighted Files at School, in Workplace (June 29, 2005), available at <http://www.definetheline.com/press03.html>.

144. GROSS, STUDENT AND ACADEMICS SURVEY, *supra* note 143, at 23.

145. *Id.* at 30.

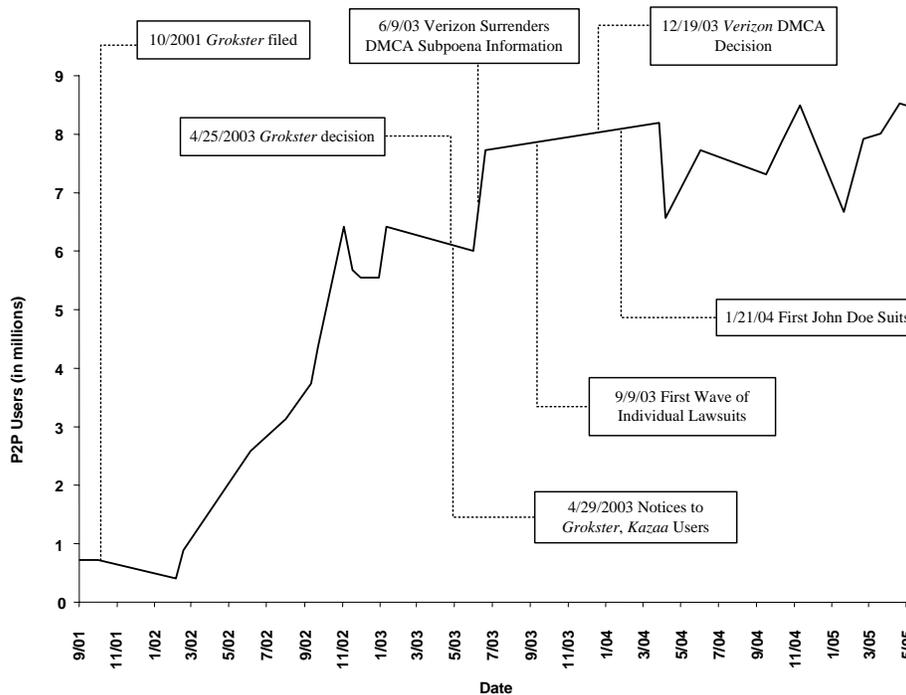
146. Steve Steklow, *Repro Man*, WALL ST. J., Oct. 15, 2005, at A1 (mentioning the Student Monitor “computing and the Internet” study).

simply fueled a technological arms race which reflects the synergy between the P2P file sharing and application coding communities.<sup>147</sup>

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147. I collected the data reflected in this Section from Slyck.com, a site that presents regular statistical updates of activity on various P2P networks. All the data collected are available on my website at <http://www.davidopderbeck.com/techdarwinism.php> (last visited Dec. 20, 2005). According to Slyck.com, "We gather the statistics from the network clients, and verify them through a third party. For example, for FastTrack we use KCeasy to verify the statistics displayed by Kazaa Media Desktop." Thomas Mennecke, *Interest in File Sharing at All-Time High*, SLYCK.COM, Apr. 27, 2005, <http://www.slyck.com/news.php?story=763>. In addition to the data I compiled, the proprietors of Slyck.com have prepared their own analysis of their historical statistics, which is consistent with mine. See *id.* As Slyck.com notes, "Although the RIAA (Recording Industry Association of America) and MPAA have sued well over 10,000 individuals, it appears this novelty has worn off as the P2P population has almost doubled since January 2003." *Id.* Another recent study of P2P activity, which monitored internet traffic in real time to identify P2P protocols, also suggested that overall P2P activity is steadily increasing. Thomas Karagiannis et al., *Is P2P Dying or Just Hiding* (Nov. 2004) (prepared for IEEE Globecom 2004—Global Internet and Next Generation Networks), available at <http://www.caida.org/outreach/papers/2004/p2p-dying/p2p-dying.pdf> ("We find that, if measured accurately, P2P traffic has never declined; indeed we have never seen the proportion of p2p [sic] traffic decrease over time (any change is an increase) in any of our data sources."). Some commentators have questioned whether connectivity data is a useful measure of the RIAA litigation's impact. Justin Hughes, for example, notes that connectivity data does not distinguish between U.S. and foreign users—indeed, he states, "Using statistics that include non-U.S. downloads to discuss whether the lawsuits in the U.S. are working is disingenuous, silly or disturbingly Americentric—implicitly thinking everyone on the planet sees our TV news and fears being hauled into our courts (perhaps the Canadians do)." Justin Hughes, *On the Logic of Suing One's Customers and the Dilemma of Infringement-Based Business Models*, 22 CARDOZO ARTS & ENT. L.J. 725, 732 (2005). A 2004 OECD study, however, showed that more than half of P2P users originated from the United States, with most of the remainder coming from Europe. OECD INFORMATION TECHNOLOGY OUTLOOK 2004, PEER TO PEER NETWORKS IN OECD COUNTRIES, available at <http://www.oecd.org/dataoecd/55/57/32927686.pdf>. The music industry has aggressively pursued and publicized end-user litigation in Europe as well as in the United States. See, e.g., Press Release, RIAA, Comments of Carey Sherman, President Recording Industry Association of America (RIAA), on Legal Actions Brought by IFPI in Europe (Oct. 7, 2004), available at <http://www.riaa.com/news/newsletter/100704.asp>. The recording industry claims that its end-user litigation in Europe has reduced the number of music files shared in Germany by 35%. See Press Release, IFPI, Music File-sharers Face Biggest Round of Legal Actions Yet; Many are Already Counting the Cost (Apr. 12, 2005), available at <http://www.ifpi.org/site-content/press/20050412.html> (IFPI is an international counterpart to the RIAA). Thus, the critique about U.S. versus non-U.S. connectivity data is misplaced. Connectivity data also has been criticized because it does not account for "spoof" files placed on P2P networks by RIAA. See Hughes, *supra*, at 733-34. A recent study of P2P spoofing, however, demonstrates that nearly all spoof files can be traced to a handful of peers—less than 200 peers in total. Akshay Patil, *Identifying Spoof Files and Limiting their Impact in the FastTrack Network* (Dec. 2003) (un-

It is interesting first to compare total P2P network usage with the RIAA litigation timeline:

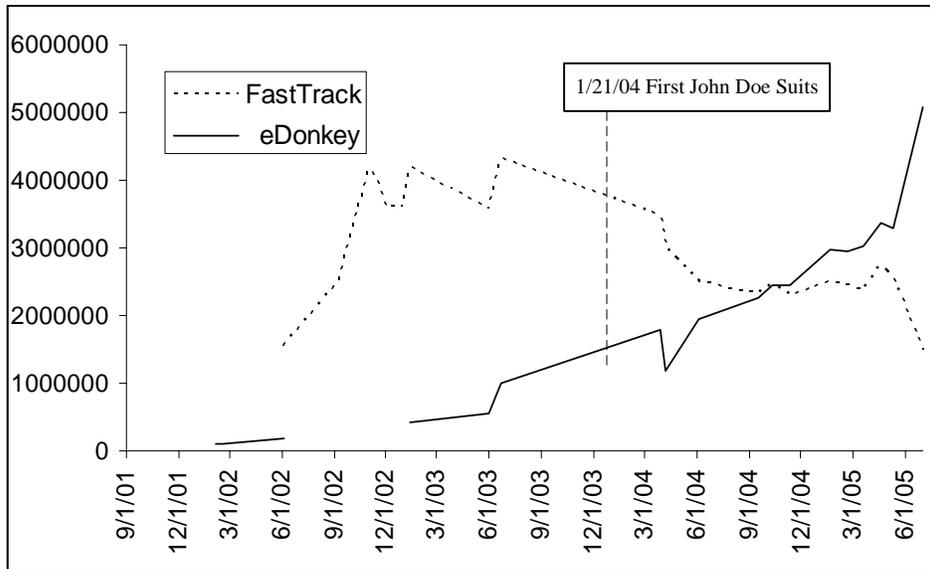


It seems clear from this data that the RIAA end-user litigation had an initial impact on file sharing activity, but that overall activity, while volatile, has returned to pre-litigation levels despite RIAA's sustained litigation campaign.

The picture becomes even more interesting when breaking out different types of P2P technology. For example, if we compare connections to the FastTrack network, which is a second-generation supernode network over which applications like Grokster are deployed, to a third-generation network such as e-Donkey, the pattern is striking:

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published manuscript), available at <http://web.mit.edu/patil/Public/805project>. Thus, file spoofing has an imperceptible impact on the overall connectivity data.

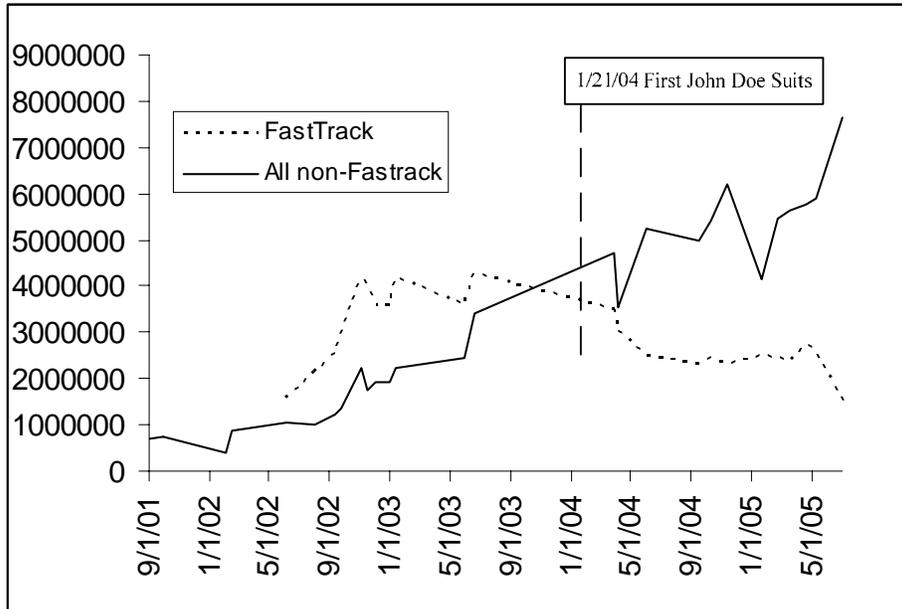


This suggests the second-generation P2P technologies were already declining when the Doe suits were filed and that the suits seem to have prompted a sudden steep decline in connections to those networks. At the same time, connections to the eDonkey network steadily increased, with a dip immediately after the Doe suits were filed, followed by significant increases immediately following the Supreme Court's *Grokster* decision.<sup>148</sup>

148. The spike in eDonkey connectivity immediately following the Supreme Court's *Grokster* decision seems to have passed. In October 2005, for example, Slyck.com was reporting eDonkey connectivity at 2.7 million users (data on file with author). This may represent a return to equilibrium levels of connectivity after the spike resulting from publicity after the *Grokster* decision. Alternatively, or in addition, it may reflect the recent announcement by the proprietors of the eDonkey software client that they are moving toward a "closed" P2P network in response to RIAA cease-and-desist letters. See Elle Cayabyab, *Fallout from Grokster Case Closes Down eDonkey*, ARSTECHNICA.COM, Sept. 30, 2005, <http://arstechnica.com/news.ars/post/20050930-5372.html>. If the latter scenario is true, this represents one way in which RIAA's gatekeeper strategy is succeeding, at least until the open source eMule client, which runs over the eDonkey network, becomes more popular or a commercial eDonkey service is created with an overseas base. Perhaps even more curious, following the widely publicized settlement of the *Grokster* case, total P2P connectivity has continued to rise, and total connections to the Fastrack and eDonkey networks have equalized. See Slyck.com, P2P Connectivity Data, Nov. 21, 2005 (on file with the author). Moreover, the story is further complicated when considering separate data concerning BitTorrent connectivity. As of October 2005, a BitTorrent site that uses a spidering technique to track torrent files and peers listed over two million BitTorrent peers. See Supernova.org, <http://www.supernova.org> (last visited Nov. 21, 2005) (Nov.

A regression analysis of this data reveals a significant correlation between the rise in connectivity to the eDonkey network and the decrease in connectivity to FastTrack.<sup>149</sup> The regression analysis of the data showed an  $R^2$  value of 0.76, which suggests a strong correlation, and a p-value of less than .0001. This analysis suggests the correlation is statistically significant.<sup>150</sup> Thus, it seems that a substantial component of the growth in the e-Donkey network could result from FastTrack defections.

If we include Gnutella<sup>151</sup> and other non-FastTrack networks along with eDonkey in the analysis, the results are equally interesting:



Statistical analysis of these data raises a number of intriguing questions. A

21, 2005 peer data on file with author). If this data is accurate, it may be that some users are migrating to BitTorrent clients until the post-*Grokster* situation stabilizes, representing yet another stage in the technological evolution of P2P networks.

149. I conducted a regression analysis using the Analyze-it software plug-in for Microsoft Excel. Regression analysis is used to determine the percentage of variation in one data set that is explained by the variability of another data set. See DAVID M. LEVINE ET AL., *STATISTICS FOR MANAGERS USING MICROSOFT EXCEL* 523-26 (4th ed. 2005). Data points prior to August 2002 were excluded because certain data prior to that date was unavailable. The data are available on my website, <http://www.davidopderbeck.com/technologicaldarwinism.php> (last visited Dec. 20, 2005).

150. The data are available on my website, <http://www.davidopderbeck.com/technologicaldarwinism.php> (last visited Dec. 20, 2005).

151. Gnutella is another decentralized P2P network. See Gnutella, WIKIPEDIA: THE FREE ENCYCLOPEDIA, <http://en.wikipedia.org/wiki/Gnutella> (last visited Oct. 14, 2005).

regression analysis suggests a statistically significant, but relatively weak, correlation with  $R^2$  value of 0.42.<sup>152</sup> The increase in connectivity to non-FastTrack networks, then, may partly result from defections from FastTrack clients. It also appears, however, that the non-FastTrack networks as a whole are attracting new users.

A final observation about the connectivity data is that the Supreme Court's *Grokster* decision did not initially result in any decrease in total connections. In fact, there is a significant spike in connectivity as of July 2005, followed by a leveling off and then a steady climb over the 10,000,000 connection mark. All of these observations taken together suggest that the RIAA's litigation strategies are failing to change the hearts and minds of the public and that P2P networks continue to attract new users despite the ongoing RIAA litigation—indeed, that the end-user litigation may be shifting public sympathy *towards* file sharing norms.<sup>153</sup>

These data are particularly interesting compared to ordinary patterns of technological evolution. Economists and finance scholars have developed various models of technological innovation. The Bass Diffusion Model, pioneered in the 1960s by Frank Bass, predicts that a technology will be adopted according to an "S"-shaped curve, with growth spurred by factors such as publicity, marketing, and word-of-mouth.<sup>154</sup> Management Professors Philip Anderson and Michael Tushman describe technological innovation as a process of "punctuated equilibrium"—periods of flat growth are punctuated by periods of sharply increasing growth, producing the characteristic "S" curve.<sup>155</sup>

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152. For a description of regression analysis generally, see LEVINE, *supra* note 149. I conducted the regression analysis using the Analyze-it software plug-in for Microsoft Excel. Data points prior to August 2002 were excluded because certain data prior to that date was unavailable. The regression yielded an  $R^2$  value of 0.42 with a p-value of .0006. The data are available on my website, [http://www.davidopderbeck.com/technological\\_darwinism.php](http://www.davidopderbeck.com/technological_darwinism.php) (last visited Dec. 20, 2005).

153. The spike also could represent an increase in activity in anticipation of losing access to the P2P services after the *Grokster* ruling. One P2P advocate attributes the spike to the "great media attention and relatively favorable outcome for P2P in the Supreme Court [in *Grokster*]." Thomas Mennecke, *P2P Population Grows as Summertime Heats Up*, SLYCK.COM, July 10, 2005, <http://www.slyck.com/news.php?story=854>. The growth in activity belies the usual pattern of P2P usage, which typically sees a drop during the summer months. *Id.*

154. See Jeffrey Morrison, *New Product Forecasting*, VISIONS MAG., Apr. 2000, <http://www.pdma.org/visions/apr00/forecasting.html>.

155. See Philip Anderson & Michael Tushman, *Technological Discontinuities and Organizational Environments*, 31 ADMIN. SCI. 439 (1986); Philip Anderson & Michael

More recently, Clayton M. Christensen has argued that “disruptive” technologies or innovations drive technological development.<sup>156</sup> A disruptive technology is one that is radically different than existing technology and fits a market segment not served by the existing technology.<sup>157</sup> The new technology is not always superior to the existing technology using standard measures of performance, but nevertheless displaces the existing technology because it fits a new or emerging market segment.<sup>158</sup>

As P2P technology matures, its growth curve may well map onto the Bass Diffusion Model. The RIAA litigation may constitute an external factor driving public awareness of the technology. In this sense, RIAA’s litigation and public relations strategy may be self-defeating.

Even more intriguing is the relationship between the RIAA litigation and the disruptive technology model. P2P technology itself may be a type of disruptive technology, although it would be difficult, given P2P’s roots in the early internet, to distinguish “old” networking technology from P2P.<sup>159</sup> Within what we now consider P2P technology, the disruptive technology model also is difficult to apply. The newer generation of distributed networks resemble a disruptive technology in they are not significantly more stable, scalable, or accessible than the Napster technology, but have been adopted because they fill a market niche.<sup>160</sup>

The niche the new P2P technologies fill, however, is not that of a new or emerging market seeking a radically different technology, but that of a market left devoid of one version of an existing technology because of a court injunction, and threatened by continued litigation against end users. The more distributed nature of second and third-generation P2P networks makes them less susceptible to direct assaults in the form of contributory or vicarious copyright liability and makes it more difficult to trace large-scale end users. Perhaps this suggests an ancillary model to Christensen’s

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Tushman, *Technological Discontinuities and Dominant Designs: A Cyclical Model of Technological Change*, 35 ADMIN. SCI. 604 (1990).

156. See generally CLAYTON M. CHRISTENSEN, *THE INNOVATOR’S DILEMMA WHEN NEW TECHNOLOGIES CAUSE GREAT FIRMS TO FAIL* (1997).

157. See generally *id.*

158. *Id.* A paradigmatic example of a disruptive technology is the smaller-size computer disk drive. Smaller disk drives were slower and had less storage capacity than existing larger drives, but fit the then-niche market segment of drives for desktop computers. *Id.*

159. See *supra* Part III for a description of the growth of P2P technology.

160. For a discussion of P2P as a disruptive technology, see RAMESH SUBRAMANIAM & BRIAN D. GOODMAN, *PEER-TO-PEER COMPUTING: THE EVOLUTION OF A DISRUPTIVE TECHNOLOGY* (2005).

disruptive technologies: a model of technology evolving resistance to intellectual property litigation.

## V. THE RISE AND LEGITIMACY OF REVERSE PRIVATE ATTORNEY GENERAL INTELLECTUAL PROPERTY LITIGATION

RIAA and its members, of course, have the right to sue file sharers for copyright infringement. A copyright infringement claim by the owner of a musical work against a person who uploads or downloads a digital copy of the work without authorization unquestionably satisfies any good faith pleading requirements and likely will succeed on the merits if litigated to a conclusion.<sup>161</sup> We might be tempted to accept the RIAA lawsuits as legally justified even if distasteful.

From a broader policy perspective, however, we might question whether the RIAA's reverse private attorney general approach is an efficient use of resources, and whether it serves the interests of justice. This is particularly so if, as the data presented in the previous Section indicate, the litigation is failing to change the relevant norms and is instead fueling a technological arms race. Furthermore, broad examination of the justification of RIAA cases becomes increasingly important as reverse private attorney general action gains prevalence as a method of intellectual property enforcement as a whole.

This Section provides some examples of other reverse private attorney general actions in the intellectual property context, which demonstrate that the RIAA cases do not stand alone as examples of content providers enforcing rights in mass claims against consumers. It then highlights the technological, cultural, and legal factors that will accelerate the trend toward mass intellectual property end-user litigation, absent changes in procedural and substantive law. Following that discussion is an analysis of the RIAA litigation, and reverse private attorney general intellectual property litigation generally, under the traditional justifications for private attorney general actions.

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161. Federal Rule of Civil Procedure 11 requires that any claim be warranted under the existing law or under a reasonable argument for the extension of existing law. Even if a given file sharing defendant could assert potentially meritorious affirmative defenses, as discussed in Part V below, there is little doubt that an RIAA member's file-sharing claim against an individual who engaged in file sharing with respect to a work owned by that member would satisfy Rule 11.

### A. Intellectual Property Reverse Private Attorney General Litigation Involving Technologies Other Than P2P

The RIAA litigation is not the only example of intellectual property reverse private attorney general litigation. A brief survey of cases concerning music sampling<sup>162</sup> and satellite television programming<sup>163</sup> demonstrates a broader trend toward the use of reverse private attorney general litigation to change sharing norms.

#### 1. Music Sampling

Sampling, a musical technique prevalent in rap, R&B, and dance music, grew out of the way DJ's blend songs together manually using vinyl records and turntables.<sup>164</sup> With advances in recording technology, it became possible to construct entire rhythm sections from pre-existing records.<sup>165</sup> As digital technology became a staple of recording studios, and home "project studios" housed on personal computers began to fit within the budgets of average music enthusiasts, sampling became an even more engrained practice.<sup>166</sup> In an effort to curtail sampling, the recording industry filed an aggregated copyright action against numerous defendants.<sup>167</sup> In music sampling cases, the sharing norm is rather pronounced, but the defendants are not ordinary consumers. Rather, the defendants are music producers, musicians, and others involved in the process of creating mu-

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162. See, e.g., *Bridgeport Music, Inc. v. 11C Music*, 202 F.R.D. 229 (M.D. Tenn. 2001) (severing claims against 770 publishing companies, entertainment companies, and other defendants that allegedly copied excerpts from copyrighted musical compositions without authorization).

163. See, e.g., *Tele-Media Co. of W. Conn. v. Antidormi*, 179 F.R.D. 75 (D. Conn. 1998) (severing claims against 104 defendants alleged to have intercepted cable television signals without authorization).

164. For a discussion of sampling, see Robert Szymanski, *Audio Pastiche: Digital Sampling, Intermediate Copying, Fair Use*, 3 UCLA ENT. L. REV. 271 (1996); *Bridgeport Music v. Dimension Films*, 410 F.3d 792, 798-99 (6th Cir. 2005); David S. Blessing, Note, *Who Speaks Latin Anymore?: Translating De Minimus Use for Application to Music Copyright Infringement and Sampling*, 45 WM. & MARY L. REV. 2399, 2403-05 (2004).

165. See *id.*

166. *Id.*; see also Maureen Downy, *Beat by Beat: The Distinctive Spectrums of Loop-based Production*, MIX MAGAZINE, Nov. 1, 2001, <http://industryclick.com/magazine/article.asp?magazineid=141&releaseid=9555&magazinearticleid=132786&SiteID=15> (discussing music production using looped samples).

