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INTELLECTUAL PROPERTY AND THE INCENTIVE FALLACY

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ABSTRACT

The enterprise of intellectual property law has long been based on the premise that external incentives—such as copyrights and patents—are necessary to get people to produce artistic works and technological innovations. This Article argues that this foundational belief is wrong. Using recent advances in behavioral economics, psychology, and business-management studies, along with empirical investigations of industry, it is now possible to construct a compelling case that the incentive theory, as a general matter, is mistaken, and that natural and intrinsic motivations will cause technology and the arts to flourish even in the absence of externally supplied rewards. It follows that intellectual property law itself needs a fundamental rethinking.

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I. INTRODUCTION

The whole idea of copyright and patent law is that people won't create or invent things without incentives. If people can just swoop in and make copies, the reasoning goes, these necessary incentives will be lacking. This is the classic economic argument for intellectual property law. And it makes perfect sense. But it turns out to be wrong.

Without anyone really noticing it, the primary rationale underpinning intellectual property law has become hollow. New strains of thinking in the fields of economics, psychology, and business-management studies now debunk the long-venerated idea that legal authority must provide some artificial inducement to artistic and technological progress. At the same time, the incentive theory is being roundly contradicted by the deluge of citizen-produced digital content that is distributed over the internet without any expectation of compensation. These unfolding events confirm the view that has developed among social scientists: External rewards are, as a general matter, unnecessary for the flourishing of arts, entertainment, and technology.

Contrary to orthodoxy, the great driver of artistic and technological progress is not external, but internal. Call it *inherent motivation*. People have an intrinsic drive to create. Business firms have natural reasons for innovating. The idea of inherent motivation may be counter-intuitive, but the evidence is compelling. Survey-based studies and even controlled experiments have confirmed this view time and time again. Astonishingly, when it comes to the psychology of the individual, there is even evidence that extrinsic rewards have the opposite of the intended effect and can actually defeat inherent motivation, thus inhibiting creative and inventive endeavor.

The upshot of all this is that is now possible to say with confidence that the classical economic dogma that lies at the heart of intellectual property law is a mistake.

The incentive theory is, and always has been, elegant. The simplicity and transparent logic of the incentive theory is one of its strongest features. But the theory's attractiveness should not be allowed to hide its very best quality—its falsifiability. The incentive theory yields predictions about the world that can be tested. Specifically, the incentive theory predicts that economic actors will tend not engage in economically valuable creativity and innovation without external rewards. And, as it turns out, digitally networked technologies have been testing this prediction. The evidence is in, and it re-

futes the theory. What's more, work in business-management studies and the social sciences is putting together a new, more nuanced theoretical picture of innovation and creativity. That new theoretical understanding—while less elegant as a matter of theory—is manifestly in line with empirical observations. The necessary implication is that thinking about intellectual property must be completely revised.

There are exceptions. That is, there are circumstances where external incentives may sometimes be necessary to spur progress. My argument in this Article is not that external incentives are never necessary or useful. Instead, my argument is about the general case: In general, the kind of creativity and innovation that benefits society as a whole is not in need of externally supplied incentives. That being the case, it follows that in the esteem of judges, lawmakers, and legal scholars, the incentive theory is due for a downgrade.

Flipping our economic presumption about intellectual production is not a mere matter of academic curiosity. Innovation and creative labor are among the most important aspects of the world economy, and arguably they are the most important drivers of economic growth. Accordingly, changing our default policy with regard to innovation and creative production has the potential to work a positive, wide-scale transformation in our economy as a whole.

Looking at the incentive theory's troubles with present circumstances begs a fresh look at its past. Indeed, the incentive theory has a long and venerable pedigree that contributes to a reluctance to set it aside. But the incentive-theory tradition is not quite so well-rooted in history as one might think. While it's natural to think that the development of intellectual property law was guided by careful reasoning on the basis of classical economics, in reality, it wasn't. The real history is not so much Adam Smith as Niccolò Machiavelli: the monopolies now understood as copyrights and patents were originally created by royal decree, bestowed as a form of favoritism and control. As the power of the monarchy dwindled, these chartered monopolies were reformed, and essentially by default, they wound up in the hands of authors and inventors. Thus, now that happenstance indicates the unfitness of the incentive theory, we should not hesitate to humble it.

As a matter of framing the issues, I should be clear about what I mean by "intellectual property." In this context, I am talking about patents, copyrights, and various sorts of *sui generis* intellectual property rights.[1] Generally speaking, when I say "intellectual property" in

1. The term *sui generis* describes unique intellectual property entitlements created to fill specific niches where there was an industry call for protection but no existing legal scheme provided it. The chief examples in the United States are the 10-year term of protection for patterns of circuits lithographed on silicon semiconductor chips and the 10-year term of protection of the shape of boat hulls. Semiconductor Chip Protection Act of 1984, 17

this Article, I am not intending to include rights of publicity and traditional trademarks, such as logos, trade names, and the like.