167. See *Bridgeport Music*, 202 F.R.D. at 229

sic, who incorporate portions of pre-existing works into new compositions.<sup>168</sup>

Perhaps because of the different norms and economic incentives at play, the music sampling problem seems to be resolving itself through an ad-hoc process of license negotiation. Generally, artists are responsible for clearing rights to any samples they use.<sup>169</sup> The copyright holder in the sampled work is paid through a single flat fee or a royalty based on units sold.<sup>170</sup> In addition, a strong boutique industry has arisen to meet the demand for royalty-free samples. For about \$50 per gigabyte, it is now possible for a musician to purchase extensive libraries of drum beats, instrumental lines, background rhythms, and sound effects to meet virtually any imaginable music production need.<sup>171</sup> In sampling cases, then, the market seems to be providing a workable solution before litigation becomes excessively burdensome.<sup>172</sup>

## 2. *The DirecTV Litigation*

In contrast to sampling cases, the problem of unauthorized access to satellite television signals remains intractable. DirecTV, a supplier of digital satellite television services, has for several years been engaged in reverse private attorney general litigation involving use or trafficking in technology that can unscramble DirecTV's satellite signals.<sup>173</sup> The

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168. *Id.*

169. *Id.*

170. *Id.* at 293-94.

171. See, for example, the sample libraries available at the following online retailers: Audiomidi.com, <http://www.audiomidi.com/master.cfm?CID=342> (last visited Oct. 15, 2005); Smartloops.com, <http://www.smartloops.com> (last visited Oct. 15, 2005); Sony's Acidplanet.com, <http://www.acidplanet.com/tools/?p=loops&T=9388> (last visited Oct. 15, 2005).

172. The recording industry's self-interest in sampling undoubtedly is fueling this resolution. Initially, sampling was the domain of small, independent producers. Now, nearly every "top 40" hit employs sampling to some extent. In short, the record companies themselves became samplers.

173. See for example the DirecTV Defense website sponsored by the Electronic Frontier Foundation at <http://www.directvdefense.org> (last visited Oct. 15, 2005). The technologies at issue can be used to copy or mimic the access cards issued to DirecTV subscribers, which allow subscribers to view encrypted programming. See *In re DirecTV, Inc.*, No. C-02-5912-JW, 2004 WL 2645971, at \*2 (N.D. Cal. 2004) (discussing DirecTV access card technology). They include "smart cards," which contain decryption algorithms; smart card readers and writers, which can be used in conjunction with smart cards to decrypt DirecTV signals; "unloopers" and "bootloaders," which facilitate the recycling of smart cards; and "emulators," which are circuit boards that mimic smart cards. See

DirecTV cases result from a massive investigation into the distribution of decryption devices after DirecTV obtained sales records of several companies that sold the devices.<sup>174</sup> The company has issued over 100,000 cease and desist letters and has sued over 24,000 individuals.<sup>175</sup> DirecTV's claims arise under federal wiretap and copyright laws, including the Digital Millennium Copyright Act,<sup>176</sup> the Electronic Communications Privacy Act,<sup>177</sup> and the Federal Communication Act's rules concerning unauthorized satellite signal reception,<sup>178</sup> as well as state statutes and common law.<sup>179</sup>

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DirecTVDefense, Which Devices are Threatened?, <http://www.directvdefense.org/threat> (last visited Oct. 15, 2005).

174. *See* DirecTV, Inc. v. Cavanaugh, 321 F. Supp. 2d 825 (2003); Lauren McBrayer, *The DirecTV Cases: Applying Anti-Slapp Laws to Copyright Protection Cease-and-Desist Letters*, 20 BERKELEY TECH. L.J. 603, 613 (2005).

175. *Id.*

176. The Digital Millennium Copyright Act (DMCA) provides a cause of action for circumvention of "copyright protection measures" and for trafficking in technology that facilitates such circumvention. 17 U.S.C. §§ 1201(a)(1), (2) (1998).

177. 18 U.S.C. §§ 2511-2512 (2000). This is a wiretap statute that prohibits the unauthorized intentional interception, use, or disclosure of "wire, oral, or electronic communication." *See generally id.*

178. 47 U.S.C. § 605(a) (2001). This section also is essentially a wiretap statute, which prohibits the unauthorized receipt or transmission of wire or radio signals. *See id.*

179. *See, e.g.,* DirecTV, Inc. v. Adkins, 58 Fed. R. Serv. 3d 90 (W.D. Va. 2003) (reciting claims that included state common law unjust enrichment, tortious interference, and unfair competition). As a case study in reverse private attorney general litigation, the DirecTV cases are particularly interesting because DirecTV works very closely with law enforcement agencies, particularly the Federal Marshall's Service, which is responsible for executing writs of seizure. It should be noted that the DirecTV cases were not the first reverse private attorney general claims against end users of cable or satellite television services. In fact, the DirecTV cases were prefigured by earlier actions involving analog circumvention technology. In the early cable and satellite television cases, consumers used what would today be called "circumvention" technology to decrypt television and movie signals and obtain the benefits of cable or satellite television for free. *See* Movie Sys., Inc. v. Abel, 99 F.R.D. 129 (D. Minn. 1983) (granting motion to sever claims filed against 1,795 individuals who allegedly intercepted microwave television signals without authorization); Tele-Media Co. of W. Connecticut v. Antidormi, 179 F.R.D. 75 (D. Conn. 1998). The "sharing" norm was not as pronounced in those cases, because the technology involved was primarily "hard wired" and there was no commercial internet through which circumvention technology could be distributed. Most of the courts that encountered such cases summarily rejected the content providers' efforts to aggregate claims against individual defendants. Bridgeport Music, Inc. v. 11C Music, 202 F.R.D. 229 (M.D. Tenn. 2001) (severing claims against 770 publishing companies, entertainment companies, and other defendants that allegedly copied excerpts from copyrighted musical compositions without authorization). As one district court stated:

Many of the DirecTV cases were filed as aggregated actions.<sup>180</sup> The cases have sparked a substantial grassroots resistance, including counter-claims under “SLAPP” statutes and anti-DirecTV lawyers and advocates who maintain a vigorous online presence.<sup>181</sup> Much of the opposition stems from allegations that DirecTV has improperly sued individuals who obtained decryption technology for legitimate uses.<sup>182</sup> As with the RIAA cases, some courts have held that joinder of DirecTV claims is appropriate under Federal Rules of Civil Procedure 20(a),<sup>183</sup> while others have held otherwise because the individual cases do not arise from a common set of facts.<sup>184</sup>

The DirecTV cases seem to involve norms that lie somewhere between the early analog satellite cases and the P2P cases. The “sharing” norm is not as pronounced as in the P2P cases, because DirecTV smart-card users do not literally share content. However, some of the norms that relate to the coding of P2P applications also are at play in the DirecTV cases. This is because individual hackers and crackers often become involved in creating the hardware and software used to decrypt DirecTV signals.<sup>185</sup> More-

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[T]he attempted filing of these actions with such an inordinate number of party defendants in each raises an issue of proper joinder of parties under Rule 20, has created unmanageable administrative problems in the clerk's office and has occasioned unfairness, confusion and prejudice to defendants in their efforts to answer plaintiff's complaints, make responsive motions and conduct pre-trial proceedings.

*Movie Systems*, 99 F.R.D. at 129-30.

180. See, e.g., *In re DirecTV, Inc.*, No. C-02-5912-JW, 2004 WL 2645971, at \*1, \*6 (N.D. Cal. 2004); *DirecTV, Inc. v. Boggess*, 300 F. Supp. 2d 444, 449-50 (S.D. W. Va. 2004); *DirecTV, Inc. v. Hosey*, 289 F. Supp. 2d 1259, 1262 (D. Kan. 2003); *DirecTV v. Loussaert*, 218 F.R.D. 639 (S.D. Ia. 2003); *DirecTV, Inc. v. Perez*, No. 03 C 3504, 2003 WL 22682344 (N.D. Ill. 2003); *DirecTV, Inc. v. Russomanno*, No. 03-2475, 2003 U.S. Dist. LEXIS 23403 (D.N.J. 2003); *DirecTV, Inc. v. Essex*, No. C02-5503RJB, 2002 U.S. Dist. LEXIS 26923, at \*4 (W.D. Wash 2002).

181. See McBrayer, *supra* note 174, at 614-20; Welcome to DirecTVDefense.org, <http://www.directvdefense.org> (last visited Oct. 15, 2005); About DTVLawsuits.com, <http://www.dtvlawsuits.com> (last visited Oct. 15, 2005); Lakeshore Law Center, DirecTV Class Action FAQ, <http://www.lawyers.com/lakeshorelaw/directv.jsp> (last visited Oct. 15, 2005).

182. See websites listed in *supra* note 181.

183. See, e.g., *Hosey*, 289 F. Supp. 2d at 1262; *Russomanno*, 2003 U.S. Dist. LEXIS 23403; *Essex*, 2002 U.S. Dist. LEXIS 26923, at \* 4.

184. See, e.g., *Boggess*, 300 F. Supp. 2d at 449-50; *In re DirecTV*, 2004 WL 2645971, at \*1, \*6 (dismissing without prejudice aggregated claims involving over 775 defendants); *Loussaert*, 218 F.R.D. at 639; *Perez*, 2003 WL 22682344.

185. This is consistent with my personal experience in representing an individual defendant in a DirecTV case.

over, the DirecTV cases resemble the P2P cases in that many consumer advocates believe the content provider's aggressive litigation practices are disproportionate to the value of the rights being protected.<sup>186</sup>

It is unclear whether the DirecTV cases have succeeded in changing public norms regarding the taking of satellite television signals, as there do not seem to be reliable sources of empirical data about this practice. What does seem clear is that DirecTV's litigation campaign continues, and pre-figures future similar campaigns against users of encrypted works.

This brief survey of reverse private attorney general intellectual property litigation outside the P2P context suggests that such litigation is not unique to the P2P wars. Rather, it is becoming a significant enforcement tool, particularly for entertainment content industries. The DirecTV litigation suggests that end-user cases involving individual consumers may be difficult to resolve on a global basis, while the sampling litigation suggests that the market might provide a reasonably efficient licensing solution if the content provider has sufficient incentive to grant licenses. It does not appear in either case that the end-user litigation has influenced sharing norms, and it has only influenced sharing behavior in the music sampling context when a reasonable license is made available.

#### **B. Why the Trend Towards Reverse Private Attorney General Intellectual Property Litigation Will Accelerate**

A number of technological, cultural, and legal factors conspire to accelerate the trend toward mass lawsuits by large content providers against end users. These include, on the technology front, the widespread availability of broadband internet access and cheap, user-friendly digital reproduction technology; on the legal side, new legal tools such as the DMCA coupled with a continued dearth of criminal enforcement activity; and culturally, a deepening divide between the norms of propertizing and sharing intellectual property.

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186. See, e.g., Darrin Schlegel, *DirecTV Dragnet Casting Wide Net: But Defendants say Piracy Suits Unfair*, Jan. 17, 2004, DTVLAWSUITS.COM, [http://www.dtvlawsuits.com/news/details.cfm?nID=32&currentpage=1&pt\\_startrow=1&pt\\_endrow=20](http://www.dtvlawsuits.com/news/details.cfm?nID=32&currentpage=1&pt_startrow=1&pt_endrow=20) (quoting Pearland lawyer Peggy Bittick, who represents fifty clients in Texas accused of stealing the company's signal who notes that "DirecTV is like this big machine . . . [that] just marches on relentlessly, and they don't care who is on the other side, they just roll over people").

1. *Technological Factors Relating to Reverse Private Attorney General Intellectual Property Litigation*

Recent technological developments portend more reverse private attorney general intellectual property litigation. Broadband internet access should become nearly universal in developed countries within the next five to ten years.<sup>187</sup> This facilitates the transfer of large multimedia files. In addition, the technology to utilize multimedia files is cheap and ubiquitous. Entry-level personal computers come equipped with MP3 players and CD/DVD burners.<sup>188</sup> Using desktop production software, a hobbyist can mix audio and video samples to produce professional results with surprising ease.<sup>189</sup> The iPod and other portable MP3 players allow users to carry thousands of files anywhere and to transfer them seamlessly between computers and devices.<sup>190</sup> In short, the technology that facilitates disaggregation and sharing of digital content is becoming as commonplace as broadband internet access. If the traditional content industries wish to maintain control over their content, they must either control this technology or change public norms about how the technology should be used.

Over the longer term, P2P technology will increasingly find its way into the mainstream of personal computing. The convergence of comput-

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187. In the United States, President George W. Bush has set the goal of universal, affordable broadband access by 2007. *See* Press Release, Office of the Press Secretary, President Bush Meets with First-Time Homebuyers in MN and AZ, Remarks by the President on Homeownership (Mar. 26, 2004), *available at* <http://www.whitehouse.gov/news/releases/2004/03/20040326-9.html>; *see also* U.S. DEPT. OF COMMERCE REPORT, A NATION ONLINE: ENTERING THE BROADBAND AGE (Sept. 2004), *available at* <http://www.ntia.doc.gov/reports/anol/NationOnlineBroadband04.htm> (detailing rise of broadband usage in the U.S. and discussing areas in which further penetration of broadband service is needed); ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT REPORT, ICCP BROADBAND UPDATE (Oct. 2004), *available at* <http://www.oecd.org/dataoecd/18/9/18464850.pdf> (discussing adoption of broadband in OECD countries).

188. At the time of this writing, Dell Computer, a popular retailer, was offering a "media center" desktop computer, complete with TV tuner, CD burner, and MP3 software, for under \$1,000. *See* Dell, Desktops, <http://www1.us.dell.com/content/products/category.aspx/desktops?c=us&cs=19&l=en&s=dhs&~ck=mn> (last visited Dec. 6, 2005). The next generation of home digital entertainment centers, represented by Microsoft's recently-released "Xbox 360," will bundle digital gaming, video, music, and broadband connectivity in a sleek unit. *See* Xbox 360 FAQ, <http://www.xbox.com/en-US/hardware/xbox360/xbox360faq.htm> (last visited Dec. 12, 2005).

189. *See, e.g.*, Cakewalk, Home Recording Products, <http://www.cakewalk.com/Products/HomeRecording.asp> (last visited Dec. 12, 2005) (offering various digital audio workstation software products).

190. *See, e.g.*, iPod, <http://www.apple.com/ipod> (last visited Dec. 12, 2005).

ing, communications, and wireless technologies suggests that the networks of the future will be ubiquitous, wireless, and decentralized. One can imagine, for example, an *ad hoc* network of commuters exchanging files on the train ride home using handheld computers connected to each other through wireless radios.<sup>191</sup> In fact, to some extent, that scenario already exists with devices such as the Blackberry handheld computer and the Palm Treo.<sup>192</sup> If P2P models become integrated into how people share ordinary information, as is likely, the technology will be bundled and promoted as part of communication and computing devices, much like the way in which the Internet Explorer web browser is featured in Windows-based computers today. In fact, the next revolution in network technology, called “grid” computing, eventually will entirely supplant the client-server model with a distributed model that incorporates P2P connectivity on a far larger scale than today’s P2P networks.<sup>193</sup> On the networks of the near future, many will use P2P technology to facilitate seamless sharing of files and computing power among wireless, wired, mobile, and desktop devices. The norms of sharing over networks will become even more entrenched, and the intent-based “gatekeeper” liability standard announced in *Grokster* will likely exist only as an anachronism. Intellectual Property enforcement against individual end users will then become even more important.

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191. For a technical description of how wireless P2P networks might function, see Frank Uwe-Anderson et al., *An Architecture Concept for Mobile P2P File Sharing Services*, INFORMATIK 2004—INFORMATIK VERBINDET 229-33 (2004), available at [http://www.fmi.uni-passau.de/lehrstuehle/demeer/publications/conferences/conf\\_2004/architecturemobilep2p.pdf](http://www.fmi.uni-passau.de/lehrstuehle/demeer/publications/conferences/conf_2004/architecturemobilep2p.pdf).

192. See About Blackberry, <http://www.blackberry.com/products/blackberry/index.shtml> (last visited Oct. 13, 2005). Blackberry users typically do not communicate P2P, but rather send and receive messages that travel over cellular telephone networks to local, usually client-server, computer networks. See *id.* Personal and laptop computers can communicate P2P using wireless modems, although the manner in which wireless networking presently is employed typically involves a local wireless connection to a computer connected, via the internet or otherwise, to a centralized client-server network. As these technologies become smaller, more powerful, and more affordable, the moving, wireless, *ad hoc* P2P network likely will become as commonplace as today’s client-server models. In fact, technologists already are working on the architecture for such networks. See, e.g., Frank Uwe-Anderson et al., *supra* note 191.

193. See IBM Grid Computing, What is Grid Computing, [http://www-1.ibm.com/grid/about\\_grid/what\\_is.shtml](http://www-1.ibm.com/grid/about_grid/what_is.shtml) (last visited Oct. 13, 2005) (noting that “[l]ike peer-to-peer, grid computing allows users to share files” and “[u]nlike peer-to-peer, grid computing allows many-to-many sharing—not only files, but other resources as well”).

2. *Cultural Factors Relating to Reverse Private Attorney General Intellectual Property Litigation*

A new set of norms concerning creative works is congealing around networked digital technology. Increasingly, songs, film clips, pictures, and video are considered as isolated units rather than as part of compilations of similar works or segments of larger works. For music in particular, the concept of the “album” or “CD” as a basic creative unit is waning, except perhaps in the rare case of a breakthrough concept album such as Green Day’s recent “American Idiot.”<sup>194</sup> Consumers choose their favorite individual songs from various artists, whether on P2P networks or through paid services such as iTunes and the new Napster. Similarly, digital video recorders, on-demand digital cable and satellite television, and subscription channels with highly specialized content are completing the dismantling of network viewing continuity begun by the remote control. Many consumers seem to expect access to digital copies of any individual portion of content they desire at any time.

This digital buffet runs counter to the traditional business models of most content providers, which make money primarily by aggregating and distributing the creative output of others.<sup>195</sup> This conflict provides fertile ground for infringement. Consumers who want access to disaggregated content may resort to self-help if the “legitimate” market fails to produce a solution.

3. *Legal Factors Relating to Reverse Private Attorney General Intellectual Property Litigation*

The content industry’s problem has both technological and cultural dimensions, but the cultural aspects follow from the technology. If the technology that facilitates digital disaggregation and distribution can be controlled or disabled, the infringement problem can be sidestepped—at least in the near term. The content industries have indeed adopted encryp-

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194. See, e.g., Edna Gundersen, *Downloading Squeezes the Art Out of the Album*, USA TODAY, Dec. 5, 2003, available at [http://www.usatoday.com/life/music/news/2003-12-04-album-main\\_x.htm](http://www.usatoday.com/life/music/news/2003-12-04-album-main_x.htm); Clay Shirky, *Napster and the Death of the Album Format*, [http://www.shirky.com/writings/napster\\_nyt.html](http://www.shirky.com/writings/napster_nyt.html) (last visited Oct. 19, 2005); see also *American Idiot*, WIKIPEDIA: THE FREE ENCYCLOPEDIA, [http://en.wikipedia.org/wiki/American\\_Idiot](http://en.wikipedia.org/wiki/American_Idiot) (last visited Oct 13, 2005).

195. See Raymond Shih Ray Ku, *The Creative Destruction of Copyright: Napster and the New Economics of Digital Technology*, 69 U. CHI. L. REV. 263, 295-300 (2002) (discussing the economics of content distribution).

tion technologies designed to control access to digital works.<sup>196</sup> Many economically feasible encryption measures, however, can likely be cracked.

In order to support the utility of encryption measures, Congress passed the Digital Millennium Copyright Act (DMCA) in 1998.<sup>197</sup> The DMCA makes it unlawful to circumvent most encryption measures that protect access to copyrighted works, or to distribute decryption technology under most circumstances.<sup>198</sup> There are few viable defenses to a DMCA claim—in particular, there is nothing equivalent to a “fair use” defense—and the penalties for infringement are severe.<sup>199</sup> Thus, the DMCA provides a sharp sword against suspected infringers. As the DirecTV litigation demonstrates, the content industries are likely to employ this weapon on a large scale against individual suspected infringers.<sup>200</sup>

At the same time, government enforcement of criminal penalties in the copyright law has been sporadic at best.<sup>201</sup> Although government copyright policy has consistently favored the content industries, as evidenced most dramatically by the passage of the DMCA and the lack of a “fair use” regulation under the DMCA, the content industry has yet to persuade the Justice Department that it should divert resources toward prosecuting file sharers. Moreover, given federal law enforcement’s more pressing concerns—for example, terrorism—a significant increase in copyright en-

196. See U.S. Copyright Office, Anticircumvention Hearings Rulemaking Schedule, <http://www.copyright.gov/1201/2003/hearings/schedule.html> (last visited Oct. 31, 2005) (providing transcripts of testimony, including testimony from industry members, before U.S. Copyright Office regarding encryption measures and DMCA rulemaking).

197. Pub. L. No. 105-304, 112 Stat. 2860 (1998) (codified in scattered sections of 17 U.S.C.).

198. See 17 U.S.C. § 1201 (2000).

199. See *id.* §§ 1201(d)-(j) (listing exemptions for nonprofit libraries, archives, educational institutions, law enforcement activities, reverse engineering, encryption research, protection of minors, protection of confidential personal information, and security testing); § 1203 (listing available civil remedies, including actual or statutory damages, attorneys fees, and enhanced damages in some cases); § 1204 (listing criminal penalties, including fines of up to \$500,000 and imprisonment of up to five years for a first offense).

200. See *infra* Part IV.

201. See U.S. Department of Justice Computer Crime and Intellectual Property Section (CCIPS), Intellectual Property Cases, <http://www.usdoj.gov/criminal/cybercrime/ipcases.htm> (last visited Oct. 13, 2005) (providing a “representative sample” of eighty-four criminal copyright cases dating back to 1999). The majority of cases presented on the U.S. Department of Justice website concern counterfeit computer software. See *id.* The same site identifies seventeen criminal actions under the DMCA, largely concerning smart cards and satellite television piracy. See *id.*

forcement is unlikely.<sup>202</sup> This means the content industry must rely on civil, not criminal penalties.

If these factors indicate that reverse private attorney general intellectual property litigation is likely to become increasingly important, we should ask whether such litigation will be efficient, effective, or fair. The next Sections analyze the fairness and utility of reverse private attorney general intellectual property litigation under private attorney general theory.

### C. Reverse Private Attorney General Litigation and Private Attorney General Theory

#### 1. *Reverse Private Attorney General Intellectual Property Litigation and the Balance Rationale*

As discussed in Part II above, the balance rationale for private attorney general litigation holds that private attorney general procedures facilitate claims by people who could not otherwise afford access to the judicial system. It is difficult to conceive of any circumstance in which the balance rationale would apply to reverse private attorney general intellectual property litigation. By definition, this type of litigation involves claims by persons or entities that control valuable resources against individuals who lack those resources. In the RIAA litigation, the plaintiffs are large, wealthy, powerful corporations that have aggregated the various intellectual property rights inherent in a sound recording. They are arguably among the most powerful players in the new media economy and, as evidenced by legislation such as the DMCA, are more than capable of influencing the lawmaking process. The defendants, in contrast, typically are ordinary people, including in some notorious cases, schoolchildren, and grandparents.<sup>203</sup> Likewise, the DirecTV cases involve a leading content

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202. See U.S. DEP'T. OF JUSTICE, 2003-2008 STRATEGIC PLAN, available at <http://www.usdoj.gov/jmd/mps/strategic2003-2008/index.html> (last visited Oct. 22, 2005). The Strategic Plan notes that the Justice Department's primary goal is to "prevent terrorism and protect the Nation's security." *Id.* at pt. II. The Department's second goal is to "enforce federal laws and represent the rights and interests of the American people." *Id.* The priorities listed under that goal are reducing violent crime; reducing trafficking in illegal drugs; combating white collar crime, economic crime, and cybercrime; and upholding civil rights. *Id.* The section on "cybercrime" focuses primarily on consumer fraud, although intellectual property theft is mentioned briefly. *Id.*

203. See Associated Press, *Hundreds of Music Swappers Sued*, MSNBC.COM, Sept. 8, 2003, <http://msnbc.msn.com/id/3078419> (quoting Durwood Pickle, a seventy-one-year-old grandfather named in an RIAA case because his grandchildren used his com-

provider as the private attorney general. The balance rationale, then, cannot support reverse private attorney general intellectual property litigation.

## 2. *Reverse Private Attorney General Intellectual Property Litigation and Social Advocacy Theory*

The RIAA litigation arguably promotes some important social values. Our law and public policy reflect the significance of intellectual property rights. The *Grokster* court expressed its concern that P2P software “is fostering disdain for copyright protection”; even Justice Breyer, in his generally pro-technology concurrence, equated deliberate unlawful copyright infringement with “garden-variety theft.”<sup>204</sup> To the extent the *Grokster* rule fails to curb the growth of P2P and other dual use technology, perhaps the RIAA litigation makes sense under a social advocacy private attorney general theory.

The social advocacy justification for private attorney general litigation originally grew out of concern for underrepresented minorities who lacked access to other avenues of social change.<sup>205</sup> This sort of litigation is one type of response to the problems presented by public choice theory. It should act, to use John Coffee’s term, as a “failsafe” against regulatory capture.<sup>206</sup> Moreover, the social advocacy justification focuses on concerns that are central to our constitutional system, such as the individual rights guaranteed under the Bill of Rights.<sup>207</sup> In early civil rights litigation, for example, African-Americans who were not heard by racist legislatures obtained some measure of relief, and more importantly, began to change public perception of racism through the courts.<sup>208</sup>

Large intellectual property owners such as wealthy RIAA members are not oppressed minorities that require special protection in this manner. Indeed, the RIAA litigation may perversely represent an effort to capture the judicial system. More importantly, intellectual property does not implicate policy concerns that rise to the level of the life, liberty, or even property interests inherent in many other kinds of social advocacy private attorney general litigation.

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puter to download music files, who said, “How do I get out of this? Dadgum it, got to get a lawyer on this.”).

204. *Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd.*, 125 S. Ct. 2764, 2793 (2005) (Breyer, J. concurring).

205. See Rabkin, *supra* note 15, at 187-94. For more discussion, see *supra* Part II.

206. Coffee, *supra* note 32, at 227.

207. See Rabkin, *supra* note 15, at 187-89.

208. See *id.*

For example, Justice Breyer's comment that downloading copyrighted music amounts to "garden-variety theft" is questionable. If someone steals the laptop computer on which I am composing this Article, the theft represents a serious threat to our economic, social, and moral order. My laptop is a rivalrous resource. The thief and I cannot possess my laptop equally at the same time. In economic terms, the theft means I will lose the value of the labor through which I had obtained money to purchase the laptop, and I will further lose the opportunity to divert future income to other productive uses because I will need to replace the laptop. In social and moral terms, the thief will have degraded long-standing norms about my right to possess personal property obtained through my labor. If this type of theft continues undeterred on a large scale, our economy and society would collapse.

In contrast, if the thief makes digital copies of a song I wrote and produced, I still possess my copy of the recording as well as my ideas about the song's lyrics, chord changes, and structure. The intellectual property inherent in the song is a nonrivalrous resource.<sup>209</sup> When the thief takes a digital copy, I have not necessarily lost the value of the labor and other inputs used in creating the song, the thief has not necessarily transgressed any established norms supporting the culture in which I created the song, and large scale undeterred theft of a similar sort will not necessarily degrade our economy or society. As suggested by the ongoing debate over the nature and scope of intellectual property—and indeed over the concept of intellectual "property" itself—the analysis is far more complicated than "garden-variety theft."<sup>210</sup>

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209. See, e.g., Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1051 (2005). There, Professor Lemley wrote:

Precisely because its consumption is nonrivalrous, information does not present any risk of the tragedy of the commons. It simply cannot be "used up." Indeed, copying information actually multiplies the available resources, not only by making a new physical copy but by spreading the idea and therefore permitting others to use and enjoy it. The result is that rather than a tragedy, an information commons is a "comedy" in which everyone benefits. The notion that information will be depleted by overuse simply ignores basic economics.

*Id.* As I have discussed elsewhere, however, the proposition that ideas are nonrivalrous resources must be qualified depending on the context of the idea. See David W. Opperbeck, *The Penguin's Genome, or Coase and Open Source Biotechnology*, 18 HARV. J. L. & TECH. 167 (2004).

210. There is substantial debate over whether intellectual property should be considered "property" at all. See, e.g., John W. Duffy, *The Marginal Cost Controversy in Intellectual Property*, 71 U. CHI. L. REV. 37 (2004) (analogizing intellectual property to public

The norms of intellectual property likewise are not as entrenched as norms relating to fundamental rights. The moral ambivalence evident in public opinion surveys about copyright infringement arguably reflects more than simple opportunism.<sup>211</sup> It may also suggest deeper cultural traditions about who “owns” things like popular songs, visual arts, and literature. Indeed, on a historic and global scale, the concept of individual “ownership” of such intellectual property may be anomalous. Generations of people across nearly all cultures have created artwork, told stories, and sung tunes shared by the broader community. The notion that an author should retain sole control over a song, story, or picture creates dissonance with some earlier norms about “ownership” of creative work.<sup>212</sup>

In light of this background, the most troubling aspect of the P2P end-user litigation—and of reverse private attorney general intellectual property litigation generally—may be its tendency to delegitimize intellectual property law. In the near term, reverse private attorney general actions against individual infringers might reflect a “strong” intellectual property regime. Over the long term, however, the heavy hand of intellectual property enforcement will produce increasing resistance in the form of aversion, avoidance, and outright rebellion. This creates a serious issue concerning the legitimacy of intellectual property rules.

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utility regulation); Lemley, *supra* note 209, at 1031 (tracing the history of the “propertization” of intellectual property, and arguing that the current intellectual property framework provides an excessive level of control to intellectual property rights owners); Joseph P. Liu, *Regulatory Copyright*, 83 N.C. L. REV. 87 (2004) (noting and critiquing the increasingly regulatory nature of copyright legislation); Tim Wu, *Copyright’s Communications Policy*, 103 MICH. L. REV. 278 (2004) (describing how copyright is, in part, a communications regulatory regime). *But see* Michael A. Carrier, *Cabining Intellectual Property Through a Property Paradigm*, 54 DUKE L.J. 1 (2004) (reviewing the propertization of intellectual property and suggesting that limitations on other sorts of property should serve to limit the expansion of intellectual property protection); Richard A. Epstein, *Liberty Versus Property? Cracks in the Foundations of Copyright Law*, 42 SAN DIEGO L. REV. 1 (2005) (arguing that intellectual property is properly considered a form of “property” under Lockean labor theory); Peter K. Yu, *Intellectual Property and the Information Ecosystem*, 2005 MICH. ST. L. REV. 1 (2005) (discussing critiques of the propertization of intellectual property).

211. See *supra* Section IV.B.1 for a discussion of public opinion surveys and their results.

212. See, e.g., Anupam Chander & Madhavi Sunder, *The Romance of the Public Domain*, 92 CALIF. L. REV. 1331 (2004) (describing how TRIPS and other international conventions have upset the balance between propertization and the international public domain); Yu, *supra* note 210 (proposing the concept of an “information ecosystem” as a framework for international intellectual property protection rather than a traditional “property” model).

As Richard Fallon recently observed, “legitimacy” has at least three possible dimensions: legal, sociological, and moral.<sup>213</sup> Legal legitimacy results from decisions that comport with existing law.<sup>214</sup> Sociological legitimacy is the Weberian concept that the relevant public regards as “justified, appropriate, or otherwise deserving of support for reasons beyond fear of sanctions or mere hope for personal reward.”<sup>215</sup> Finally, moral legitimacy refers to a law’s inherent “moral justifiability or respect-worthiness.”<sup>216</sup> Moral legitimacy theorists, according to Fallon, tend to refer to a “moral ideal” to which the law should aspire, or to the minimum governmental control people should be willing to accept in the absence of better alternatives.<sup>217</sup>

For Fallon, who writes from a legal positivist perspective, sociological legitimacy is the central question in assessing the legitimacy of fundamental laws such as a constitution.<sup>218</sup> Others, such as those who adhere to a concept of natural law, might emphasize moral legitimacy.<sup>219</sup> Regardless, legitimacy is not a monochromatic issue.

If we attempt to apply Fallon’s three aspects of legitimacy to the P2P end-user litigation, the empirical data concerning file sharing activity demonstrate a serious sociological legitimacy problem.<sup>220</sup> People believe they should be allowed to share their music files, and they continue to do so in large numbers despite the RIAA’s concerted litigation efforts.<sup>221</sup> This is perhaps the most significant legitimacy problem presented by the RIAA litigation.

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213. Richard H. Fallon, Jr., *Legitimacy and the Constitution*, 118 HARV. L. REV. 1787 (2005).

214. *Id.* at 1794-95.

215. *Id.* at 1795-96 (discussing the political theory of Max Weber).

216. *Id.* at 1796.

217. *Id.* Fallon cites the Madisonian/Hamiltonian idea that government should be based on the consent of the governed as an example of a “moral ideal” theory. *Id.* (citing 22 THE FEDERALIST 152 (Clinton Rossiter ed., 1961) describing “the consent of the people” as the “pure, original fountain of all legitimate authority”). Fallon also cites John Rawls as a type of a “moral ideal” theorist, in that Rawls locates governmental legitimacy in the exercise of power in accordance with a constitution with which all citizens should reasonably be expected to agree. *Id.* at 1797-98.

218. *See id.* at 1805 (“With respect to the most fundamental matters, sociological legitimacy is not only a necessary condition of legal legitimacy, but also a sufficient one.”).

219. *See id.* at 1805 n.61 and accompanying text.

220. *See supra* Part IV.

221. *See supra* Part IV.

The P2P end-user litigation also is questionable from a moral legitimacy perspective. Although the RIAA portrays the litigation as a moral crusade against piracy, the morality of the RIAA's cause is debatable from a moral ideal, minimal control, or natural law moral theory. As to a moral ideal theory, it is questionable whether those governed by the copyright laws ever truly consented to the sort of control over content distribution that RIAA's members seek. The Constitution's intellectual property clause is designed to incentivize *authors*, not distributors.<sup>222</sup> The social bargain on which the limited monopoly of copyright is based—at least to the extent cases like the Supreme Court's *Sony* decision remain good law after cases like *Eldred* and *Grokster*—is one by which the public agreed to give authors a limited monopoly in order to enhance the public domain. The process by which a few content distributors, like the RIAA's members, aggregate content and then enforce those aggregated rights *en masse* against the public arguably subverts that bargain.

As to a natural law theory, a natural law perspective would recognize some moral right in an author concerning attribution and the integrity of the work, and a Lockean natural law perspective would grant an author some inherent right to profit from the fruit of her labor.<sup>223</sup> However, natural law theory would also likely resist efforts by a small number of distributors to control the public's access to music, art, and literature.<sup>224</sup>

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222. U.S. CONST., art. I, § 8, cl. 8 (“The Congress shall have Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to *Authors* and *Inventors* the exclusive Right to their respective Writings and Discoveries”) (emphasis added).

223. See, e.g., Epstein, *supra* note 210 (applying various iterations of Lockean labor theory to intellectual property rules); Justin Hughes, *The Philosophy of Intellectual Property*, 77 GEO. L.J. 287 (1988); Adam Mossoff, *Rethinking the Development of Patents: An Intellectual History*, 52 HASTINGS L.J. 1550-1800 (2001) (discussing the Lockean basis for early adjudication of patent claims).

224. Adam Mossoff's discussion of the history of early patent law suggests that courts and legislators drew on Lockean and proto-Lockean labor theory to justify the reward of a limited monopoly to an individual inventor for disclosing his invention. Mossoff, *supra* note 223. At the same time, there was growing suspicion of state-sanctioned monopolies that achieved their status through mere royal fiat. See *id.* at 1276. There are parallels between this balance between rewarding creators and avoiding monopolies and the concern that large content distributors are upsetting the intellectual property bargain by aggregating claims and obtaining rents for mere distribution rather than creation. See Epstein, *supra* note 210, at 28 (concluding that copyright is properly viewed as a form of property under Lockean labor theory, but that “it seems clear that the peculiar nature of the rights in question justifies rules that allow for limited duration and fair use, and perhaps some other restrictions”).

Finally, although the RIAA end-user lawsuits are within the rules of pleading, their legal legitimacy is uncertain to the extent they rely on the rules of joinder and result in non-negotiable form settlements.<sup>225</sup> There is little doubt that the rules of joinder themselves pass the test of legal legitimacy, but, to the extent courts permit such claims to proceed without carefully analyzing the joinder problem, the legitimacy of the outcome is questionable. In fact, such cases arguably represent a form of regulatory capture over the judicial branch, rather than a fair day in court for all concerned parties.

These sorts of legitimacy concerns will likely apply to reverse private attorney general intellectual property litigation concerning other technologies—especially if, as I have suggested, reverse private attorney general intellectual property litigation becomes a more widespread enforcement mechanism. The inevitable backlash against such tactics may result in a different kind of “digital divide”: a divide between content distributors and content consumers, fueled by and fueling technological evolution, without an end in sight.

### 3. *Reverse Private Attorney General Litigation and the Efficiency Rationale*

The lack of a “David slaying Goliath” element to reverse private attorney general intellectual property litigation is emotionally unsatisfying, as is the lack of social *gravitas* inherent in typical private attorney general cases. Although we would prefer our private attorney general to resemble Atticus Finch,<sup>226</sup> we might tolerate a private attorney general who looks more like Gordon Gecko<sup>227</sup> if the litigation were an efficient use of judicial resources. On this count, however, reverse private attorney general intellectual property litigation fails. The RIAA litigation strategy, in particular, fails to account for the symbiosis between file sharing and file coding norms as they relate to P2P technology, and mass litigation against individual end users of intellectual property in general ultimately subverts positive effects of intellectual property litigation.

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225. *See supra* Part III.

226. Atticus Finch is the central character in *To Kill a Mockingbird*, Harper Lee’s classic novel about the ideals of a small-town lawyer in the face of racial injustice.

227. Gordon Gecko, played by Michael Douglas, is a central character in the 1987 film *Wall Street*. Gecko is symbolic of corporate power and greed—the movie’s most famous line is Gecko’s proclamation at a shareholders’ meeting that “greed is good.”

Intellectual property litigation entails significant social costs, but enforcement also brings important benefits.<sup>228</sup> The incentive system established by an intellectual property regime depends on a strong enforcement mechanism. If defending an intellectual property claim is excessively costly or difficult, the right will be far less attractive, the pace of innovation may slow, and innovators may choose secrecy rather than disclosure. Moreover, a robust enforcement mechanism ensures that a free-riding infringer's rents are transferred back to the rights-holder through a damages claim.<sup>229</sup>

In addition to these enforcement benefits, intellectual property litigation can entail social benefits through the adjudication of close cases. We can call this a "boundary-mapping" function. In copyright cases, for example, judicial application of the merger doctrine, fair use, and other defenses can inform the public about what constitutes the public domain.<sup>230</sup> Similarly, in patent cases, judicial application of the novelty and obviousness standards, as well as judicial interpretation of claim language, identify the boundaries between private and common property, and help define the scope of the prior art. And, in trademark cases, courts determine whether a claimed mark or trade dress belongs to the public because it is generic or merely descriptive, or whether the use of a mark is permissible descriptive fair use.<sup>231</sup>

Litigation's boundary-mapping function is particularly important in copyright cases because, in contrast to patents and trademarks which face significant administrative review of the adequacy of a claim of rights, there is minimal *ex ante* administrative review of copyright applications,

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228. "Ordinary" intellectual property litigation is costly. Recent studies suggest that each side in a typical intellectual property case incurs average fees of \$1 million for patent cases, \$699,000 for trade secret disputes, \$502,000 for trademark disputes, and \$400,000 for copyright cases. See Kevin M. Lemley, *I'll Make Him an Offer He Can't Refuse: A Proposed Model for Alternative Dispute Resolution in Intellectual Property Cases*, 37 AKRON L. REV. 287, 311-12 (2004) (citing 2001 American Intellectual Property Law Association survey).

229. For a discussion and critique of the "free rider" rationale in intellectual property law see Lemley, *supra* note 210.

230. See, e.g., Neil Weinstock Netanel, *Copyright and a Democratic Civil Society*, 106 YALE L.J. 283, 362-65 (1996) (discussing the important limiting functions of copyright); L. Ray Patterson, *Free Speech, Copyright, and Fair Use*, 40 VAND. L. REV. 1, 26-40 (1987) (discussing history of fair use doctrine).

231. See J. THOMAS MCCARTHY, TRADEMARKS AND UNFAIR COMPETITION § 3:01 (4th ed. 2005) (nature and function of trademarks generally); *id.* § 11:01 (spectrum of trademark distinctiveness); *id.* § 11:45 (fair use).

and there is no useful way to search existing copyright claims.<sup>232</sup> In the United States, copyright registration is not required to obtain the right, but registration is necessary to maintain an infringement action and carries other procedural benefits.<sup>233</sup> The registration process typically is perfunctory: the applicant completes a pre-printed form, includes deposit copies, and pays a minimal fee.<sup>234</sup> Applications are not published prior to approval, and interested parties have no opportunity to oppose an application. The administrative review is limited to obvious defects in the application or a failure to pay the required fee. In short, given the sheer scope of copyright—covering any original expression fixed in a tangible medium—and the subtlety of doctrines such as the idea/expression dichotomy, merger, and fair use, copyright policy in the U.S. purposely leaves the boundary-defining function almost entirely to private litigation.

The RIAA litigation has avoided some of the costs inherent in ordinary intellectual property litigation because few defendants have challenged the RIAA's claims on substantive grounds. Nevertheless, the litigation imposes significant burdens on the judicial system.<sup>235</sup> Obversely, the RIAA litigation has generated few of the social benefits of ordinary intellectual property litigation. As the P2P network connectivity data demonstrate, the RIAA litigation has failed to deter file sharing. Instead, it has fueled a technological arms race that has allowed P2P file sharing to flourish.

One could argue that this technological arms race is itself a benefit of the litigation. Innovation has social value, and the development of less

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232. In the United States, patent applications are reviewed by examiners trained in the claimed subject matter. An application can founder on any of the statutory requirements for patentability. *See* 35 U.S.C. § 131 (2000); 37 C.F.R. § 1.104(a) (2005). Likewise, U.S. trademark applications are examined by special administrative officers to ensure that the proposed mark meets all the statutory requirements under the Lanham Act. *See* 35 U.S.C. § 2 (establishing U.S. Patent and Trademark Office); *see generally* USPTO, TRADEMARK MANUAL OF EXAMINING PROCEDURE (TMEP) (4th ed. 2005), available at <http://www.uspto.gov/web/offices/tac/tmep>. In addition, for both patents and trademarks, the administrative systems include searchable databases of existing proprietary claims. *See* USPTO, Trademark Electronic Search System (TESS), <http://www.uspto.gov/index.html> (follow "Search" hyperlink below "Trademarks") (last visited Nov. 7, 2005); USPTO, Patents – Patent Full-Text and Full-Page Image Databases, <http://www.uspto.gov/patft/index.html> (last visited Nov. 7, 2005).

233. 17 U.S.C. § 411 (2000); *see also* U.S. Copyright Office, Copyright Basics (Circular 1), <http://www.copyright.gov/circs/circ1.html#rp> (last visited Nov. 7, 2005).

234. *Id.*

235. *See* General Order, *In re* Cases Filed by Recording Cos. (W.D. Tex. Nov. 17, 2004) (noting administrative costs of aggregated actions), available at [http://www.txwd.uscourts.gov/rules/stdord/Austin/recording\\_111704.pdf](http://www.txwd.uscourts.gov/rules/stdord/Austin/recording_111704.pdf).

centralized P2P technology may have spillover benefits not yet fully understood. As discussed in Section III.B, however, economic innovation theory predicts that efficient levels of technological innovation will occur when there is appropriate market demand for the innovation. The type of innovation fueled by the P2P litigation, then, does not generate as much social value as ordinary innovation.

Moreover, because most individual defendants lack the resources to contest the RIAA's claims, the benefits of boundary mapping in intellectual property litigation have not materialized. For example, with respect to any given work involved in a RIAA case, factual investigation and discovery might reveal defenses concerning the work's originality or ownership.<sup>236</sup> But because the RIAA pursues form settlements that cost individual defendants far less than the anticipated costs of such investigation and discovery, the litigation almost never performs this important function.

In addition, a plausible fair use defense could be constructed against a music file sharing claim. Such a defense was rejected by the *Napster* court, which found that "ripping" compact discs is not a "transformative" use and that P2P music file sharing harms the market for the copyrighted work by reducing compact disc sales and depriving the copyright owner of access to the market for on-line digital distribution.<sup>237</sup> The *Napster* court was particularly persuaded by testimony from record industry executives and experts about declining compact disc sales.<sup>238</sup>

The *Napster* court's findings about file sharing's effect on the market are belied by more recent and more thorough data. A study conducted by faculty at the Harvard Business School and the University of North Carolina, for example, demonstrated that most file sharers would not have purchased the music they downloaded for free.<sup>239</sup> In addition, the advent of pay-per-song download services such as iTunes, the new Napster, Musicmatch, and others, demonstrates that a profitable online digital market exists or RIAA's members alongside "free" P2P networks. As discussed in

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236. See, e.g., *Tuff 'n Rumble Mgmt., Inc. v. Profile Records, Inc.*, No. 95 Civ. 0246 (SHS), 1997 WL 158364, at \*2 (S.D.N.Y. 1997) (involving copying of music tracks, plaintiff was unable to establish chain of title to the copyright in the songs at issue).

237. *A&M Records v. Napster, Inc.*, 239 F.3d 1004, 1014-20 (9th Cir. 2001).

238. *Id.* at 1015-17.

239. Felix Oberholzer & Koleman Strumpf, *The Effect of File Sharing on Record Sales, An Empirical Analysis* (Mar. 2004), [http://www.unc.edu/~cigar/papers/FileSharing\\_March2004.pdf](http://www.unc.edu/~cigar/papers/FileSharing_March2004.pdf). But see OECD Report, *Digital Broadband Content: Music*, DSTI/ICCP/IE(2004)12/FINAL (Jun. 8, 2005), available at <http://www.oecd.org/dataoecd/13/2/34995041.pdf> (summarizing recent surveys and empirical studies of effects of file sharing on CD sales and noting inconclusive and mixed results).

Section III.B above, P2P activity has steadily increased even as the pay-per-download services have become more popular. P2P drives interest in and increases demand for individual song downloads. The presence of some free riders arguably expands the “legitimate” market rather than destroying it.<sup>240</sup> However, the nature of P2P end-user litigation precludes, as a practical matter, any possibility of litigating such a defense.

## **VI. ALTERNATIVES TO REVERSE PRIVATE ATTORNEY GENERAL INTELLECTUAL PROPERTY LITIGATION**

The preceding Part suggests that reverse private attorney general litigation is becoming a prominent feature of the intellectual property landscape. It also suggests that such litigation is inefficient, delegitimizes intellectually property law, and generally undermines the rule of law. The question then arises whether the system should be changed. This Part evaluates the prospect of stasis against a number of proposed alternatives to the current system.