Trademark law has its own economic justification that is quite distinct from the other doctrines of intellectual property. The economic idea of trademark is not to give incentives for creative or innovative labor, but rather to legally protect indications of commercial source, thus letting businesses profit from a well-earned reputation for quality. That being said, I do not exclude trademark doctrine from my argument entirely. Trademark doctrine has been expanding wildly in the past two decades. Increasingly, it is covering "creations" rather than just indicia of commercial source. For example, trademark law has been construed by some courts to cover designs for vehicles and toys.[2] To the extent that trademark law behaves in this way or is intended to be justified in this way, my critiques are meant to apply.

The right of publicity is also distinguishable from mainline intellectual property entitlements in terms of its underlying justification. At least as originally conceived, an action for right-of-publicity infringement is a tort claim. Specifically, the right of publicity arose as a branch of the tort of invasion of privacy. As with trademark, however, I do mean to include the right of publicity within the scope of my argument to the extent that it is purportedly justified on the need to supply incentives for creative labor.[3]

At any rate, once the traditional form of trademark is taken out of the mix, the great balance of what is left over in the intellectual property sphere, in terms of its economic significance and societal impact, is copyright and patent. Thus, my discussion below focuses mainly on these two areas of the law.

As a final matter of framing the issues, I need to point out that scholars have advanced various theories that might justify intellectual property.[4] The external-incentive theory is only one theory. But

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U.S.C. §§ 901–914 (2006); Vessel Hull Design Protection Act, 17 U.S.C. §§ 1301–1332 (2006).

2. *See, e.g.*, Gen. Motors Corp. v. Lanard Toys, Inc., 468 F.3d 405 (6th Cir. 2006) (upholding exclusive right to vehicle design represented in toy on the basis of trademark doctrine); Warner Bros. v. Gay Toys, Inc., 724 F.2d 327 (2d Cir. 1983) (upholding exclusive right to toy vehicle livery on the basis of trademark rights to "Dukes of Hazard" television series). Note, however, that the doctrinal soundness of such decisions is dubious. *See, e.g.*, Eric E. Johnson, *Intellectual Property's Need for a Disability Perspective,* 20 GEO. MASON U. C.R. L.J. 181, 204-06 (2010) (criticizing the *Lanard Toys* decision).

3. *See, e.g.*, Mark F. Grady, *A Positive Economic Theory of the Right of Publicity*, 1 UCLA ENT. L. REV. 97, 110-11 (1994) (discussing the incentive theory as applied to the right of publicity).

4. *See, e.g.*, William Fisher, *Theories of Intellectual Property*, NEW ESSAYS IN THE LEGAL AND POLITICAL THEORY OF PROPERTY 168, 168-99 (Stephen R. Munzer ed., 2001) (reviewing various theories). Note also, that the incentive theory is not the only economic theory of non-trademark IP rights. Some scholars have sought to justify IP entitlements based on the perceived problem of "overgrazing." *See, e.g.*, William M. Landes & Richard A. Posner, *Indefinitely Renewable Copyright*, 70 U. CHI. L. REV. 471, 485-88 (2003) (discussing

it is by far the most influential theory, throughout the world and especially in the United States.[5] The incentive theory is also the motivating force behind IP globalization efforts. Emblematic of this fact, the slogan of the United Nation's World Intellectual Property Organization (WIPO) is "Encouraging Creativity and Innovation."[6] Other theories that scholars have identified may be compelling, and occasionally they are persuasive to policymakers and courts. Nonetheless, the incentive theory remains the engine of IP policy. Thus, the theory's prospective demise is highly significant.

Here is a look ahead: In Part II of this Article, I explain the incentive theory in depth, showing why it is such a powerful intellectual argument. Readers thoroughly familiar with the current theory may wish to skim or skip this part. In Part III, I look at where intellectual property rights came from—their historical pedigree—and I show how the incentive theory, despite its logical appeal, is really best understood as a post-hoc rationalization for a creature of pure politics. In Part IV, I discuss the burgeoning field of behavioral economics and what it and social psychology have to say about intellectual property law. In particular, I show that the social science literature leads to the identification of a general rule that intellectual labors will tend to flourish naturally, without external rewards. In Part V, I look at how technology—particularly the internet and network-connected digital devices—have revealed a human passion for creative expression and puzzle solving that corresponds with the new understandings from social science. In Part VI, I review historical-based empirical work that tells us about the motivations of authors in the past. As we'll see, these findings are consistent with a general rule that creative and innovative human labors are not dependent on external rewards but, instead, will tend to flourish of their own accord. In the next two parts, I take a look at the corporate context. In Part VII, I explain how empirical research shows that the external-incentive theory fails to make sense as a general principle even among firms, including capital-intensive industrial sectors where production, development, and research are coordinated by large shareholder-owned corporations. Then, in Part VIII, I explain how intrinsic motivations of individuals can aggregate in order to partially or completely capitalize

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overgrazing of creative works); *see also* Grady, *supra* note 3 (discussing overgrazing of celebrity identities).