### **A. Allow the Market to Correct any Imbalances**

Perhaps any cure would be worse than the disease, in which case the best course is to do nothing. Judges can continue to evaluate reverse private attorney general intellectual property actions under the rules of joinder, with a deeper concern for the efficiency and legitimacy problems created by such actions. If courts limit when intellectual property claims can be aggregated and manage discovery so that individual litigants are not forced into early non-negotiable settlements, the attractiveness of reverse

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240. The relationships between P2P file sharers, the RIAA end-user litigation, and the “legitimate” download are complex. The RIAA litigation may also contribute to the legitimate market by making the decentralized P2P network aversion strategy too costly for many users. Such users, who might otherwise have used a P2P network, prefer to pay \$1 per song rather than to risk being sued in an end-user case. (Thanks to Prof. Erik Lillquist for this insight.) The costs of using a decentralized network as an aversion strategy, however, include not only the threat of a RIAA case, but also the inconvenience of installing a P2P application, the costs of vigilance against the spyware, viruses, and other security problems that often accompany such applications, and the costs of filtering access to unwanted files, such as pornography. Moreover, another factor to consider is the volume of music a given end user consumes. A casual music fan, who might download ten or twenty songs in a given month, might be more willing to spend \$10 or \$20 instead of investing in an aversion strategy. Some of these variables are discussed in the Oberholzer and Koleman study, but there do not appear to be any empirical studies accounting for all of them. In any event, the premise that P2P file sharing has a significant negative effect on legitimate markets is dubious.

private attorney general intellectual property litigation should diminish. And, if legislatures avoid sweeping changes to intellectual property laws that either favor content distributors or impose levies on new technology or its users, the market will work to correct any imbalance in the intellectual property incentive scheme caused by activity such as P2P file sharing.

Indeed, such market correction is happening in music sampling. The music sampling market is beginning to mature as licensing terms become standardized and royalty-free sample content fills a market niche.<sup>241</sup> As for music distribution, prior to Napster, there was no market for individual song downloads. Now the market is more robust: Apple's non-iPod music products, which includes iTunes, grew from sales of 47 million in the last quarter of 2003 to 177 million in the last quarter of 2004.<sup>242</sup> In July 2005, Apple celebrated its five hundred millionth download.<sup>243</sup> Given the success of services such as iTunes, it is easy to forget that they represent only the first baby steps of an industry recently forced into the digital age by the destructive technology of P2P. Just as P2P technology will continue to adapt in response to litigation threats, the commercial market for digital content will continue to adapt in response to the new technology. The symbiosis between law, code, and norms reflected in the P2P wars is not only present among the content distributors, file sharers, and file sharing application coders. It also is present in the commercial content market. Content providers threaten file sharers, file sharing application coders adapt to the threat, the market adapts to the file sharing culture, and the rhythms of life and death in the digital jungle go on.

The serious problem with the market correction solution is that it undermines respect for the rule of law. File sharing is not an isolated phenomenon—as the empirical data in Part III suggest, over eight million people connect to P2P networks every day, and the numbers are steadily growing. An intellectual property system that leaves enforcement against this volume of infringing activity to reverse private attorney general litigation will be ineffective and will be perceived by much of the public as un-

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241. *See supra* Part III.

242. Apple Computer, Inc., Securities and Exchange Commission Form 10-Q, Feb. 1, 2005, at 25, available at [http://www.sec.gov/Archives/edgar/data/320193/000110465905003520/a05-2329\\_110q.htm](http://www.sec.gov/Archives/edgar/data/320193/000110465905003520/a05-2329_110q.htm) (providing financial data for Apple Computer, Inc. and its related products).

243. *Apple Sells Half a Billion Songs Through iTunes*, MAC NEWS NETWORK, July 17, 2005, <http://www.macnn.com/articles/05/07/17/half.a.billion.songs>.

fair and illegitimate.<sup>244</sup> Moreover, as P2P and other distributed computing technologies grow in importance, the war between file sharers and content industries in fields other than music will intensify.<sup>245</sup> This will result in a new digital divide between content distributors and a rebellious public.

## B. Increase Criminal Enforcement

One solution that has received relatively little attention is the possibility of increased criminal enforcement. United States copyright law contains criminal as well as civil penalties,<sup>246</sup> but the criminal sanctions are rarely and selectively enforced.<sup>247</sup> This reflects the relative unimportance of copyright in the federal government's allocation of law enforcement resources. And this, in turn, may represent the relative unimportance of copyright as a social institution.

Some commentators, including Glynn Lunney, Anthony Reese, and Mark Lemley, have suggested that increased criminal enforcement, along with higher civil penalties, could effectively deter infringement.<sup>248</sup> Nevertheless, Reese and Lemley note that selective enforcement, overdeterrence, mistaken prosecution, and a lack of political will among prosecutors present serious problems for enforcement based on high criminal or civil penalties.<sup>249</sup> Moreover, as discussed in Part III above, the belief that selective enforcement will change norms of compliance is belied by the empirical evidence, which indicates that direct enforcement efforts have resulted in aversion strategies. Increased criminal enforcement, then, presents the same efficiency and legitimacy problems as the RIAA end-user litigation, with the added concern that some individuals will suffer severe criminal punishment that is disproportionate to the crime.

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244. See *supra* Part IV for a discussion of the legitimacy issues raised by reverse private attorney general intellectual property litigation.

245. See *supra* Part III for a discussion of the cultural, technological, and legal factors that are likely to result in increased reverse private attorney general intellectual property litigation.

246. 17 U.S.C. § 506 (2000).

247. For a discussion of criminal sanctions and their use, see *supra* note 202.

248. Mark A. Lemley & R. Anthony Reese, *Reducing Digital Copyright Infringement Without Restricting Innovation*, 56 STAN. L. REV. 1345, 1398 (2004) ("The reason the already substantial civil and criminal penalties [under the Copyright Act] have only begun to have a deterrent effect is that for the most part they have not yet seriously been pursued against alleged direct infringers on p2p networks."); Glynn S. Lunney, Jr., *The Death of Copyright: Digital Technology, Private Copying, and the Digital Millennium Copyright Act*, 87 VA. L. REV. 813, 825, 850 (2001).

249. *Id.* at 1401-05.

Finally, the relative lack of criminal enforcement is particularly problematic if we view file sharing and coding norms as forms of “sticky” norms.<sup>250</sup> As Dan Kahan has observed, when the law condemns certain conduct more strongly than a typical decisionmaker under that law, the decisionmaker will balk at enforcement.<sup>251</sup> If there is public ambivalence about a norm the law is seeing to change, efforts to increase the penalties for non-compliance will have the paradoxical effect of making public sentiment about that norm more entrenched.<sup>252</sup> Under such circumstances, it is unlikely that the effort at regulation will produce significant change.<sup>253</sup> Increased criminal enforcement, then, does not seem to present a meaningful solution to the intellectual property enforcement problem.

### C. Eliminate Copyright

In his article *The Creative Destruction of Copyright*, Raymond Ku suggests that copyright can safely be discarded in the age of desktop media production and digital distribution.<sup>254</sup> Ku argues that, with respect to music, traditional content distributors such as the major record labels add no value to the creative process.<sup>255</sup> Copyright, then, does not provide incentives for deep creativity, but rather, it provides the foundation for a business model by which music has become increasingly homogenized.<sup>256</sup> Freeing music from copyright, Ku argues, would permit a more organic creative process, in which local music created by independent artists could flourish.<sup>257</sup>

Ku’s thesis is appealing because, to a large extent, it accurately describes certain problematic aspects of today’s music business. The large record labels do indeed maintain excessive influence and control over what music gets heard. Ku may not, however, have adequately accounted for the increased importance of the production process as digital technology has become mainstream. It is true that, with digital technology, a straight-ahead rock band like the White Stripes can record and produce a song without any outside assistance. It is equally true, however, that digi-

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250. See Dan M. Kahan, *Gentle Nudges vs. Hard Shoves: Solving the Sticky Norms Problem*, 67 U. CHI. L. REV. 607 (2000).

251. *Id.* at 608.

252. *Id.*

253. *Id.*

254. Ku, *supra* note 195.

255. *Id.*

256. *Id.*

257. *Id.*

tal sampling and synthesis have opened new creative vistas for skilled producers working in conjunction with musicians.<sup>258</sup>

Moreover, as digital music distribution has gained prominence, it has become ever-more difficult for consumers to find the music they want. More choices mean higher search costs.<sup>259</sup> A recent Google search for "ska music," for example, yielded over seven million hits.<sup>260</sup> The high placement of some of those hits undoubtedly resulted from efforts to game the Google algorithm through link farms, blog spam, and the like.<sup>261</sup> This information overload suggests that there may yet be some role for content aggregators, like traditional record labels, in reducing search costs through branding, advertising, and promotion of content. As long as such a role exists, it is likely that copyright law will continue to provide some useful incentives.

In addition, the United States and all other industrialized nations are subject to treaty obligations that require minimum standards of copyright protection.<sup>262</sup> Any political move to abolish copyright, therefore, would require a global consensus that is unlikely to materialize.

A more realistic proposal might be to revise the scope of copyright protection to limit rent seeking by distributors. One such possibility is to extend the "first sale" doctrine to digital works, and then to append to it a fair use right of redistribution.<sup>263</sup> The first sale doctrine permits the owner of a lawfully acquired copy of a work to "dispose of the possession" of that copy however she desires, including by selling or gifting it to another person.<sup>264</sup> The first sale doctrine currently does not apply to P2P file sharing because at least one additional copy of the work is made by the downloader (and often, if the work originally resided on a CD, yet another copy is made by the uploader), and the uploader does not "dispose of pos-

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258. *Id.*

259. See Posner, *supra* note 107 for a discussion of search costs.

260. [www.google.com](http://www.google.com) (search "ska") (Dec. 19, 2005) (printed results on file with author).

261. For a discussion of these practices, see Blog Spam, WIKIPEDIA: THE FREE ENCYCLOPEDIA, [http://en.wikipedia.org/wiki/Blog\\_spam](http://en.wikipedia.org/wiki/Blog_spam) (last visited Nov. 5, 2005).

262. These include the Paris Convention for the Protection of Industrial Property, Mar. 20, 1883, revised in Stockholm, July 14, 1967, 21 UST 1583, 828 U.N.T.S. 305; the Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, revised in Paris, July 24, 1971, 25 U.S.T. 1341, 828 U.N.T.S. 221; and the Trade Related Aspects of Intellectual Property (TRIPS) Agreement, Apr. 15, 1994, 33 I.L.M. 81, available at [http://www.wto.org/english/tratop\\_e/trips\\_e/t\\_agm0\\_e.htm](http://www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm).

263. See 17 U.S.C. § 109 (2001) (first sale doctrine).

264. *Id.*

session” of her copy, but instead retains the original file.<sup>265</sup> As discussed in Section III.B, although this arguably is a transformative “fair use” by the purchaser of the work, a traditional fair use argument is difficult at best. Therefore, the Copyright Act’s fair use provisions would need to be extended to noncommercial distribution of digital copies for the “digital first sale” doctrine to work in connection with P2P technology.<sup>266</sup>

If the first sale doctrine were extended in this manner, the content provider could obtain compensation for its initial distribution of the work, and the original purchaser would be free to make digital copies available to others. Although we might expect such a regime to create a free rider problem, P2P networks have always required *someone* to purchase the music initially, and they have thrived despite the presence of free riders. This is because, as discussed in Part III above, the norms of file sharing ensure that some downloaders will also upload. A first sale/fair use limitation, then, might prove workable, at least with respect to entertainment products like music.

#### D. Alternative Dispute Resolution Procedures

The solution Lemley and Reese favor is an alternative dispute resolution mechanism for claims by content providers against individuals.<sup>267</sup> They suggest as a model the Uniform Dispute Resolution Procedure (UDRP) for internet domain name disputes.<sup>268</sup> In their model, the Copyright Act would include an option by which a copyright owner could choose to enforce his or her rights through an abbreviated administrative proceeding.<sup>269</sup> The administrative proceeding would be available only against a person who has uploaded at least fifty copyrighted works during

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265. See Berkman Center for Internet and Society at Harvard Law School, Digital Media Project, *iTunes: How Copyright, Contract and Technology Shape the Business of Digital Media—A Case Study* (Jun. 15, 2004), at 56, available at <http://cyber.law.harvard.edu/media/uploads/81/iTunesWhitePaper0604.pdf> [hereinafter *iTunes Case Study*].

266. For discussion of a possible “digital first sale” doctrine, see *id.* at 55-58; Brian Mencher, *Online Music Distribution: Proposal for a Digital First Sale Doctrine*, 21 ENT. & SPORTS LAW. 16 (2004); R. Anthony Reese, *The First Sale Doctrine in the Era of Digital Networks*, 44 B.C. L. REV. 577 (2003); Ryan Roemer, *Trusted Computing, Digital Rights Management, and the Fight for Copy Control on Your Computer*, 2003 UCLA J.L. & TECH. 8 (2003) (discussing digital first sale provisions in proposed BALANCE Act); Eurie Hays Smith IV, *Digital First Sale: Friend or Foe?*, 22 CARDOZO ARTS & ENT. L.J. 853 (2005).

267. See Lemley & Reese, *supra* note 248, at 1351-52.

268. *Id.* at 1411.

269. *Id.* at 1413.

a thirty-day period over a P2P network.<sup>270</sup> Copyright owners would be permitted to aggregate their claims against individual uploaders in a single proceeding.<sup>271</sup> Uploaders who wish to assert defenses would be required to file a declaratory judgment action in federal court after the arbitration is concluded.<sup>272</sup> A defendant found liable as an infringer would be subject to monetary penalties of \$250 per song uploaded, and would be designated an “infringer” for purposes of online service provider liability under the DMCA.<sup>273</sup> Finally, an uploader found to be an infringer would be liable for the plaintiff’s costs and attorneys’ fees.<sup>274</sup>

In short, Lemley and Reese would make the reverse private attorney general intellectual property litigation model easier and cheaper for the content provider. This model might deter some infringement if the \$250 per song civil penalty and “infringer” label outweigh the benefits of aversion. Serious legitimacy questions, however, would remain. Does the right of distributors like the record and film companies to control the content they aggregate rise to such a fundamental level that the uploaders should face the prospects of bankruptcy and exclusion from the legitimate online community? The “infringer” designation seems particularly Draconian, as it would deprive the wearer of the “infringer’s badge” from access to any online service provider that desires protection under the safe harbors afforded by the DMCA.<sup>275</sup> This would create an online class system, in which “infringers” are relegated to provider ghettos willing to forgo the DMCA harbors. The “cure” of an administrative dispute resolution mechanism for file sharing, then, seems worse than the disease.

An administrative dispute resolution model might prove more palatable, however, if it were combined with a regulatory model of intellectual property rights. As discussed in the next two Sections, levies and rate regulation hold some promise, although neither is a perfect solution in itself. If there were some form of levy and rate regulation system for intellectual property rights, content providers would require some means of collecting payments. A collection system could involve a regulatory proceeding in which the content owner can collect the regulatory rate from a consumer who has refused to pay. The proceeding might also include the remedy of “turning off” the debtor’s online access temporarily until a

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270. *Id.*

271. *Id.*

272. *Id.* at 1414-17.

273. *Id.* at 1417-20.

274. *Id.* at 1422-23.

275. *See* 17 U.S.C.A. § 512(i)(1)(A) (2000).

payment plan is established. The regulatory rate, however, would be substantially less than the statutory award proposed by Reese and Lemley, and would be designed solely as compensation rather than as a deterrent.

### E. Levies

Neil Netanel and Terry Fisher have proposed a levy model, by which digital works would be subject to a compulsory license, and the owner of the copyright would be compensated through the proceeds of a tax on software, services, or hardware used to distribute the content.<sup>276</sup> There is precedent for such a levy system, Lemley and Reese have noted, in Canadian and European models, as well as in the Audio Home Recording Act of 1992.<sup>277</sup>

Potential difficulties with a levy system include determining which technology to tax, how much tax to assess, and how to collect the tax.<sup>278</sup> Reese and Lemley suggest that a broad-based technology tax is problematic because it would force many consumers to subsidize the downloading activities of a smaller number of consumers, and might create a moral hazard problem by incentivizing downloaders to gorge on files.<sup>279</sup> They suggest that a levy on bandwidth usage might be more efficient, as bandwidth use bears some relationship to file downloading.<sup>280</sup>

A bandwidth levy, however, would constitute only a short-term solution to the music P2P problem. It would not address the larger problems that certainly will arise from the more widespread use of broadband services and the convergence of digital technologies. Relatively few internet users today share music and video files. It is relatively easy today to trace high bandwidth usage to activities such as file sharing. This will no longer be the case when movies, music, television, gaming, and telephony services enter the home through the same pipe. Even today, high bandwidth usage might represent infringing P2P file sharing activity, or it may represent an active, law-abiding gamer who plays Halo 2 or Everquest every night.<sup>281</sup> Moreover, a bandwidth levy would not address the possibility of

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276. WILLIAM FISHER, PROMISES TO KEEP: TECHNOLOGY LAW AND THE FUTURE OF ENTERTAINMENT (2004); Neil W. Netanel, *Impose a Noncommercial Use Levy to Allow Free Peer-to-Peer File Sharing*, 17 HARV. J.L. & TECH. 1, 2 (2003).

277. See Lemley, *supra* note 248, at 1407-08.

278. See *id.* at 1408-10.

279. *Id.*

280. *Id.*

281. Halo 2 is a popular video game that can be played online against live opponents. See Xbox, Halo 2, <http://www.xbox.com/en-us/halo2/default.htm> (last visited Oct. 19, 2005). Everquest is a popular online multiplayer game. See [Everquestlive.com](http://Everquestlive.com),

reverse private attorney general litigation concerning infringing patented technology traded over P2P trading networks. In short, in the near future, bandwidth usage is unlikely to constitute a reasonable proxy for infringement.

## F. Technological Measures

An alternative to a levy system is the use of technological measures to restrict content use. The technology to restrict the manner in which digital files can be copied and used has proved quite successful under the iTunes business model, which allows users to download individual songs for \$0.99 each.<sup>282</sup> This model is facilitated by Apple's Fairplay digital rights management system, which limits the functionality of music files purchased over iTunes to five computers and limits the number of CD-copies of a playlist a customer can burn.<sup>283</sup> The iTunes Digital Rights Management (DRM) system is supported by provisions in the iTunes clickwrap user agreement.<sup>284</sup>

The success of the iTunes model suggests that a combination of DRM and contractual limitations can facilitate the exchange of digital files at reasonable costs to consumers. Further, the use of a strong but flexible DRM system eliminates the perceived need for reverse private attorney general actions by content providers against users of the encrypted content.

The iTunes model, however, is not a flawless solution. Nearly any viable encryption scheme can be broken, and any DRM method involving music or video can be circumvented by exploiting the "analog hole."<sup>285</sup> In fact, several Fairplay decryption programs have been developed, including "Playfair," which was developed as an open source project; "Hymn," a successor to "Playfair"; and DeDRMS, a tool created by Jon Johansen, the

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<http://eqlive.station.sony.com> (last visited Oct. 19, 2005). For a discussion of some legal implications of online gaming, see Jack M. Balkin, *Virtual Liberty: Freedom to Design and Freedom to Play in Virtual Worlds*, 90 VA. L. REV. 2043 (2004); F. Gregory Lastowka & Dan Hunter, *The Laws of the Virtual Worlds*, 92 CALIF. L. REV. 1 (2004); Tal Z. Zarksy, *Information Privacy in Virtual Worlds: Identifying Unique Concerns Beyond the Online and Offline Worlds*, 49 N.Y.L. SCH. L. REV. 231 (2004).

282. For a description of the iTunes business model, see iTunes Case Study, *supra* note 265, at 8-10.

283. *See id.* at 11-12.

284. *See id.* at 14-15.

285. *See id.* at 41-42. The "analog hole" refers to the fact that a digital media file can be copied using analog devices—for example, a digital sound recording can be copied using a tape recorder positioned near the computer speakers.

infamous teenage programmer who cracked the CSS encryption algorithm used in connection with DVDs.<sup>286</sup>

The ability to crack DRM, however, does not necessarily create enforcement problems of the same magnitude as P2P technology has presented. As discussed in Part III above, consumers who lack strong intellectual property norms will choose aversion strategies when the costs of aversion are lower than the costs of compliance. As the success of the iTunes model demonstrates, for a significant number of consumers, the \$0.99 per song charge under the iTunes service is lower than the costs of aversion using P2P technology.<sup>287</sup> The “cracking” problem, then, can be addressed, at least to some extent, through the market’s response.

A more significant problem for the DRM/contract model is the degree of control it vests in the content providers. Using DRM and contractual provisions, content providers can easily exceed the degree of control afforded under basic copyright law. This can create barriers to entry in product markets ancillary to copyright content market.<sup>288</sup> It also allows content providers to avoid copyright doctrines that were designed to limit the scope of the copyright monopoly, including the fair use and first sale doctrines.<sup>289</sup> DRM, then, is not attractive as a broad solution to the enforcement problem.

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286. *See id.* at 42; *see also* Fairplay, WIKIPEDIA: THE FREE ENCYCLOPEDIA, <http://en.wikipedia.org/wiki/FairPlay> (last visited Oct. 30, 2005). “DeCSS,” the program created by Jon Johansen to crack the CSS algorithm used to encode DVDs, resulted in a criminal prosecution against Johansen in Norway. *Norway v. Johansen*, No. 02-507 M/94 (Oslo First Instance Ct., 2003), *available at* [http://www.eff.org/IP/Video/Johansen\\_DeCSS\\_case/20030109\\_johansen\\_decision.html](http://www.eff.org/IP/Video/Johansen_DeCSS_case/20030109_johansen_decision.html); *see also* Electronic Frontier Foundation, *Norway v. Johansen*, [http://www.eff.org/IP/Video/Johansen\\_DeCSS\\_case](http://www.eff.org/IP/Video/Johansen_DeCSS_case) (last visited Oct. 19, 2005) (providing the decision for Norway v. Johansen and other related documents).

287. The costs of aversion using P2P technology include the prospect of infringement liability, the pop-up advertising, spyware and spam that result from installing many popular P2P applications, the threat of viruses and other malicious files transmitted on the P2P network, and the search costs involved in eliminating “spoofed” or corrupted files from the search results.

288. For example, under Apple’s DRM scheme, iTunes files cannot be played on any portable devices except for Apple’s iPod. *See* iTunes Case Study, *supra* note 265, at 45. Given the popularity of iTunes, this creates a significant entry barrier for manufacturers of other portable MP3 players. *Id.* at 45-48.

289. *See id.* at 51-54 (first sale doctrine); *id.* at 67-74 (fair use).

### G. A Regulatory Model of Intellectual Property Rights

Another possibility is to treat intellectual property rights like a public utility.<sup>290</sup> Under this scenario, content owners would police their rights primarily through technological protection measures, but the amount of royalties that could be charged and the restrictions that could be placed on the use and distribution of the content would be limited by regulation. In many respects, this is the most attractive of the various solutions. It would eliminate reverse private attorney general intellectual property litigation, as consumers who fail to pay the required content fees would be subject to a strictly compensatory regulatory collection proceeding. And, it would restrict the content industries' ability to engage in rent seeking by making access and copying restrictions overly burdensome or setting royalties too high.

This mechanism also, however, is problematic. Even if the political will for such sweeping changes existed, the question of the content industry's ability to capture the resulting regulatory body would remain. Further, the costs of regulation would shift to some extent from the content industries to the government, an externality that ultimately would be funded by the public in tax dollars. Finally, the cost of the online content "utility" might prove prohibitive to many people, resulting in inequities similar to those that exist today in housing markets.

In short, there is no single solution to the growing problem evident in the P2P wars. What does seem clear is that the reverse private attorney general litigation model fails on theoretical and empirical grounds. The courts handling such cases should discourage the use of the reverse private attorney general model by disaggregating cases and carefully managing scheduling and discovery. Congress should not incentivize reverse private attorney general litigation in the intellectual property context by increasing civil penalties or creating alternative dispute resolution mechanisms for infringement claims against individuals. Instead, policymakers should focus on a combination of market forces, modified digital first sale and fair use doctrines, targeted levies, and limited public utility type regulation to better reflect the role intellectual property rights play in our economy and culture.

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290. See, e.g., GartnerG2 & The Berkman Center for Internet & Society, *Five Scenarios for Digital Media in a Post-Napster World* 10-12 (Research Pub. No. 2003-07, Nov. 2003), <http://cyber.law.harvard.edu/home/uploads/286/2003-07.pdf>. For a discussion of the regulatory functions of the existing Copyright law, see Joseph P. Liu, *Regulatory Copyright*, 83 N.C. L. REV. 87 (2004); Timothy Wu, *Copyright's Communications Policy*, 103 MICH. L. REV. 278 (2004).

## VII. CONCLUSION

Reverse private attorney general litigation likely will gain increasing prominence as companies seek to enforce their rights against a public that holds norms concerning intellectual property rights somewhat loosely. In the intellectual property context, however, such litigation does not seem to satisfy any of the traditional justifications for private attorney general actions. There is no need to remedy any imbalance between content industries and consumers. Moreover, using the P2P end-user litigation as a test case, it appears that reverse private attorney general litigation by content industries against end users will not prove an efficient means of changing intellectual property norms. In fact, the empirical data suggest that such litigation will succeed only in driving technological changes that allow consumers to practice aversion strategies. This, in turn, ultimately will weaken intellectual property norms by undermining the social, moral and legal legitimacy of intellectual property law. Courts therefore should apply the rules of joinder strictly in intellectual property cases against consumers and manage discovery and settlement negotiations so as to minimize, as much as possible, the negative aspects of such litigation.

Congress also should act to limit recourse to reverse private attorney general intellectual property litigation and to establish a better balance between content owners and consumers. Congress should limit the remedies available against individual consumers sued in aggregated actions. In addition, public policy concerning intellectual property rights should reflect a mix of regulatory measures, including expanded digital first sale and fair use doctrines, targeted levies, and rate regulation. In this way, we can avoid a new “digital divide”: a chasm between content providers and consumers filled with the detritus of mass reverse private attorney general litigation.

### VIII. APPENDIX

The following is a table of filed cases reported by press releases available on the RIAA website.<sup>291</sup>

Date	Venue Filed or Target Defendants Provided in Press Release	# of Does
9/29/05	Students at: Boston University; Carnegie Mellon University; Columbia University; Drexel University; Georgia Institute of Technology; Harvard University; Massachusetts Institute of Technology; New York University; Princeton University; Rensselaer Polytechnic Institute; Rochester Institute of Technology; University of California, Berkeley; University of California, Los Angeles; University of California, San Diego; University of Massachusetts Amherst; University of Pennsylvania; and University of Pittsburgh	757
8/31/05	California, Colorado, District of Columbia, Georgia, Missouri, New York, Pennsylvania, and Virginia	754
7/28/05	California, Colorado, Georgia, Missouri, New Jersey, New York, Pennsylvania, and Virginia	765
6/29/05	California, Colorado, District of Columbia, Georgia, Missouri, New Jersey, New York, Pennsylvania, and Virginia	784
4/27/05	California, Colorado, District of Columbia, Georgia, Missouri, New York, Pennsylvania, and Virginia	725
2/28/05	Students at: Hamilton College; Louisiana State University; Louisiana Tech. University; Loyola University Chicago; Ohio University; Old Dominion University; Rensselaer Polytechnic Institute; Texas A&M University; University of Southern California; Vanderbilt University; and Wright State University	753

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291. <http://www.riaa.org> (last visited Dec. 14, 2005).

1/24/05	Students at: Bentley College, Bridgewater State College, College of Mount Saint Vincent, Georgetown University, Harvard University Medical School, Illinois State University, Indiana Institute of Technology, Indiana University, Michigan State University, Old Dominion University, Ohio State University, Ohio University, Pace University, SUNY at Morrisville, Texas A&M University, University of Kentucky, University of Massachusetts (Lowell), University of Michigan (Ann Arbor), University of South Florida, University of Southern Mississippi, Virginia Commonwealth University, Wabash College, and Wayne State University	717
12/16/04	Connecticut, District of Columbia, Georgia, Illinois, Missouri, New York, Pennsylvania, and Virginia	754
11/18/04	American University, Amherst College, Assumption College, Boston College, Boston University, Bridgewater State College, Emerson College, Iowa State University, James Madison University, Mount Holyoke College, Northeastern University, and the University of Massachusetts.	761
10/28/04	Unclear	750
9/30/04	Students at: Appalachian State University, Augsburg College, Claremont McKenna College, Colgate University, College on Mount Saint Vincent, Columbia University, Georgetown University, Hampton University, Illinois Institute of Technology, Kean College, Kent State, Louisiana State University, Michigan State University, Minnesota State University, New York University, Pacific Lutheran University, Portland State University, St. John's University, Stanford University, State University of West Georgia, SUNY College at Old Westbury, University of Connecticut, University of Louisville, University of the South, Virginia State University, and Western Illinois University	762

8/25/04	Oakland, California; Denver, Colorado; Atlanta, Georgia; Covington, Kentucky; St. Louis, Missouri; Trenton, New Jersey; New York, New York; Austin, Texas; and Madison, Wisconsin.	744
7/20/04	Atlanta, Georgia; St. Louis, Missouri; New York, New York; Plano, Texas; Alexandria, Virginia; and Seattle, Washington	506
6/22/04	Colorado, District of Columbia, Missouri, and New Jersey	482
5/24/04	Alabama, Arizona, California, Colorado, Georgia, Iowa, Illinois, Indiana, Kansas, Kentucky, New Jersey, New York, Minnesota, Missouri, Pennsylvania, South Dakota, and Texas	493
4/28/04	Students at: Brown University; Emory University; Georgia Institute of Technology; Gonzaga University; Mansfield University; Michigan State University; Princeton University; Sacred Heart University; Texas A & M University; Trinity College (Connecticut); Trinity University (Texas); University of Kansas; University of Minnesota; and Virginia Polytechnic Institute	477
3/23/04	California, Colorado, Missouri, Texas, and Virginia	532
2/17/04	Orlando, Florida; Atlanta, Georgia; Trenton, New Jersey; and Philadelphia, Pennsylvania	531
1/21/04	Unclear	532

# THE TAO OF OPEN SOURCE: MINIMUM ACTION FOR MAXIMUM GAIN\*

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## ABSTRACT

This Article denies the sharply diametric rhetoric characterizing the debate over the viability of open source software. Rejecting the extremes, Satchwell argues that a middle solution exists whereby a properly formed intellectual property regime will incentivize the production of quality open source software while ensuring the stability of the open source paradigm and without disrupting more traditional intellectual property structures. To this end, this Article discusses the necessary focus and form of such an open source IP regime and shows that by concentrating exclusively on attribution and vertical stability a path may be steered between the tragedies of the commons and anticommons that will enable and promote open source as a viably sustainable production method. Finally, a possible form for such a system is suggested and its benefits discussed.

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The shape changes but not the form;  
The more it moves, the more it yields.  
More words count less.  
Hold fast to the center.  
—Chapter Five of the Tao Te Ching

## I. INTRODUCTION: CAN'T WE ALL JUST GET ALONG?

The argument over open source software development has reached a near-fevered pitch. At one extreme are those who argue that open source software has no place in today's economy because without strong intellectual property controls, both the process and its products are doomed to failure.<sup>1</sup> At the other extreme are those who claim that while open source is the wave of the future, it can never operate productively under even weak intellectual property strictures.<sup>2</sup> As fervently as each of these positions is advocated, neither describes the actual current state of open source development. This Article will explain that between these two extremes lies a cohesive solution whereby open source production does not just co-exist with a non-traditional intellectual property structure, but is in fact improved by intellectual property protections.

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1. See Joseph Scott Miller, *Allchin's Folly: Exploding Some Myths About Open Source Software*, 20 CARDOZO ARTS & ENT. L.J. 491, 491-93 (2002) (quoting senior Microsoft executives who characterize "[o]pen source [as] an intellectual-property destroyer" and argue that "Linux is a cancer"); see also Mary Jo Foley, *Microsoft Adds to Its Anti-Open-Source Arsenal*, MICROSOFT WATCH, Sept. 13, 2004, <http://www.microsoft-watch.com/article2/0,2180,1645122,00.asp>; Jonathan Krim, *The Quiet War Over Open-Source*, WASH. POST, Aug. 21, 2003, at E1.

2. See Richard Stallman, *The GNU Operating System and the Free Software Movement*, in OPEN SOURCES: VOICES FROM THE OPEN SOURCE REVOLUTION (Chris DiBona et al. eds., 1999); Severine Dusollier, *Open Source and Copyleft: Authorship Reconsidered?*, 26 COLUM.-VLA J.L. & ARTS 281, 286-88 (2003).

While open source efforts have often resulted in viable (some might even argue superior) products,<sup>3</sup> it is important to query whether traditional intellectual property incentive structures are applicable. One major problem is that properly incentivizing individuals to participate in open source efforts has rarely resulted in financial remuneration. Although many current contributors appear to participate in open source development for little more than the colloquial prestige they stand to gain for their polished efforts, it is unclear whether such intangible benefits are a sufficiently effective motivation to drive large-scale efforts capable of rivaling traditional proprietary production. Further, it is empirically unclear whether intellectual property rights act as a motivation or as a limitation on those considering participating in open source development. Packaged with many open source projects currently distributed is some form of user license describing the rights and limitations of use allocated to the public. This Article attempts, on the most basic level, to assess how intellectual property rights can encourage production of viable, high-quality software developed through open source means.

To this end, two fundamental theories are presented. First, it must be determined whether or not intellectual property protections, in any form, make sense in the instance of open source development. Put another way, are there appreciable gains to be had by providing some form of proprietary control over what is fundamentally a reaction against traditional proprietary production schemes? I argue that some form of intellectual property rights would not only incentivize open source production but also increase the quality of the software produced through open source software development.

The second and more difficult question is what form this proposed intellectual property protection should take. In addressing this question, I will identify some clear shortcomings of traditional intellectual property schemes with regard to open source development. Employing basic economic analysis, I'll suggest a more optimal intellectual property scheme that is not only capable of properly incentivizing open source development, but also increasing product quality.

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The problem is classic and well known. Ownership is, in effect, a right of exclusion. To possess property is fundamentally the ability to prevent others from using it. This rationale falls short, however, in terms of intel-

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3. See *infra* notes 6-11.

lectual property. By its very nature, the value of such property is the innovation it represents, either in terms of a new expression of an idea or a new utilization of technology. Such innovations must be made manifest to be realized, but physical realization makes the innovation plain to others and may invite easy misappropriation.

Ownership with regard to intellectual property, therefore, has been implemented as a right of distribution more than as a right of exclusion.<sup>4</sup> In return for making her innovation known, the author/inventor is rewarded with the grant of some form of control over the distribution of manifestations of her innovation. In the Western legal tradition, this distribution control is provided primarily through patents and copyrights. This notion works well in the ‘one creator, many users’ paradigm classically preserved in traditional patent and copyright schemes. In fact, much of the structure of modern Western patent and copyright law revolves around the ways and means of preserving, protecting, and thereby rewarding only the distribution of the unaltered and unimproved form of a creator’s work.<sup>5</sup> What is unclear is how well these traditional forms of intellectual property protection balance societal edification with innovator rewards in instances of non-traditional methods of production.

Of particular interest are recent efforts in open source development, especially those in the technology and software industry. In contrast with traditional proprietary or corporate production models, open source development is identifiable by two characteristics. First, open source projects are distributed in forms that allow not just observation and utilization but modification as well. In the software example, a particular program would be distributed in such a way that its human-readable source code is accessible in addition to its machine-readable object code. Second, open source projects are provided to users with a varying level of redistribution and modification rights. These rights range from a floor of very limited redistribution allowances accompanied by strict crediting requirements to a ceiling of unlimited modification, appropriation, assignment, and even resale.<sup>6</sup>

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4. See generally Paul Goldstein, *Derivative Rights and Derivative Works in Copyright*, 30 J. COPYRIGHT SOC’Y 209 (1983) (discussing the evolution of American copyright law and examining rights in derivative works as distinguished from reproduction rights).

5. See *id.* at 216.

6. See Open Source Initiative, *The Approved Licenses*, <http://opensource.org/licenses> (last visited Nov. 13, 2005) (providing specific examples of redistribution rights). Also, bear in mind that open source software, while often billed as free software, is not necessarily gratis. This is an important distinction. While the terms “free software”

As such, famous open source efforts as Mozilla,<sup>7</sup> Apache,<sup>8</sup> and of course Linux<sup>9</sup> have shown open source development is becoming a major force in the software industry.<sup>10</sup> The idea is that by releasing to the public not just a piece of software itself, but human-accessible source code as well, a community effort may be used to develop and better the software in an often disorganized and highly egalitarian fashion as many individual programmers work on the software with minimal oversight. Instead of following the paradigm of traditional proprietary businesses where projects are developed in a classic factory-like hierarchy and traditional ownership notions are preserved, open source developers feel that many heads each working in its own direction are better than one tightly organized team.

In his article on the economic factors that motivate and sustain viable open source development, Yochai Benkler nicely synthesizes the basic theory of why open source development has become a practical alternative to more traditional proprietary production schemes:

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and “open source software” are often used interchangeably in everyday conversation, some members of the open source community take such semantic issues very seriously. For the purposes of this Article such technical issues will be overlooked. The important point is that the “free” in free redistribution means the legal freedom to redistribute code, whether it is sold or given away without compensation.

7. Mozilla is an open source software suite including a web browser, e-mail utility, and other applications. Mozilla was spun off of Netscape as a non-profit open source effort in 2003. Firefox, the dedicated browser utility developed by the Mozilla team, has generated significant praise as a legitimate competitor to the Internet Explorer web browser developed by Microsoft. *See* CNET Editor’s Review, [http://reviews.cnet.com/Mozilla\\_Firefox\\_10/4505-9241\\_7-31117280.html](http://reviews.cnet.com/Mozilla_Firefox_10/4505-9241_7-31117280.html); *see also* Cynthia L. Webb, *Firefox Flames Internet Explorer*, WASHINGTONPOST.COM, Nov. 15, 2004, <http://www.washingtonpost.com/wp-dyn/articles/A50983-2004Nov15.html>.

8. Apache is an open source HTTP web server for UNIX platforms. As of August, 2004, approximately 67% of the web servers on the internet were running Apache software. Developed in early 1995, it is rapidly becoming the industry standard. *See* Apache Software Foundation, WIKIPEDIA: THE FREE ENCYCLOPEDIA, [http://en.wikipedia.org/wiki/Apache\\_server](http://en.wikipedia.org/wiki/Apache_server) (last visited Dec. 6, 2005).

9. Perhaps the best-known open source software in the world, Linux is a UNIX-like operating system kernel developed by Linus Torvalds and first released in 1991. Since then, the Linux kernel has been extensively and continuously overhauled by a world wide network of open source developers. The Linux kernel is used in many different Linux operating systems (distributed for free and for cost) and is running on twenty million computer systems worldwide.

10. *See* Arik Hesseldahl, *Better Browser Now The Best*, FORBES.COM, Sept. 29, 2004, [http://www.forbes.com/2004/09/29/cx\\_ah\\_0929tentech.html?partner=tentech\\_newsletter](http://www.forbes.com/2004/09/29/cx_ah_0929tentech.html?partner=tentech_newsletter) (arguing that the open source Firefox browser is superior to its competitors). *See generally* News Forge, <http://www.newsforge.com> (an online newspaper covering Linux and open source developments around the world) (last visited Dec. 6, 2005)..

Peer production [referred to here as open source development] has an advantage over firms and markets because it allows larger groups of individuals to scour larger groups of resources in search of materials, projects, collaborations, and combinations than is possible for firms or individuals who function in markets. Transaction costs associated with property and contract limit the access of people to each other, to resources, and to projects when production is organized on a market or firm model, but not when it is organized on a peer production model. Because fit of people to projects and to each other is variable, there are increasing returns to the scale of the number of people, resources, and projects capable of being combined.<sup>11</sup>

While open source efforts such as Mozilla and Linux have been held up as evidence that the model works, they have succeeded largely by contravening or even ignoring traditional intellectual property regimes. In other words, those open source efforts most often held up as examples of how peer production can prosper in the modern information economy have succeeded in spite of, rather than because of, contemporary intellectual property controls.<sup>12</sup> The existence of what are often self-serving defenses of the open source model are thus a deliberate condemnation of the narrow-mindedness of our current intellectual property structures. They are also implicit admissions that open source development still has a long way to go before it becomes more than a practical alternative and takes its place as a legitimate mainstream production option.

What follows is a discussion of how intellectual property rights, properly deployed, can improve and legitimize contemporary open source development. Part I provides the theoretical framework from which I will critique current open source IP rights systems and suggest my own solution. In Part II, I argue that open source development will benefit greatly from an IP rights system that serves the dual goals of incentivizing production and increasing the quality of products generated by focusing closely on proper attribution and vertical sustainability. Part III examines some well-known open source efforts that have succeeded by utilizing mechanisms very similar to the theoretical one outlined in Part I and II. These examples, nevertheless, serve as instances of sound theory, but imperfect implementation.

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11. Yochai Benkler, *Coase's Penguin, or Linux and the Nature of the Firm*, 112 *YALE L.J.* 369, 376-77 (2002).

12. As will be discussed in Part IV of this Article, the use of open source software is premised on license terms that alter the author's conventional copyrights. As contracts between the author and the user delineating terms of use, these licenses are both inefficient and ineffectual.

From there I will move to Part IV, where I will suggest in more concrete terms a possible adjustment to our own IP system that would benefit society by improving and encouraging open source development as a more cost-effective and productive means of software development. Although not a magic pill to cure the open source debate, my solution will attempt to show that it is at least possible to productively integrate open source and intellectual property.

The argument presented does not attempt to define, nor provide, a new or in-depth explanation for the open source development model.<sup>13</sup> Rather, the model is taken as an established production approach that contrasts with traditional hierarchical and proprietary production schemes, and seeks to identify the shortcomings in traditional intellectual property regimes with respect to open source development and discuss some possible solutions.

## II. HOW INTELLECTUAL PROPERTY RIGHTS CAN BENEFIT OPEN SOURCE DEVELOPMENT

Before addressing the obvious and significant question of what form an intellectual property regime capable of productive synchronization with open source development might take,<sup>14</sup> it is important to first ask what gains, if any, might be realized by attempting to marry intellectual property and open source development. In the open source development context, intellectual property rights in any form must decrease transaction costs. This can be accomplished by building an IP rights structure that focuses closely on serving two fundamental purposes: attribution and vertical sustainability.<sup>15</sup>

Much has been made of the argument that intellectual property is inherently incompatible with true open source development.<sup>16</sup> This argument is essentially that of the now famous tragedy of the anticommons, a situation held to occur when too many actors in a community hold rights

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13. For an in-depth description of the open source model, see Marcus Maher, *Open Source Software: The Success of an Alternative Intellectual Property Incentive Paradigm*, 10 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 619 (2000). For a discussion of the fundamental economic and social motivations behind the open source model, see generally Benkler, *supra* note 11.

14. *See infra* Parts III and IV.

15. For the purposes of this article, “attribution” refers to accurate and sustainable notification authorship. Likewise, “vertical sustainability” describes a set of stable circumstances in which the rights regime adopted by an author is preserved as that original author’s work is passed from user to user as well as to subsequent contributors.

16. *See supra* note 2.

of exclusion, such as property rights. This argument, first posited in 1998 by Michael Heller, contends that when such a situation occurs, many actors may collectively underutilize a resource even though they act separately and rationally.<sup>17</sup> The idea is that when an increasing number of actors are each assigned a property-like right, the effort required to reach a consensus amongst all who have a say in a matter will become greater and greater. Eventually the difficulty involved in getting everyone on board will become so high that some opportunities will simply go underutilized and some resources untapped. This is to say, in the end, that the tragedy of the anticommons is one of increasing transaction costs.<sup>18</sup>

Critics fear that liberal assignment of intellectual property rights in an information economy will result in precisely this sort of drastic increase in transaction costs. Because the open source model thrives fundamentally on the free exchange of information, these critics argue that even an incremental increase in transaction costs above absolutely minimal levels will smother any open source effort.<sup>19</sup>

Although the anticommons argument certainly has merits, it is important to recognize that the tragedy it foretells is not a necessary component of all intellectual property schemes. Increased fragmentation of exclusion rights does not necessarily imply higher transaction costs. Rather, transaction costs rise with the costs of knowledge and negotiation. This is one reason that the tragedy of the anticommons receives so much attention in intellectual property literature. Put another way, transaction costs rise in the anticommons model because it becomes difficult for any individual actor to: (1) ascertain who the pertinent rightholders are with regards to a project that actor wants to complete, and (2) convince them to deal with each other usefully and efficiently.

In the intellectual property realm, it may not be obvious who controls the rights to basic technologies or information necessary to the completion of larger projects; nor is it always easy to entice those holding the rights to act in strategic concert. The more a creative field is fragmented by the as-

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17. Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621 (1998).

18. Anticommons property is prone to the tragedy of underuse. Once anticommons property appears, neither markets nor subsequent regulation will reliably convert it into useful private property, even if the property rights are 'clearly defined' and contracts are subject to the 'rule of law.' Transaction costs, holdouts, and rent-seeking may prevent economically justified conversion from taking place.

*Id.* at 687-88.

19. See generally Ruth L. Okediji, *Trading Posts in Cyberspace: Information Markets and the Construction of Proprietary Rights*, 44 B.C. L. REV. 545 (2003).

signment of rights to holders of smaller and smaller parcels of information, the more actors must be identified and involved in any cumulative endeavor and the more strategic action issues come into play. In short, because creativity is fundamentally an act of consolidating ideas,<sup>20</sup> the risk of killing it through the overassignment of intellectual property rights is salient. With this tragic scenario in mind, it becomes clear that minimizing transaction costs must be a central aim of any intellectual property regime that seeks to accept, let alone benefit, open source development.

#### A. The Importance of Attribution and Sustainability

Creating a rights allocation system for open source development that minimizes transaction costs is not only theoretically possible, but practically feasible without resorting to a commons-based system. In order to avoid the type of spiraling transaction costs associated with rights fragmentation, any hypothetical intellectual property system must promote both transparency and avoid nonproductive and inefficient negotiations between actors.

Proper attribution is one way a system of allocating and implementing intellectual property rights might deal with the problem of increased transaction costs associated with the difficulties inherent in figuring out which individuals hold rights to material necessary to software development. One significant contemporary barrier to open source development as a legitimately competitive software production model is the difficulty any individual developer has in ascertaining who she needs to ask permission of to use code she may want to implement into her project.<sup>21</sup> In the analog world, if I want to insert an excerpt from an article written by someone else into a book I am writing, I need only to look to the article's author and perhaps the journal in which it was published to ask for permission to use the excerpt. Because the article's content is clearly attributed to the

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20. "Masterpieces are not single and solitary births; they are the outcome of many years of thinking in common, of thinking by the body of the people, so that the experience of the mass is behind the single voice." VIRGINIA WOOLF, *A ROOM OF ONE'S OWN* (1929); see also William M. Landes & Richard A. Posner, *An Economic Analysis of Copyright Law*, 18 J. LEGAL STUD. 325, 332 (1989); R. Polk Wagner, *Information Wants to be Free: Intellectual Property and the Mythologies of Control*, 103 COLUM. L. REV. 995, 998 (2003).

21. For a discussion of this phenomenon that occurs when too many fragmented exclusionary rights are granted as it pertains in the realm of patents, see Rosemarie Ham Ziedonis, *Don't Fence Me In: Fragmented Markets for Technology and the Patent Acquisition Strategies of Firms*, 50 MGMT. SCI. 804, 807-08 (2003). Although this article deals primarily with the anticommons issues connected with patents, the same transaction cost situations and arguments apply equally well in terms of copyrights.

author and its distribution to the publisher, it is a trivially simple task for me to secure the permission necessary to use that author's words in my own work. Of course, I too must accurately attribute the portion of work that is not mine so that any subsequent authors who might want to excerpt me do not inadvertently take something from the author I excerpted without asking. The point is that because conventional copyright ensures that everyone knows who is responsible for what work, the transaction costs involved in securing proper permissions is minimal.

This is not the case in the software development industry. In order for a computer program to be written and manipulated by a human as well as understood and utilized by a computer, any given piece of software must be expressed in two forms that look different but are functionally equivalent: object code and source code. Source code is human-readable and in a form that software coders can easily interact with. Object code is machine-readable; it is entirely ones and zeroes—the program reduced to pure binary format.<sup>22</sup>

Open source development efforts often run into trouble in terms of prohibitively high transaction costs because of a conspicuous lack of access and attribution at the source code level. Any IP rights system that seeks to improve the viability of open source development must focus on this area because it is code that can be understood and manipulated by people. Because software is often at least partly a compilation of tried-and-true code, software engineering is rarely done from scratch.<sup>23</sup> Proper attribution therefore plays an essential role in a successful open source intellectual property system by ensuring that not only would the software authors receive credit (and any available compensation) for their work, but

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22. The major distinguishing difference between open source software development and proprietary efforts is that while both the source code and object code for open source software is released, corporations like Microsoft only release the object code for their software. Further, the use of the object code for such programs is very often contingent upon the user accepting license terms that forbid attempting to alter or even access the underlying source code. Take for example this license language from Microsoft's XP Professional operating system:

5. LIMITATION ON REVERSE ENGINEERING, DECOMPILATION, AND DISASSEMBLY. You may not reverse engineer, decompile, or disassemble the Product, except and only to the extent that it is expressly permitted by applicable law notwithstanding this limitation. Microsoft, Microsoft Windows XP Professional END-USER LICENSE AGREEMENT, <http://www.microsoft.com/windowsxp/pro/eula.mspx> (last visited Dec. 6, 2005).

23. See Maher, *supra* note 13, at 624-25 (discussing the widespread practice of reusing old code in new projects).

also crucially reducing transaction costs by allowing those who wish to use code to identify those with whom they must negotiate.

However, identifying those who hold copyrights in code that a software engineer would like to use in a new program is only half the battle. The other factor that significantly increases transaction costs is the effort required to get those rights-holders to negotiate and agree to provide the hopeful engineer with the permission to use their work. Therefore, in addition to mechanisms for proper and pervasive attribution, a successful open source intellectual property system must also be vertically sustainable. What good would it do, in other words, for a given pool of collaborators to work hard on an open source project only to have some outside individual swoop in and unilaterally appropriate and commercialize the project as soon as it reaches fruition? What about the corporate software producer who would like to realize the efficiency and quality gains to be had by adopting open source production methods but does not want her competitor to simply walk off with the results?<sup>24</sup>

To avoid such unilateral downstream appropriation of the fruits of open source labors, the assignment of IP rights must strike a balance between providing authors with sufficient control over their work to encourage them that it is worthwhile to produce while at the same time ensuring that the information and otherwise protected material produced remains 'free' enough to others that downstream production may progress unfettered. By achieving such a vertically sustainable balance a proper open source IP system would drastically decrease, if not eradicate, the transaction costs associated with motivating rightholders to collectively act. Further, proper vertical sustainability would ensure that no individual rightholder could prevent downstream development by refusing to share her work.

### III. THE EFFECTS OF ATTRIBUTION AND VERTICAL SUSTAINABILITY ON OPEN SOURCE DEVELOPMENT

If done properly, any system designed to allocate and protect intellectual property rights would serve the dual goals of incentivizing individuals to produce while at the same time increasing the quality of their work. Put another way, society wants not only more software, but software that works better. If a system of intellectual property is to not just coexist with, but actively improve open source development, it must encourage and improve production.

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24. See Benkler, *supra* note 11, at 439-40 (discussing the de-incentivizing results of unilateral downstream appropriation).

In order for open source development to compete with traditional proprietary assembly as a legitimate means of production in general, and as a viable means of software development in particular, open source production must be incentivized.<sup>25</sup> At one extreme, to simply abolish property rights in information and hope to incentivize production through a complete rejection of proprietary rights would result in either far less work getting done, or a tragedy of the commons-like race to the bottom in terms of quality of work produced.<sup>26</sup> On the other hand, the opposite extreme of strict intellectual property controls quickly results in the type of spiraling transaction costs described by the tragedy of the anticommons that precludes any effort at open source development.

If our goal is to harness the utility, efficiency, and innovative solutions of open source then we must choose the middle path: without completely rejecting or embracing traditional intellectual property notions we must implement a system of IP rights that creates sufficient incentives for open source production while at the same time minimizes transaction costs for all actors. I agree with Benkler's argument that "[a]t the broadest level, wherever peer production can motivate behavior better than markets or firms, then certainly it will be superior."<sup>27</sup> An IP system that properly focuses on attribution and vertical sustainability is a powerful way to increase the ability of open source to motivate behavior in addition to improving the quality of product.

One of the most common arguments raised against synchronizing intellectual property with open source development is that assigning rights will stifle production.<sup>28</sup> Indeed, the open source movement itself is largely conceptualized as a reaction against the overbearing control embodied by

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25. Indeed, because of the uncertainty of monetary returns on open source participation relative to proprietary production, incentivization has been identified as perhaps the largest hurdle to enabling open source production as a legitimate market force. For a discussion of these issues in the open source software development context, see Benkler, *supra* note 11, at 423-34. For a more fundamental treatment, see Goldstein, *supra* note 4, at 216-17.

26. For a discussion on the failure of the abolition of IP rights, see generally Wagner, *supra* note 20.

27. Benkler, *supra* note 11, at 426.

28. The preamble of the GNU General Public License articulates this fear:

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

GNU General Public License, Version 2, Free Software Foundation, Inc. (1991), <http://www.fsf.org/licensing/licenses/gpl.html>.

perfect intellectual property rights.<sup>29</sup> While I certainly agree that traditional IP structures are at best irrelevant and at worst destructive to open source development, I strongly disagree that open source is necessarily IP averse.

The proper attribution and sustainability that may be achieved through IP rights go a long way towards providing the kinds of incentives to production that monetary compensation usually performs in more traditional publishing or production industries. By providing pervasive attribution throughout a vertically sustainable chain of open source development, the identity of those individual contributors most responsible for the success of some collaborative effort will be known to all other participants in the project, as well as any eventual consumer of the project. Indeed, it is exactly this kind of notoriety that many current open source developers seek.<sup>30</sup>

While it is unclear whether these developers covet this notoriety for purely hedonistic personal reasons or because it occasionally may be parlayed into more economically rewarding employment,<sup>31</sup> the proper attribution available through a system of IP rights would serve both aims. By ensuring that an author's name will not be disassociated from her work, no matter who utilizes the software or how the software is put to use, the author is reassured that her peers and consumer of the software will credit her for producing the viable software.

By properly attributing an author's work as a matter of law and vertically sustaining that attribution, many authors who might otherwise not contribute to open source efforts could be enticed to do so because they have less reason to think that their work will go unnoticed. They are also more likely to capture the colloquial or economic prizes that come with notoriety. In other words, it is possible to replace the incentives provided by money (available only to the few)<sup>32</sup> with those provided by property

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29. See Lawrence Lessig, *The Architecture of Innovation*, 51 DUKE L.J. 1783, 1788 (2002) (discussing the motivations of the open source movement as they relate to IP structures).

30. See Maher, *supra* note 13, at 631-36 (discussing the high value many open source developers place on visibility within the community); Benkler, *supra* note 11, at 423-26 (discussing the open source motivations).

31. *Id.*

32. Even though the majority of software used today for everyday home computing tasks is proprietary, the number of individuals financially compensated for this proprietary production is very small relative to consumer base of the software they produce. As any computer hobbyist or amateur hacker would probably tell you, it's hard to get paid to work with code. Firm statistics on how many people are being paid to code in America are difficult to come by, as are statistics counting how many pieces of software are sold

rights (available to all),<sup>33</sup> while at the same time increasing access to traditional corporate rewards for production.<sup>34</sup>

Additionally, an IP regime focused on attribution and vertical sustainability will further incentivize production by lowering barriers to entry such that many whose perceived benefit may nevertheless be marginal will still be willing to participate usefully in the project.<sup>35</sup> As open source development now stands, many potential contributors do not participate because of the real and perceived barriers to entry that anticommons-type transaction costs represent. Decreasing those transaction costs through: (1) promoting transparency and knowledge of rightholders through proper attribution, and (2) crafting a vertically sustainable rights balance that minimizes the costs of negotiation and the ability of the few to derail the

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each year. That said, a rough calculation is possible. In May 2003, the U.S. Department of Labor's Bureau of Labor Statistics reported that there were a little over one million Americans working as computer programmers and software engineers. U.S. DEP'T OF LABOR, BUREAU OF LABOR STATISTICS, 2003 National Employment and Wage Data from the Occupational Employment Statistics Survey by Occupation, <http://www.bls.gov/oes/2003/may/table1.pdf>. The number of Americans writing software thus pales significantly when compared to the 32 million copies of its Windows XP operating system that Microsoft sold in the first six months it was available. Margie Semilof, *XP Sales Exceed 32 Million; SP1 Set for September*, SEARCHWIN2000.COM, June 28, 2002, [http://searchwin2000.techtarget.com/originalContent/0,289142,sid1\\_gci836066,00.html](http://searchwin2000.techtarget.com/originalContent/0,289142,sid1_gci836066,00.html). Put another way, in just six months one company sold at over 30 times as many copies of just one computer program as the number of paid programmers and software engineers in the entire U.S.

33. By their fungible nature, property rights are literally available to all. This is significant because these fungible goods are freely given (in terms of copyright) and can be secured regardless of nationality or citizenship.

34. One of the most important aspects of the proper attribution afforded by a well-considered IP rights regime is the notoriety available to clever programmers. Indeed, the informal recognition afforded the best open source contributors can result in gainful employment and/or project contracts. For one perspective, see Open Source, Jobs for Hackers, <http://opensource.org/advocacy/jobs.php> (last visited Dec. 6, 2005). For an accessible and in-depth discussion of the incentive structures inherent to open source, see Josh Lerner & Jean Tirole, *Some Simple Economics of Open Source*, 50 J. INDUS. ECON. 197, 212-20 (2002).

35. Benkler speaks at length about several such successful open source efforts that employ low barriers to entry. See Benkler, *supra* note 11, at 384-89. Benkler attributes much of this barrier lowering function to the granularity of the projects he discusses. Although granularity is an important aspect of open source development, it is by no means fundamental to successful open source efforts. With regard to lowering barriers to participation, decreasing transaction costs across all fronts through proper IP is the crucial prerequisite. Once that function is performed, granularity will often follow on its own accord.

work of the many, will mean that even individuals who perceive only minimal benefits of participation will nonetheless be incentivized to do so.

By rewarding open source producers with attribution (leading to sustainable property rights and minimizing the transaction costs that bar entry to a level below even marginal rewards for participation), a proper IP rights framework can seed the open source model with sufficient incentives to promote greater production. Indeed, rather than stifling creativity and invention, a proper IP framework with regards to open source production can in fact result in more and better products.

#### A. Incentivizing Open Source Production

One of the most often repeated arguments against the long-term sustainability of open source development revolves around the problem of enticing individuals to participate in open source efforts.<sup>36</sup> According to this argument, while there may be an extremely large user base for popular software, enticing those users to become active contributors rather than just passive customers is difficult, and they are likely to do so only temporarily.<sup>37</sup>

While conventional wisdom holds that it's nearly impossible to get someone to do something for nothing, there are a variety of non-monetary indirect appropriation means available to open source developers, in addition to the significant economic rewards reaped by the authors of successful software. In his article *Coase's Penguin, or, Linux and the Nature of the Firm*, Benkler expands on the work of Lerner and Tirole to abstract the mechanics of human motivation.<sup>38</sup> Benkler's framework is both useful and accessible, and I will use it here to motivate my own argument.

Benkler identifies three separate rewards that may motivate behavior: (1) monetary rewards, (2) hedonistic rewards associated with the subjective personal pleasure derived by each agent, and (3) social-psychological rewards tied to the social associations and status perceptions tied to the activity in question. He then identifies a rewards function:<sup>39</sup>

$$R=M+H+SP$$

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36. See *supra* note 25.

37. See Maher, *supra* note 13, at 628-37 (discussing the process of transforming code users into code contributors).

38. See *supra* note 11.

39. Benkler's argument and mathematical abstractions are in fact quite a bit more subtle and complex. The simplified version of Benkler's arguments I present here preserves the substance of his ideas while providing a sufficiently basic framework upon which to base my own thoughts.

According to Benkler, rational actors will base their decisions on whether to act or not on the value of *R*, not on *M*, *H*, or *SP* alone. Given this framework, it is important to ask what role intellectual property rights play in the subjective valuation of *R*. While Benkler does argue that traditional, “strong” intellectual property rights will stifle open source development, he says nothing of the non-traditional, moderate IP rights focused on attribution and vertical sustainability that I advocate.<sup>40</sup>

Clearly, proper attribution can have an immensely positive effect on *SP*. In any form, the availability of social-psychologic rewards is closely tied to the actor being recognized for his contribution. By assigning vertically sustainable IP rights that preserve an author’s association with his work even through successive generations of use, reinterpretation, and re-use, many individuals’ subjective assessment of *SP* will greatly increase. In this way code that is particularly clever, adaptable, or otherwise useful will be properly credited to its author and that author will reap the benefits in positive *SP* rewards. Paying credit where credit is due is one of the quickest ways for informal rewards like prestige and professional reputation to begin directly incentivizing open source development.<sup>41</sup>

A potential open source contributor’s highly subjective valuation of the hedonistic rewards associated with a project can also be strongly influenced by an IP rights regime that focuses on attribution and vertical sustainability. *H* rewards can be conceptualized as the individual personal joy a contributor derives from participating in an open source project. While there is evidence that few open source contributors participate out of pure altruism, human nature dictates that most derive more pleasure from participating in projects they consider worthwhile. Two conjectures can thus be drawn. First, the majority of open source contributors who are not con-

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40. Benkler argues that:

Strong intellectual property rights, in particular rights to control creative utilization of existing information, harm peer production by raising the cost of access to existing information resources as input. This barrier limits the capacity of the hundreds of thousands of potential contributors to consider what could be done with a given input and to apply themselves to it without violating the rights of the owner of the information input. This does not mean that intellectual property rights are entirely bad. But we have known for decades that intellectual property entails systematic inefficiencies as a solution to the problem of private provisioning of the public good called information. The emergence of commons-based peer production adds a new source of inefficiency.

Benkler, *supra* note 11, at 445-46. It is exactly these types of systemic inefficiencies inherent in the current IP model that the moderate solution I propose in Part IV seeks to overcome.

41. *See supra* note 34.

tributing for purely altruistic reasons would enjoy participating even more if they knew their contributions would be attributed to them. Second, because most contributors are accepting the opportunity cost of participating in an open source project rather than a generally higher paying proprietary effort, it is unlikely that they would like to see their work appropriated for someone else's exclusive gain.<sup>42</sup> Therefore more vertically sustainable open source projects are likely to be considered more worthwhile.

Considering this capacity for attribution and vertical sustainability to positively influence both *SP* and *H*, it is possible to adjust Benkler's basic equation to reflect the influence of intellectual property rights on *R*:

$$R=M+(H+SP)(IP+1)$$

In this new equation, the variable *IP* symbolizes the effects of attribution and vertical sustainability as applied to either *H* or *SP*. When the effects of intellectual property are either absent or ignored, this equation reduces to Benkler's basic assertion of motivation. However, when the positive effects of attribution and vertical sustainability available through a proper intellectual property arrangement are considered, *R* will increase and open source production will be incentivized.<sup>43</sup>

Examining this equation reveals that whenever the effects of intellectual property can be realized positively, it is possible to overcome small immediate monetary returns with enhanced social-psychological and hedonistic rewards. This is particularly significant with regards to incentivizing and sustaining open source production. Benkler's analysis prompts him to conclude that there are "a series of likely conditions under which nonproprietary organizational approaches will be sustainable. First, there

42. Unilateral downstream appropriation is a major issue in the open source community. Richard Stallman has argued that the kind of copyleft licenses discussed in Part III of this Article is the only way to avoid such unfair appropriation. *See* Why Copyleft?, <http://www.gnu.org/philosophy/why-copyleft.html> (last visited Nov. 13, 2005); *see also* Maher, *supra* note 13, at 677-78 (discussing unilateral appropriation).

43. If  $(H+SP)$  were multiplied by only a factor of  $(IP)$  then the equation would reduce to  $R=M$  if zero IP benefits were realized. This is clearly not the case; even if no IP benefits exist there can remain very real *H* and *SP* rewards. Because proper IP rights increase *R* whenever they are realized, *H* and *SP* must be multiplied by  $(IP + 1)$  to maintain them even if IP benefits are absent. Additionally, the equation, as written, implies that *IP* operates equally on *H* and *SP* in a given situation. This may or may not be true. As discussed above, *IP* effects that promote vertical sustainability, for example, may have a greater effect on *H* than on *SP*. That said, this minor technical inaccuracy does not decrease the conceptual accuracy and is acceptable in order to maintain the simplicity of the equation.

is the case of projects . . . where market remuneration would likely be too costly to sustain, but where hedonic and social-psychological rewards can provide contributors with positive rewards.”<sup>44</sup> In other words, where  $(H+SP) \gg M$ ,  $R$  may still be sufficiently large to prompt participation in open source efforts. Because IP acts directly on  $(H+SP)$  in a positive fashion, an intellectual property rights regime focused on attribution and vertical sustainability will reinforce the commitment made by those who would have been enticed to participate without any IP rights, and more importantly, incentivize more people to contribute who otherwise would not have done so due to insufficient  $(H+SP)$  valuation.

Benkler continues his observation: “[s]econd, there are instances where the value of monetary return is small relative to the value of the hedonic and social-psychological rewards, particularly where the cultural construction of the social-psychological rewards places a high negative value on the direct association of monetary rewards with the activities.”<sup>45</sup> In these instances,  $(H+SP)$  is again much greater than  $M$ . The difference is that in the first set of projects, the inequality is driven by objective market forces whereas in these second instances, the inequality is driven by social context and subjective valuations. Nevertheless, the beneficial operation of intellectual property rights remains the same.

## B. Maximizing the Quality of Open Source Products

After facilitating the delivery of more products to the public, the second goal of any useful IP rights system should be improving the quality of the products delivered. This Section will explain how intellectual property rights can not only incentivize production, but also increase the quality of the work produced.

As with incentivizing production, improving the quality of products through intellectual property rights is a function of proper attribution and vertical sustainability. One first order result of lowering transactional costs to their absolute minimum is that any interested party may easily participate in an open source development effort.<sup>46</sup> It stands to reason that those who choose to participate are self-selected as the most personally interested individuals available. In contrast to traditional corporate production where each rational producer only works as hard as she must to ensure her continued employment, the fundamentally decentralized open source model encourages voluntary participation by those who most wish to do

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44. Benkler, *supra* note 11, at 433.

45. *Id.* at 434.

46. *See supra* note 35.

so.<sup>47</sup> All things being equal, those who desire to perform a task will do a better job of it than those who are required to do the task. Therefore, the eradication of barriers to entry represented by an IP system that properly attributes and preserves vertical sustainability will result in more self-motivated people generating higher-quality work.

Because the open source development model is decentralized and largely non-hierarchical, there is rarely a finite and clearly defined goal, or a point at which a project is considered complete.<sup>48</sup> Rather, open source development may be considered more of a rolling process where improving on the work of those who came before is often the most tangible goal. For instance, compare the incrementally improved and highly frequent releases of software, such as the Fedora Project distribution of the Linux operating system, to the universally overhauled releases of a new Microsoft operating system that occur only once every few years.<sup>49</sup> This is largely a result of the fact that open source is by definition open, permitting and encouraging each interested user to immediately improve on the software she receives. In contrast, software developed by traditional corporate means is

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47. See Maher, *supra* note 13, at 631-37 (discussing the open source culture); Benkler, *supra* note 11, at 372-73 (discussing the application of organization theory to the open source paradigm).

48. This open source characteristic is displayed in the Frequently Asked Questions section of the Fedora Project's (an open source Linux software suite) webpage:

Q: Why a project instead of a product?

A: A global steering committee at Red Hat decided that Red Hat Linux was suffering from too many compromises as a retail 'product,' and that we should redirect our efforts at creating a community-based project. Rather than being run through product management as something that has to appear on retail shelves on a certain date, Fedora Core will be released based on schedules, set by a steering committee, that will be open and accessible to the community, as well as influenced by the community.

The Fedora Project FAQ, <http://fedora.redhat.com/about/faq> (last visited Oct. 13, 2005).

49. For instance: Microsoft Windows was first announced in 1983. Windows 1.0 was released in 1985, 2.0 in 1987, 3.0 in 1990, Windows 95 was released in 1995, Windows 98 was released in 1998, and Microsoft Windows XP first appeared in 2001. That's an average of one release every 2.6 years. In stark contrast, the Fedora project (an open source Linux-based operating system) website announces updates to the Fedora Core code a few times a month, and makes incremental updates reflecting the work done each day available every night. See Fedora Project Schedule, <http://fedora.redhat.com/participate/schedule> (last visited Oct. 13, 2005) (laying out version release dates).

almost always only available on the condition that it is not tampered with, let alone altered.<sup>50</sup>

This means that there is a much higher availability of value-added software developed through open-source means than that churned out by hierarchical corporate production. For instance, while the basic Linux operating system is available for free, several value-added versions developed by open source means are sold. Further, as new uses and issues are identified for which the software might be adapted, a community of open source developers is constantly and instantly available to shape the software to meet these needs.<sup>51</sup>

This responsiveness to community needs is especially relevant in the world of software where the cost of producing good software is rarely different from the cost of producing bad software, but where the use of good software can save billions of dollars compared to the use of bad.<sup>52</sup> Funda-

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50. To be sure, when viewed up close, decentralized production appears extremely inefficient. Whereas traditional proprietary production adheres to clearly defined goals and processes, the efforts of individual actors participating in a decentralized production effort (like open source development) are often redundant or at odds. When considered en masse, however, the efforts of each decentralized actor overlap and the group as a whole moves in the direction of general improvement. A visual metaphor might be a colony of ants scavenging for food. If you watch the behavior of each individual ant they seem extremely unorganized. And they are. Some ants find food, some ants wander aimlessly, and some ants switch back and forth. But when you consider the behavior of the colony as a whole, the massively paralleled distributed efforts of each individual ant combine to assure that the colony is fed. For a far more expert discussion of the considerable power of decentralized production, see Eric Steven Raymond, *How Many Eyeballs Tame Complexity*, in THE CATHEDRAL AND THE BAZAAR, <http://www.catb.org/~esr/writings/cathedral-bazaar/cathedral-bazaar> (last visited Oct. 25, 2005).

51. Indeed, it seems that the number of internet chat rooms and running bulletin board services devoted to open source grows daily. At the time of writing, the web search engine Google found over eleven million newsgroup postings with the word "linux" in their title, and over 2,000 individual newsgroups devoted to linux. See Google Groups, <http://groups.google.com> (last visited Nov. 21, 2005).

52. In one instance, a:

security vulnerability in Microsoft's database program SQL Server 2000 enabled a computer worm known as Slammer to temporarily take down hundreds of thousands of computers around the world, causing an estimated \$950 million to \$1.2 billion in lost productivity worldwide. Among the reported damage, 13,000 automated teller machines temporarily stopped working, some airline flights were canceled, and the emergency 911 system in at least one city temporarily stopped working.

Reid Goldsborough, *Is There a Solution to Buggy Computers?*, OFFICESOLUTIONS, July-Aug. 2003, available at [http://www.findarticles.com/p/articles/mi\\_m0FAU/is\\_4\\_20/ai\\_105367980](http://www.findarticles.com/p/articles/mi_m0FAU/is_4_20/ai_105367980). Jack Ganssle has commented that because much of the world's economy is directly tied to software, "fire code"-like rules should be installed to minimize the im-

mental institutional barriers often result in the first release of corporate-developed software being buggy or malfunctioning.<sup>53</sup> Because she is not allowed to tinker with the software she has purchased, the consumer must wait until the corporation fixes the problem (*if* the corporation fixes the problem).<sup>54</sup> On the other hand, the decentralized rolling nature of open source development means that if one proposed solution creates more problems than it solves, it can either be adjusted or discarded relatively immediately by the open source development community.<sup>55</sup>

On a superficial level, proper attribution's role in increasing *SP*-type rewards will encourage individuals to produce better products since few, if any, would want to be associated with inelegant or failed solutions. But there is a more fundamental aspect of open source that allows proper IP to truly maximize quality: open source software is designed to solve problems whereas proprietary software is designed to compete in the market.<sup>56</sup> Because the primary purpose of the software as conceptualized by its manufacturer is to compete in the marketplace, clever solutions to actual problems are only one of the many ways in which this goal might be realized. The result is the tendency for proprietary software to lean towards an emphasis of style over substance in comparison to open source software's often more elegant, if less accessible, solutions.<sup>57</sup> Contextualizing this disparity, one commentator has written:

[I]n every release cycle Microsoft always listens to its *most ignorant customers*. This is the key to dumbing down each release

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plementation of bad software and the significant monetary and human costs such software entails. Jack Ganssle, *Codifying Good Software Design*, Aug. 5, 2004, <http://www.embedded.com/showArticle.jhtml?articleID=26806185>.

53. Proprietary corporations almost always announce upcoming software releases in advance in order to build consumer and investment interest. Because these corporations stand to lose significant amounts of money if they miss their self-imposed software release dates, the corporations often release code before it is fully tested.

54. *See infra* note 57.

55. Indeed, this parallel peer review is one of the defining traits of open source development. *See* Maher, *supra* note 13, at 626-28.

56. This distinction is one of motivation, an *ex ante* reason the software is developed. Of course, both proprietary and open source software, once released, compete in the marketplace. It is perhaps then more accurate to say open source software is almost always modified by individuals seeking to solve a particular problem, while proprietary software is modified by corporations seeking to capture a larger market share, and sometimes seek to satisfy this goal by solving problems.

57. Again, because proprietary producers seek to capture larger market shares they often attempt to do so by improving the superficial design of software rather than focusing on its function. Open source, on the other hand, has routinely been criticized as difficult for the average user to access because of its attention to function over useability.

cycle of software for further assaulting the non personal-computing population. [Open source developers for both] Linux and OS/2 developers, [on the other hand,] tend to listen to their *smartest* customers. . . . The good that Microsoft does in bringing computers to non-users is outdone by the curse they bring on experienced users, because their monopoly position tends to force everyone toward the lowest-common-denominator, not just the new users.<sup>58</sup>

These benefits of open source's incremental and solution-motivated approach to software development can be maximized by an IP rights system that preserves vertical sustainability because a system that allows users to not just utilize but adapt software to their own needs will by necessity be more responsive to community desires.

Further, vertical sustainability as it is conceptualized here does not preclude the possibility of economic gain.<sup>59</sup> There is no reason why an individual who develops a particularly useful or clever program having added her own work to a framework of open source code should be precluded from commercializing her product. In fact, one of the most salient benefits of the open source development model is its propensity for producing value-added software. Although open source does not mean monetarily free,<sup>60</sup> rational consumers will not pay for software developed through non-proprietary means unless it stands head and shoulders above

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58. Tom Nadeau, *Learning from Linux: OS/2 and the Halloween Memos*, <http://www.os2hq.com/archives/linmemo1.htm> (last visited Oct. 23, 2005).

59. Indeed, many open source companies compete successfully with proprietary corporations. Robert Merges has argued that companies such as IBM can use open source production as an economic strategy in the marketplace:

IBM's contribution to and backing of Linux comes free of property right claims. IBM's work product becomes part of the public domain. This both permits IBM to draw on the work of previous contributors, and (key for this argument) encourages downstream users to adopt Linux without the fear of being held hostage by IBM. IBM's investments are P[roperty] P[reempting] I[nvestment]s, precluding anyone (including IBM itself) from claiming property rights in the operating system. This credibly assures other firms that IBM will not assert the kind of control over the Linux operating system that other firms fear Microsoft will assert or has asserted over Windows.

Robert P. Merges, *A New Dynamism in the Public Domain*, 71 U. CHI. L. REV. 183, 193 (2004). Even Richard Stallman has written a piece on the marketability of open source software. See *Selling Free Software*, <http://www.gnu.org/philosophy/selling.html> (last visited Oct. 23, 2005).

60. Richard Stallman has commented that "To understand the concept, you should think of 'free' as in 'free speech,' not as in 'free beer.'" *The Free Software Definition*, <http://www.gnu.org/philosophy/free-sw.html> (last visited Oct. 25, 2005).

what they can get without paying. The incentive to add value to the bare code through service, documentation, support, or other tangential means is therefore very high.<sup>61</sup> This means that developers will benefit from the pool of knowledge and economic efficiencies inherent in vertically sustainable open source development, while at the same time be encouraged to produce quality software because of the financial rewards for value-addition they may realize through proper attribution. In this way, intellectual property rights, properly implemented, may provide ex ante incentives and facilitate ex post rewards for producing the most quality software possible.

The ability to produce high quality software is critical to the survival of open source development. IBM's recent and significant investment in non-proprietary production as well as Microsoft's attacks on open source signify that the open source community recognizes the importance of quality and has embraced this goal sufficiently enough to inspire the confidence (IBM) and ire (Microsoft) of two of the world's biggest tech companies.<sup>62</sup> Rather than trusting the market, sympathetic proprietary corporations, or the decentralized commitment of the open source community to preserve an ongoing campaign for quality, IP rights present a discrete and predictable way to realize and maximize the open source movement's natural and necessary appetite for effective and useful software.

### C. Overcoming Barriers to Open Source Participation

Incentivizing open source production of quality software through assigning IP rights focused on attribution and vertical sustainability will do little good if those rights do not also help overcome barriers to rational participation in an open source effort. In addition to incentivizing participation, a proper IP regime can help overcome the two barriers to open

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61. As the Open Source Initiative puts it on their website FAQ:

[Q:] How do I make money on software if I can't sell my code?

[A:] You can sell your code. Red Hat does it all the time. What you can't do is stop someone else from selling your code as well. That just says that you need to add extra value to your code, by offering service, or printed documentation, or a convenient medium, or a certification mark testifying to its quality.

Open Source Initiative, *Frequently Asked Questions*, <http://opensource.org/advocacy/faq.php> (last visited Oct. 23, 2005).

62. For a discussion of IBM's close ties to the open source community, see Cynthia L. Webb, *IBM's Open-Source Lovefest*, WASHINGTONPOST.COM, Sept. 13, 2004, [http://www.washingtonpost.com/wp-dyn/articles/A17842-2004Sep13.html?nav=rss\\_technology](http://www.washingtonpost.com/wp-dyn/articles/A17842-2004Sep13.html?nav=rss_technology). For a discussion of Microsoft's opposition to open source, see Ben Charny, *Microsoft Raps Open Source Approach*, CNETNEWS.COM, May 3, 2005, [http://news.com.com/Microsoft+raps+open-source+approach/2100-1001\\_3-257001.html](http://news.com.com/Microsoft+raps+open-source+approach/2100-1001_3-257001.html).

source mentioned most often: integration failures<sup>63</sup> and downstream appropriation.<sup>64</sup>

The problem of integrating the efforts of a large number of diverse participants is a significant issue in a deliberately decentralized and non-proprietary production model such as open source development. Without an effective integration strategy individual contributors' efforts will not be assembled into an aggregate project. This ex post failure to harness the creativity and effort of open source participants will immediately and severely decrease each contributor's *H* and *SP* valuations to the point that she will view her contribution as wasted effort. Clearly any contribution IP could make towards easing integration would be highly beneficial.

Again, by focusing on attribution and vertical sustainability, an IP system can facilitate easier project integration. Accurately preserved attribution facilitates the type of constructive peer review that helps choose which contributions should be included in the final project.<sup>65</sup> Attribution also associates the author's identity with a particular program or piece of code, implying that each contribution is more substantial personally than an anonymous submission. Most importantly, attribution provides the means through which both contributors and compilers can track each individual's modular progress and status throughout the integration process.<sup>66</sup>

Even if a project is successfully integrated, however, contributors will still feel that their work was for naught if some downstream actor is able to unilaterally appropriate the project and exclude the contributors from further participation and its associated rewards. The most common way in which this occurs is when a project is completed in an open source mode but the source code of the finished product is then removed from the commons and held as a proprietary secret.<sup>67</sup> Indeed, it is this fear of failed

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63. See Lerner & Tirole, *supra* note 34, at 220 ("The success of an open source project is dependent on the ability to break the project into distinct components."). Maher also discusses the benefits of what he calls the "modularity" of open source projects. Maher, *supra* note 13, at 636-37.

64. See Benkler, *supra* note 11, at 439 ("The more important potential 'defection' from commons-based peer production is unilateral appropriation.").

65. This peer review structure is well-known in academia. For a discussion of peer production as it applies to scientific research, see Yochai Benkler, *Commons-Based Strategies and the Problem of Patents*, 305 *SCI.* 1110-11 (2004).

66. Cf. Lerner & Tirole, *supra* note 34, at 218-20 ("It is clear that giving credit to authors is essential in the open source movement.").

67. Stallman and many others argue that the only way to absolutely ensure vertical sustainability is through copyleft type licenses such as the GNU GPL. See Copyleft: Pragmatic Idealism, <http://www.gnu.org/philosophy/pragmatic.html> (last visited Nov. 5,

sustainability that prevents many erstwhile open source contributors from continuing their work.

The specific purpose of the vertical sustainability aspects of the IP regime suggested here is to prevent this type of downstream appropriation. By ensuring that downstream actors cannot benefit from open source developers' work without their permission the developers will be confident that although they release the substance of their work to the public, they can retain control over the strategic decisions of how that work is directed. Further, vertical sustainability requires that there be a sufficient volume of shared resources to sustain open source development over the long run. The goal of vertical sustainability via IP rights is therefore to provide enough control to prevent wholesale appropriation on the one hand, while at the same time providing enough access to an author's work to ensure a steady supply of non-proprietary source code to sustain open source efforts. When this balance is properly struck, open source contributors can be assured that their work will be neither stolen from below nor strangled from above.<sup>68</sup>

#### IV. WHAT KIND OF OPEN SOURCE IP IS RIGHT FOR YOU?

In the preceding Parts, I have discussed the ways in which an IP rights system properly focused on attribution and vertical sustainability can incentivize open source production while also maximizing the quality of work produced. Having established the theoretical framework of attribution and vertical sustainability as the basic tenets of a successful open source IP system, this Part will critically examine several of the IP implementations currently in use and evaluate their success and functionality through this lens.

In general, all open source licenses are designed to allow software developers to relinquish some traditional legal copyrights while retaining others. Some licenses, like the MIT license,<sup>69</sup> do this by simply disclaiming a large portion of the rights provided by American copyright law. Other licenses, like the GNU General Public License (GPL),<sup>70</sup> take a more

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2005). I feel this attitude is not only shortsighted, but fundamentally counterfactual. I address copyleft licenses in Part IV of this article.

68. Professor Wagner directly rebuts those who argue no such balance is possible and that any form of IP control will eventually strangle open source initiatives. *See* Wagner, *supra* note 20, at 1030-31.

69. Open Source Initiative, The MIT License, <http://www.opensource.org/licenses/mit-license.php> (last visited Nov. 5, 2005).

70. Open Source Initiative, The GNU General Public License (GPL), <http://opensource.org/licenses/gpl-license.php> (last visited Nov. 5, 2005).

radical position. Through a limited surrender of rights, they attempt to provide the public with greater freedom of access to open source works while at the same time sustaining the open source community by applying strict terms of use to the licensed software.

Because all open source licenses attempt to allow the author(s) and the public to interact in a way that normal copyright does not, they are an inherently imperfect solution to what many individuals see as the unreasonableness of contemporary copyright law. Significantly, the narrow question of the enforceability of these licenses has never been directly challenged in the American courts.<sup>71</sup> It is nevertheless instructive to question what the goals of these licenses are and how they attempt to reach them.

### A. Attribution

The one trait all licenses have in common is some requirement of attribution. The de minimis language is usually something like “the above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.”<sup>72</sup> This requirement ensures that even as software is passed on and modified from user to user, each receiving individual is aware who they are receiving the software from and what terms that party has imposed.

Version 1.1 of the Apache Software License,<sup>73</sup> in particular, is closely focused on proper and permanent attribution. Not only does the license require that all redistributions and derivative works of the software bear the sentence, “This product includes software developed by the Apache Software Foundation (<http://www.apache.org/>),” but it also stipulates that “Products derived from this software may not be called ‘Apache’, nor may ‘Apache’ appear in their name, without prior written permission of the Apache Software Foundation.”<sup>74</sup>

These two clauses represent the heart of attribution with regard to open source software. In the first clause mentioned above, Apache ensures that no matter how many generations of development, modification, and redistribution their software and its derivative works go through, each user will be notified that at least some of the code in the program they receive was

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71. *See infra* note 86 (discussing software license terms as litigated in Germany).

72. Open Source Initiative, The MIT License, <http://www.opensource.org/licenses/mit-license.php> (last visited Nov. 5, 2005).

73. The Apache Software Foundation, Licenses, <http://www.apache.org/licenses/> (follow hyperlink under “Apache License, Version 1.1 (historic)”) (last visited Dec. 6, 2005). This version of the Apache license was replaced in January 2004 with version 2.0. *Id.* (follow hyperlink under “Apache License, Version 2.0 (current)”).

74. *Id.*

originally developed by Apache. This permanent attribution is critical if open source is going to be incentivized through maximizing *H* and *SP* type rewards.

The second clause mentioned above plays an even more important attribution role. That clause allows derivative works to be produced only on the condition that they are clearly marked as something other than the original Apache software. Apache thereby ensures two critical attribution traits. First, the public will not be fooled by using software they think is from Apache but is in fact an unreliable third-party modification of Apache software. Such accurate attribution preserves the public goodwill Apache can cultivate by producing quality software and incentivizes that production by placing Apache in competition with works derivative of its own source code. Second, only downstream modifications approved by Apache may carry the Apache name. This encourages downstream developers to implement and modify the original Apache code in a way that improves upon it sufficiently such that Apache is willing to license its name to that product.

Other licenses take attribution equally seriously. Condensing the Apache language into one clause, the Academic Free License v. 2.1 reads in part:

Attribution Rights. You must retain, in the Source Code of any Derivative Works that You create, all copyright, patent or trademark notices from the Source Code of the Original Work, as well as any notices of licensing and any descriptive text identified therein as an "Attribution Notice." You must cause the Source Code for any Derivative Works that You create to carry a prominent Attribution Notice reasonably calculated to inform recipients that You have modified the Original Work.<sup>75</sup>

Again, by mandating accurate attribution and notice of modification, the Academic Free License seeks to ensure that the developers who use the license receive credit for their work's successes and are held responsible for its failures, while at the same time allowing the public to make informed and accurate decisions about whether to use a product based on its pedigree. The ability of any license or IP rights regime to incentivize the production of quality goods is fundamentally tied to its attribution function. That nearly every legitimate open source license in use today has at

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75. Open Source Initiative, The Academic Free License v. 2.1, <http://opensource.org/licenses/afl-2.1.php> (last visited Nov. 5, 2005).

least a rudimentary attribution clause is evidence of the crucial role of attribution in open source development.<sup>76</sup>

## B. Copyleft and Vertical Sustainability

While there are many so-called open source licenses available to software developers, I divide these licenses into two general groups: copyleft<sup>77</sup> and non-copyleft licenses.<sup>78</sup> At the minimum, all open source licenses allow the licensee to access the source code of the program and copy and manipulate its contents. Where copyleft and non-copyleft licenses diverge is on the terms of redistribution. The license terms of copylefted programs require that any derivative works of the copylefted program be released under identical license terms, whereas derivatives of non-copylefted programs may be redistributed under any license terms.<sup>79</sup> The philosophy is one of forced vertical sustainability: by explicitly requiring any software utilizing copylefted open source code to itself be copylefted, the pool of copylefted open source software will necessarily expand. This is the motivation behind the argument raised by many open source opponents that open source software is “viral” in nature, because once copylefted code is included in a program, even a small bit, the li-

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76. Of the fifty-eight different open source licenses listed as “approved” by the Open Source Initiative at <http://www.opensource.org/licenses>, nearly every single license has at least a basic attribution requirement. These requirements range from the explicit:

2. Redistributions of the Code in binary form must be accompanied by this GPG-signed text in any documentation and, each time the resulting executable program or a program dependent thereon is launched, a prominent display (e.g., splash screen or banner text) of the Author's attribution information, which includes:

- (a) Name (“AUTHOR”),
- (b) Professional identification (“PROFESSIONAL IDENTIFICATION”), and
- (c) URL (“URL”).

Open Source Initiative, Attribution Assurance License, <http://www.opensource.org/licenses/attribution.php> (last visited Dec. 6, 2005), to the more general requirement that all copyright information of previous versions must be preserved in subsequent versions, to the very lax requirement that all versions must be tracked via different version numbers and acknowledgement of previous versions. See Open Source Initiative, Licenses, <http://www.opensource.org/licenses> (last visited Dec. 6, 2005).

77. Copyleft licenses include the GNU GPL, the French CeCILL license, the Affero GPL, and the OpenSSL license.

78. Non-copyleft licenses include the MIT license, the BSD license, the X11 license, the Apache license, and almost all proprietary software licenses.

79. To be more precise, the non-copyleft license itself usually determines what license terms apply to derivative works. Only licenses that require derivative works to be distributed under license terms identical to the original license are considered copyleft.

cense terms of that copylefted code dictate that the entire program must now be distributed under identical copyleft license terms.<sup>80</sup>

The GNU<sup>81</sup> GPL is the most famous copyleft license and has become the de facto standard.<sup>82</sup> Section two of the GPL reads in part:

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

. . . .

b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be licensed as a whole at no charge to all third parties under the terms of this License.<sup>83</sup>

This type of mandatory license terms, which require those who wish to use open source software to only distribute their work under open source terms, has legitimate drawbacks. To understand these drawbacks, a little background information is necessary.

Expanding on the excerpted section above, section two, paragraph two of the GPL goes on to say:

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permis-

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80. The term “viral,” as applied to software, is extremely content laden. Although a technically accurate description of a license that is recursively self-propagating, the term has been propagandized by copyleft opponents trading on the unrelated connotation of viral as unauthorized code that damages computer systems. See Craig Mundie, Remarks at The New York University Stern School of Business: The Commercial Software Model, (May 3, 2001), available at <http://www.microsoft.com/presspass/exec/craig/05-03share-dsource.asp>.

81. GNU is a recursive acronym for GNU’s not UNIX.

82. For an in-depth discussion of the GNU GPL’s place in the open source debate, see David McGowan, *Legal Implications of Open Source Software*, 2001 U. ILL. L. REV. 241 (2001).

83. Open Source Initiative, The GNU General Public License (GPL), <http://opensource.org/licenses/gpl-license.php> (last visited Nov. 5, 2005).

sions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.<sup>84</sup>

This section of the GPL is perhaps the most controversial. There has been much debate on the issue and many argue that this clause holds that open source developers who wish to commercialize their products, as well as downstream developers who have modified an open source program, are unable to do so under the GPL.<sup>85</sup> While this contention has never been litigated to conclusion,<sup>86</sup> it is likely that in reality the above section does serve as a significant, although not complete, practical bar to the use of GPL-ed code in conventionally commercial applications.<sup>87</sup>

This bears further significance in the arena of software development, where reusing code proven to be reliable and efficient is an important means to secure efficiency.<sup>88</sup> Imagine that there is a particularly graceful

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84. *Id.*

85. Richard Epstein has discussed this and other arguments against the GPL with James Boyle in a point-counterpoint format. See Richard Epstein, *Why Open Source is Unsustainable*, FIN. TIMES ONLINE, Oct. 21, 2004, <http://news.ft.com/cms/s/78d9812a-2386-11d9-ae55-00000e2511c8.html#U101244209021g4>.

86. In April 2004, a German court ruled on the narrow question of whether the GPL was a legally enforceable license, holding that the defendant had:

infringed on the copyright of plaintiff by offering the software “netfilter/iptables” for download and by advertising its distribution, without adhering to the license conditions of the GPL. Said actions would only be permissible if defendant had a license grant. . . . This is independent of the questions whether the licensing conditions of the GPL have been effectively agreed upon between plaintiff and defendant or not. If the GPL were not agreed upon by the parties, defendant would notwithstanding lack the necessary rights to copy, distribute, and make the software “netfilter/iptables” publicly available.

Perhaps most telling is the fact that no company that attempted to circumvent the GPL has not backed down when threatened with suit by the copyright holder or the Free Software Foundation (the body that holds the copyright in the language of the GPL and administers its use). Thus while lacking so far in *de jure* enforcement the GPL is a strong *de facto* deterrent to infringing the terms it contains. See GNU General Public License, WIKIPEDIA: THE FREE ENCYCLOPEDIA, [http://en.wikipedia.org/wiki/GNU\\_General\\_Public\\_License](http://en.wikipedia.org/wiki/GNU_General_Public_License) (last visited Dec. 6, 2005).

87. While the terms of the GNU GPL prohibit selling software itself, there is no prohibition on distributing GPL'd software for a fee. In fact, Richard Stallman encourages it. See *supra* note 55. Nevertheless, copyleft licenses like the GPL prevent developers who incorporate copylefted code into their projects from determining their own license terms for those projects. There are many reasons a developer might not want to distribute her work under the GPL. Unfortunately, by the licenses' own terms, downstream rejection of the license *de facto* requires immediate rejection of the code.

88. See *supra* note 20 (discussing the widespread practice of reusing old code in new projects).

and well-known bit of code that performs its function exceptionally well and is licensed as open source under the GPL. Developers who wish to use this code as an integral part of a larger program would be bound to license that larger program under the GPL as well. If they didn't want to be held to the terms of the GPL, then they would be barred from using the code.

Thus, the fact that GPL-ed code is distributed as an integrated software package that forces the whole to be licensed under the GPL is counterproductive in two important ways. First, it deters software developers from implementing GPL-ed code in non-GPL projects. In other words, by trying to render code more accessible by distributing it under an open source license, the GPL in fact brings about the same stifling results as strict IP control for developers who want to integrate GPL-ed code but do not want to be held to distributing it under the GPL. This is because that code is essentially as unavailable as it would be if it were conventionally copyrighted.<sup>89</sup>

Second, if open source is to legitimately compete with proprietary production it needs to be flexible enough to be a means to an end rather than an end in and of itself. That is to say, there is no reason that commercial projects cannot be developed in an open source fashion.<sup>90</sup> The strength of open source is in the ability of every user to adapt the software to her specific needs, and open source licenses should reflect this crucial characteristic. An open source license that does not allow developers to alter its terms upon modifying and redistributing the source code runs the significant risk of falling prey to the same transaction costs and institutional barriers endemic to proprietary software development and that instigated the open source movement in the first place.<sup>91</sup>

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89. See McGowan, *supra* note 82, at 255-60.

90. Indeed, it is the aim of this Article to examine some of the ways in which IP rights might aid such an effort.

91. Placing this problem with copyleft licenses like the GPL in more concrete terms, Tom Walker has analogized the effects of the GPL and strong traditional copyright protection:

When I buy music protected by DRM, the seller intends to stop me from making copies of songs. When I use software that is licensed under the GPL, the developer intends to stop me from making the software "closed," or non-free. The intentions obviously aren't even slightly similar, but the consequences are. Both the GPL and DRM want to restrict my use, and re-use, of the music or source code that I obtain. Neither does what it was designed to do. Both have unintentional harmful effects.

Tom Walker, *Toward True Open Source* (July 16, 2004), <http://software.newsforge.com/software/04/07/15/163208.shtml>.

### C. Value-Added Quality

Nevertheless, the notion of copyleft is not entirely inconsistent with the goal of incentivizing quality open source production. In fact, one area where it provides significant gains is in improving the quality of software produced. Because of the barrier to outright commercialization that copyleft licenses like the GPL represent, developers that choose such a route are highly incentivized to provide rich value added features that may be sold for a fee even under copyleft licenses.

Red Hat, the most popular version of the highly competitive Linux operating system, is often held up as an admirable example of how a complex software suite developed through open source can secure impressive commercial success. Further, even though Red Hat Linux is largely distributed under the GPL, it costs between \$25 and several hundred dollars per “subscription.”<sup>92</sup> While the Linux operating system is licensed under the GPL and therefore cannot be commercially sold, Red Hat successfully competes with Microsoft and other large software producers by undertaking and charging for significant value addition.<sup>93</sup>

This value addition takes place in two primary ways. Red Hat is not actually charging for the Linux operating system, but instead for comprehensive technical service as well as non-GPL-ed software bundled with the operating system in the Red Hat distribution of Linux. For instance, an individual user can purchase the Red Hat package for \$179 and receive a guarantee that her hardware will be compatible with the software, live, around the clock tech support, and a slew of on-site training options.<sup>94</sup> In contrast, a no-frills version of the Linux operating system is available for free, and without any of the value addition options sold by Red Hat, from the Fedora Project.<sup>95</sup> Open source developers who produce under copyleft licenses must commit themselves to value addition if they wish to receive payment for their software. By prohibiting direct commercialization, copyleft licenses do a very good job of incentivizing quality-maximizing

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92. The price depends on which Red Hat distribution you purchase. Student desktop software suites start at around \$25, whereas full corporate implementations can cost several hundred dollars. *See generally* Red Hat, <http://www.redhat.com> (last visited Nov. 29, 2005).

93. When I say “competes with Microsoft” I of course do not mean that Red Hat has captured more than a small fraction of Microsoft customers. However, it is interesting that an open source effort such as Red Hat is competing at all.

94. *See* Red Hat, Red Hat Enterprise Linux: The Corporate Linux Standard, [http://www.redhat.com/en\\_us/USA/rhel/](http://www.redhat.com/en_us/USA/rhel/) (last visited Dec. 6, 2005).

95. *See* Fedora, Red Hat Enterprise Linux, <http://fedora.redhat.com/about/rhel.html> (last visited Dec. 6, 2005) (comparing the Fedora Project to Red Hat Enterprise Linux).

value addition even as they tend to deincestivize the use of copylefted code by open source developers not producing in a copyleft environment.

## V. A THEORETICAL ALTERNATIVE

Having identified and discussed the basic elements of a successful open source IP system and the general attributes of a few open source licenses, this Part will propose a theoretical alternative to current open source licenses and conventional IP regimes. As discussed in this Article, a properly applied IP rights regime can incentivize and maximize the quality of open source production by minimizing transaction costs and focusing on proper attribution and vertical sustainability. To meet these goals, an open source IP system should minimize procedure (and thereby minimize transaction costs) while maximizing *SP*, *H*, and, if possible, *M* type rewards. Any ostensibly open source procedure not narrowly focused on attribution and/or vertical sustainability runs the serious risk of remaining a vestige of twentieth-century IP regimes focused on rights of exclusion rather than enabling and encouraging rapid software development.

### A. What We Don't Want

If an IP system is to maximize incentives for production, it makes little sense to build in restrictions against commercializing the software that prevent direct economic competition with proprietary developers. Therefore, there should be no restrictions placed on the commercialization of source code modified and/or combined with other code in a non-trivial way. In other words, copyleft type requirements, whereby downstream software that implements open source code must itself be released as open source software, should be avoided.

Further, in order for developers to harness the full potential of the open source model they must be able to fashion license terms that they feel will best suit their particular business and development model. For that reason, developers should be free to apply whatever license terms they wish to the non-trivial derivative modifications they make to open source code. Allowing developers to either tighten or relinquish the control they have over their own work will incentivize their participation in the open source community and allow developers to check or accelerate the distribution and modification of their own code without affecting the work on others' code.<sup>96</sup>

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96. Linus Torvalds, the originator of Linux, has himself said, "My opinion on licenses is that 'he who writes the code gets to choose his license, and nobody else gets to complain.' Anybody complaining about a copyright license is a whiner." E-mail from

In order to minimize the transaction costs related to securing rights, copyright—rather than patent or trade secrets—should be the mode of protection for computer programs. Because of the theoretically infinite duration of protection, trade secrets are antithetical to open source production. Although some court cases from the early days of the computer age wrestled with the idea/expression dichotomy as it applies to computer programs,<sup>97</sup> it is now settled law that computer code is copyrightable, whereas implementations and utilizations of computer code are available for patent.<sup>98</sup> Further, whereas obtaining a patent is a long, complicated, and often very expensive procedure,<sup>99</sup> copyrights are granted automatically at the moment of creation and are easily licensed. Copyrights (as opposed to patents or trade secrets) are therefore the best mode of protection for software in general, as they strike a decent balance between flexibility, accessibility, and protection.

Unfortunately, the duration of copyright protection is entirely too long to be applicable to the software development industry. The biggest necessary departure from current IP law is therefore the drastic shortening of the duration of protection for all software, both open and closed source. The

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Linus Torvalds to Steve Hutton (July 10, 1998 11:00:21 PDT), *available at* [http://linux.today.com/news\\_story.php3?ltsn=2000-09-05-001-21-OP-LF-KE&reply=00172&quote=1](http://linux.today.com/news_story.php3?ltsn=2000-09-05-001-21-OP-LF-KE&reply=00172&quote=1).

97. See David A. Einhorn, *Copyright and Patent Protection for Computer Software: Are They Mutually Exclusive?*, IDEA 265, 266 (1990). Einhorn writes:

The Copyright Office began registering copyrights on computer software in 1964. Registration by the Copyright Office, however, raised only a presumption in favor of copyright validity. This presumption was vulnerable to challenge in the courts. Any doubts as to whether software could be the subject of copyright were dispelled by the passage of the Computer Copyright Act of 1980. According to the House Report, the effect of this brief amendment was to ‘clearly [apply federal copyright law] to computer programs.’

*Id.*

98. *Diamond v. Diehr*, 450 U.S. 175, 188 (1981) (holding that otherwise patentable processes implemented via computer program are themselves patentable).

99. Depending on the nature of the invention and the extent of the prior art search required, obtaining a United States patent can cost anywhere from \$5,000 to \$10,000. Further, the prior art search typically can take anywhere from three to six weeks, drafting claims and preparing the application usually takes six to eight weeks, prosecution can take a year or two, and the issue process is typically three to nine months. If everything goes according to plan, it commonly takes twenty-four to thirty-six months to secure an average patent. See generally U.S. Patent and Trademark Office, *Frequently Asked Questions*, <http://www.uspto.gov/main/faq> (last visited Dec. 6, 2005); Markets, Patents & Alliances L.L.C., *Answers to Commonly Asked Questions About Patents*, <http://www.marketsandpatents.com/faq.html> (last visited Oct. 17, 2005).

current term of copyright protection, the life of the author plus seventy years,<sup>100</sup> might as well be infinite in the world of software development. Rarely is software relevant and almost never is it commercially viable after more than a few years. Shortening the term of protection to a decade or less would, therefore, both stimulate the pace of production while ensuring a healthy body of open source resources.

## B. What's Left?

Now that I've identified a few major traits that an open source IP system should not have, what are we left with? Clearly the most fundamental aspect of any open source IP regime is required access to open source code. Access to the code should be as easy as possible and the code should be made available in forms that facilitate maximum comprehension and utility. This most basic requirement lays the groundwork for legitimate vertical stability and, as such, should be most protected by the IP system. Second, if open source is to be anything more than a distribution scheme, developers must have the right to copy and manipulate the source code as well. The source code must be made available for combination with any other type of code so that developers can adapt the code to their own uses.

The necessary corollary to the right to copy and manipulate source code is the right to distribute both the source code and any modified version of the code as a derivative work. However, as mentioned above, this right to distribute should not be an obligation. The terms of distribution for any derivative work should be set by the author of the derivative work, not of the original source code.

When combined, these three aspects of an IP system will strike the critical vertically sustainable balance between providing developers with enough control over their work to incentivize production, and at the same time ensure that a sufficient pool of open source code remains available to sustain development.<sup>101</sup> Securing rights of access, manipulation, and distribution for developers while allowing them the freedom to determine under what terms downstream distribution will take place provides the greatest opportunity to maximize *H* and *SP* type rewards. At the same time, this approach harnesses the incentives towards open source production these rewards create to spur production.

Vertical sustainability will be severely handicapped, however, if not paired with a viable attribution mechanism. The guarantee of access, ma-

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100. 17 U.S.C. § 302(a) (2000).

101. See Wagner, *supra* note 20 (discussing the balance a proper IP regime strikes in terms of benefits to creators and sustainability of the system).

nipulation, and distribution rights must be balanced by the firm obligation of proper attribution at every stage. All source code must be accurately and clearly attributed to the responsible individual(s). Additionally, that attribution must be preserved in every distributed copy of the unaltered code as a prerequisite for the right of distribution. Finally, any code that is modified in any way must be clearly identified as such, with the original author attributed, the modifying author identified, and a clear explanation of the nature and extent of the modification. Thus, each dynasty of open source software will have a clear provenance and be of maximum utility to the community.

And that's it. Building in more restrictions or complicating the system will only raise transaction costs and disincentivize production. For an open source IP system to work, it must be simple, adaptable, and fluid—just as the open source development process itself.

### C. The Middle Path: A Way Out

It is crucial to recognize that all software licenses, even the very best, are vitally and intrinsically flawed as instruments of open source development. Because they are, in fact, contracts between the developer and the consumer, the software licenses that fuel the open source movement do so by invoking contract law as a stopgap measure in an attempt to patch what open source developers see as a broken copyright jurisprudence. However, by piling a second layer of law on top of a notoriously complex intellectual property regime, these licenses drive transaction costs through the roof. The spiraling transaction costs are exacerbated by the fact that the enforceability of these licenses is expensive at best and impossible at worst.<sup>102</sup> Further, since each license and the rights it purports to grant are different, it is difficult for any individual or group to ascertain what allowance and obligations they have accepted, especially when many differently licensed open source software are combined in a single project.

Current copyright law grants the copyright holder<sup>103</sup> the *exclusive* right to make and sell copies of the work, to import and export the work, to make derivative works, to publicly perform the work, and to sell or assign these rights to others.<sup>104</sup> Many open source advocates argue that this method of assigning rights fails because of the crucial exclusivity of the

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102. For a discussion of some barriers to successful open source litigation under a license regime, see LAWRENCE ROSEN, *OPEN SOURCE LICENSING* 269-94 (2004).

103. This is usually the author, since copyright vests immediately upon creation of the work. However, due to licenses or other contractual terms, copyrights are often held by someone other than the author.

104. See 17 U.S.C. § 106 (2000).

assignment. If the author is the only one allowed to make and sell the work and its derivatives as well as transfer the rights then there is no way for the type of rapid and widespread distribution, access, and contribution that open source development relies on to get off the ground. The transaction costs are just far too high.

Attempting to solve this fundamental transaction cost issue by resorting to an additional layer of contract law in addition to copyright is simply swapping one type of transaction cost for another. Instead of a better license, a better approach is required.

Indeed, the last time American copyright had a major overhaul was 1976.<sup>105</sup> This revision was largely motivated by and a reaction to the budding technology age and the first few years of widespread computer and software utilization. This precedent of adjusting copyright laws so that their practice conforms to their purpose should be followed today—the law must again be changed to encourage rather than punish open source producers.

The change need not be drastic or universal. Conventional copyright works very well for the vast majority of copyrightable works. All that is necessary is to make a simple choice available to software developers. As the law now stands, software developers (regardless of their production model) have an empty choice: accept conventional copyright protection (and then alter their rights through license terms if necessary) or secure no protection at all. Rather than this “damned if you do and damned if you don’t” approach, software developers should be able to choose between copyrighting their works, and “opening”<sup>106</sup> their works. Openrighted works would be copyrighted in a sense, but would be subject to very different types of rules. Clearly, the simpler the rules the better, as the purpose of opening your work rather than copyrighting would be to retain enough control to incentivize production of quality software as well as protecting the open source model itself.

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105. This fourth major revision to the U.S. Copyright Act introduced several changes, and retroactively preempted all other U.S. copyright law. Many of these changes were in response to new technologies such as computers and audio recording formats. Additionally, the 1976 revision adjusted U.S. copyright such that America’s law conformed more with international norms in preparation for the U.S. becoming a Berne Convention signatory. *See generally* CRAIG JOYCE ET AL., COPYRIGHT LAW 22-28 (5th ed. 2001).

106. I use this term to facilitate my argument. The name of the sub-category of copyright I advocate for creating here is probably not important. Any number of names would work; this one is chosen purely for simplicity.

A statutory framework that incorporates the above ideas might look something like the following:

- 1) Anyone has the right to:
  - a) access the source code of this software
  - b) manipulate the source code in any way, and
  - c) distribute the source code of this software and any derivative work based on the source code of this software for any purpose.
- 2) If this software is distributed unchanged, the unaltered source code, and only the unaltered source code, will remain under the terms of this statute.
  - a) If this software is combined with any other software or code, the terms of distribution for the portion of the combined software made up of that other software or code are not determined by this statute. The portion of the combined work that is identical to this software is still controlled by this statute.
  - b) If this software is altered in any non-trivial way, the terms of distribution for the derivative work embodied by the altered software are not determined by this statute.
- 3) The rights granted in sections 1 and 2 are contingent upon preserving the clear attribution notice in the source code of the software.
  - a) If this software is combined with any other software in any way, notice must be provided of the original author(s) of this software, notice of the combining party's identity, and notice that this software has been combined with other software. If reasonably possible, notice of the author(s) of the other software must be provided as well.
  - b) If this software is altered in any way, notice of the original author(s) of this software, notice of the altering party's identity, and notice that this software has been altered must be provided.

Such a set of "open" rules, focused closely on attribution and vertical sustainability, allows for enough control to incentivize open source development while at the same time maintaining the decentralization and low transaction costs that open source development requires. Section 1 covers the basics, allowing anyone to access and manipulate the source code of

openrighted software, and to create and distribute any derivative works they like. Section 2 deals with vertical sustainability. The terms are explicitly non-copyleft. Section 2(a) makes clear that open source code that comes into a project and is combined with other code but is itself unaltered remains open source without affecting the code with which it has been combined. In other words, open source code that is used in a project in an unaltered form will remain open source. The author is free to determine her own license terms under traditional copyright or to maintain the work's open status for all other code in the project, whether proprietary code or code that was once openrighted but has been non-trivially altered.

This provision plays three important roles. First, it prevents unilateral downstream appropriation because open source code can only leave the public domain under these rules if it is altered in a non-trivial way. Even if open source code used under these rules is combined with other code outside the scope of this license, the portion of the resulting program that was originally open source will remain so, even as the code it has been combined with will remain untouched. That means that open source code can be used in proprietary commercial projects without reducing the pool of open source software. Second, such control over the fruits of one's labors is an important way to incentivize open source. It makes sense from a Lockean perspective that the author should be allowed to determine how to dispose of code she has modified herself even if the code was originally open source.<sup>107</sup> Finally, Section 2 acts in concert with Section 1(c) to allow the ready integration of open source solutions to commercial applications. Because everything a developer builds herself or procures from other sources is explicitly exempt from these rules (no matter how it is used in conjunction with software under these rules), there is no reason why implementing openrighted software into a larger project would hinder the developer from protecting the larger project in any way she sees fit.

Clearly such ease of implementation that maintains vertical sustainability can have significant incentivizing effects on developers. These rules can further promote open source development through the compre-

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107. Lockean theory, also known as the "sweat of the brow" justification, has long been intertwined with American copyright. This theory of property, which holds that people should benefit from the fruit of their efforts, is fundamental to the quid pro quo the constitution establishes for inventions and creative works. Under such a Lockean theory, if a developer works to create software that happens to include some open source code, that innovating developer should have the right to deploy her software under whatever terms she sees fit. For a more complete explanation (and criticism) of Lockean copyright theory, see Carys J. Craig, *Locke, Labour and Limiting the Author's Right: A Warning Against a Lockean Approach to Copyright Law*, 28 QUEEN'S L.J. 1 (2002).

hensive attribution requirements of Section 3. These requirements, by ensuring that the pedigree and identities of all who worked on software are obvious at all stages of development, would encourage the production of quality software. Additionally, because any developer who implements code under these rules must give explicit notice that she has done so, whether through combination or alteration, such stringent attribution requirements also serve an incentivizing function whenever open source code under these rules is used in a larger project. Put another way, if some subroutine of a larger program works exceptionally well, anyone who cares to look can easily determine who was responsible for that portion of code.<sup>108</sup>

Finally, the “non-trivial” language in Section 2(b) serves two critical purposes. First, by exempting only non-trivial alterations of the software from the openright rules, the terms of the rules strike an important balance between prohibiting unilateral appropriation through superficial modification of the software and ensuring that developers who legitimately modify the software are free to redistribute the fruits of their labors on any terms they wish. Second, and more importantly, “non-trivial” is a largely subjective term. In some instances a non-trivial alteration might be deleting a vestigial line of code, whereas in others the alteration of a single character might be critical. This built-in subjectivity allows for case-by-case judicial interpretation of the application of the openright rule terms. Rather than rigid license terms that can only break if stressed enough, these rules are deliberately adaptable so that they can give, bend, and apply to a far greater number of instances.

It is important to reiterate that, as I conceive it, this openright regime would not replace copyright, but supplement it as an alternative to traditional copyright only available for software. Further, it is crucial that the possibility that an author could inadvertently openright her software when she meant to copyright it be extremely small. Fortunately, current copyright law facilitates a solution. Conventional copyright vests in the author at the moment of creation. As soon as software is created, it is automatically copyrighted to the author (or her contractual proxy).<sup>109</sup> Because openrighting her software means that a developer would secure fewer rights than through copyright, copyright should remain the default condition. That means that an extra positive step should be required to openright software. This could very easily be facilitated with negligible transaction

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108. See Maher, *supra* note 13, at 631-36 (discussing the importance of attribution); Benkler, *supra* note 11, at 423-26 (same).

109. See 17 U.S.C. § 106 (2000).

costs if the United States Copyright Office were to maintain a database of all openrighted code. If a developer wanted to traditionally copyright (and perhaps later license) her software, she would be free to follow the same procedures as are used today. However, if an author wanted to openright her software, she would be required to file a copy of the source code of that software with the Copyright Office to be archived in the database.

Such an archival step would serve three crucial purposes. First, it would serve the previously mentioned preventative function, ensuring that no software became openrighted without the author's consent. Second, the archive would serve a crucial vertical sustainability function by maintaining a permanent repository of open source code—an effective one-stop shop for the open source developer. Because the act of electronically transmitting code to a government server is identical to that of transmitting to any other server, the required filing with the Copyright Office would not increase transaction costs. Finally, the archive would greatly simplify and facilitate enforcement of the openright rules because the repository would serve as a collection of all “official” openrighted code. Because alteration and combination of openrighted software are central to the openright rules and their functions, practical enforcement would require an “official” copy of any code against which disputed code could be compared. Keeping a copy of all openrighted code in one place would critically minimize the transaction costs involved in this procedural necessity.

Such a streamlined, centralized system explicitly designed around accountability and vertical sustainability would drastically reduce transaction costs and, thus, not only directly incentivize the production of quality open source software but represent a very real improvement over the current copyright system. The number of copyright/license agreements that developers use today creates a “briar patch” of transaction costs. Centralizing the system under the most minimal and voluntary terms available would sharply reduce the transaction costs that inhibit open source development because actors will comprehend the rules, enforcement will be simplified, and transparency will be facilitated. Importantly, because the openright system I suggest would be a completely voluntary alternative to existing copyright statutes, what was once a broken system restraining the open source model's development into a fully competitive production practice would be rejuvenated into an effective incentivizing and rewarding mechanism with little effect on those who were happy with the system the way it was before.

## VI. CONCLUSION: IT'S TIME TO CALL A TRUCE

The battle between the equally shrill champions of open source and protectors of intellectual property must end. In the end, we all want the same thing: more software that works better. As a production mode, open source development is neither the savior nor the damnation of software development. Rather, it is simply a different way of achieving the same goal as the traditional intellectual property enthusiasts. In many instances, the personality many advocates of both sides have invested in their arguments have overshadowed this point.

Regardless of what side of the debate you are on, the growing list of open source successes should make it clear that, at the very least, open source can be a powerful mode in which to develop software. In a rational society that wants more software that works better, it makes little sense not to encourage any capable production mode. That certainly does not mean that open source should be the only mode, it merely means that it does not make sense to squash it completely with strict traditional property controls and prohibitively high transaction costs. In this battle, as in most, the middle path is the one that makes the most sense and will result in the most good for everyone.

Intellectual property, properly and carefully deployed, can be an important way to incentivize and optimize open source production. Copyright protection has been successful in being a significant motivator for many to create. Yet, because creation is fundamentally an act of compilation, the more resources available to the author, the more likely she will be able to create something wonderful. Solutions like the one presented here lie at the nexus of these two principles and it is this type of middleground solution that will be necessary to enable the next century of software development.

## CUMULATIVE INDEX

The following cumulative index commemorates our 20th volume. The index includes references to all articles, comments, and notes published in the *Berkeley Technology Law Journal* (volumes 11 through 20) and its predecessor the *High Tech Law Journal* (volumes 1 through 10). The index allows the reader to locate articles by an author's last name, by volume of publication, or by subject matter. Except as otherwise indicated in the index descriptions, all listings conform to the Bluebook for the reader's convenience.

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