5. *See* discussion *infra* Part III.

6. This slogan appears on WIPO's website. *See* WIPO - WORLD INTELLECTUAL PROPERTY ORGANIZATION, http://www.wipo.int/portal/index.html.en (last visited May 14, 2012). According to its website, "The World Intellectual Property Organization (WIPO) is a specialized agency of the United Nations. It is dedicated to developing a balanced and accessible international intellectual property (IP) system, which rewards creativity, stimulates innovation and contributes to economic development while safeguarding the public interest." *See What is WIPO?*, WORLD INTELLECTUAL PROPERTY ORGANIZATION, http://www.wipo.int/about-wipo/en/what_is_wipo.html (last visited May 14, 2012).

large-scale creative production and innovation. Then, in Part IX, I offer my prescriptions, both for the scholarly debate and for the substantive law.

II. THE IRRESISTIBLE LOGIC OF THE INCENTIVE THEORY

In this part I will explain the incentive theory from the ground up, in a way that should be accessible to everyone—no background knowledge in economics required. If you are already familiar with the theory and the economic argument behind it, I invite you to skim through or to skip ahead to Part III. To those with economics training, it may seem like I belabor the obvious, but before I declare the incentive theory to be fallacious, I want to be sure to give it its full due.

There is a quote that is often used to explain the idea that people need an inducement to create intellectual works. It is the words of eighteenth-century man-of-letters Samuel Johnson, who said, "No man but a blockhead ever wrote except for money."[7]

Take a novel. The thinking goes like this: Why would any novelist go through the trouble of writing a novel if, as soon as the first copy were released, everyone and anyone could simply make copies of it, not paying so much as a dime to the writer?

This perceived problem—the ability to copy—is what intellectual property law is intended to remedy. Intellectual property is aimed at inventions, works of art, books, music, and other intangibles for the very reason that they are copyable. Most goods aren't susceptible to copying. If I sell you a bushel of wheat, and if you want more, you'll have to buy more. You cannot simply copy the first bushel that you purchased.

Regular goods, like bushels of wheat, are what economists call "rivalrous" and "excludable." A good is rivalrous if one person's enjoyment of it defeats another person's ability to enjoy it. Once I've eaten a loaf of bread, you can't. Excludability means that other persons can be prevented from enjoying the good. Bread is excludable because, to keep you from enjoying it, I can lock it in my house.

By contrast, copyable goods, such as artistic works and technological inventions, are what economists call "nonrivalrous" and "nonexcludable." They are nonrivalrous because more than one person can use them at the same time. They are nonexcludable because there is nothing you can do to stop other people from using or enjoying a copyable work. (Unless, of course, there's a law.)

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7. JAMES BOSWELL, LIFE OF JOHNSON: INCLUDING BOSWELL'S JOURNAL OF A TOUR TO THE HEBRIDES AND JOHNSON'S DIARY OF A JOURNEY INTO NORTH WALES, VOLUME VI: ADDENDA, INDEX, DICTA PHILOSOPHI, & C. (George Birkbeck Hill ed., Oxford at the Clarendon Press 1887) (1791), *available at* http://www.gutenberg.org/dirs/1/1/7/2/11729/11729.txt.

Goods that are both nonrivalrous and nonexcludable are called "public goods." This does not mean they are funded with public money. It means that, as soon as they are created, they instantly inure to the benefit of the general public. In other words, everyone can take a free ride on the labor of persons who create public goods. This, in turn, leads to what is called "the free-rider problem."

Now, it's important to understand that the supposed problem with free riders is not that they are taking a free ride. That is, the free ride itself is not the problem. From an economic perspective, a free ride, all else being equal, is a boon to societal welfare. American courts are in accord with this perspective and have repeatedly upheld free-riding on the creative and innovative labors of others to be a good thing.[8] The "problem" in the free-rider problem is what the potential for free riding does to the incentives for engaging in intellectual labor: If no one pays for the ride—the reasoning goes—the bus isn't going anywhere.

A. The Wonderful Invisible Widget Sorter

The economic theory of intellectual property starts from a point of view supportive of a free market—that is, an Adam Smith / invisible hand / laissez-faire kind of approach.[9] The starting assumption is that if the economy is left free of government planning and intervention, then buyers and sellers, acting in their own self interest, will make deals that will have the overall effect of directing labor and capital to be employed in the most efficient ways, thus making society as a whole as wealthy as possible.

Reasoning from the classical free-market credo, intellectual property law is, at first blush, unjustifiable. After all, intellectual property law is a form of government-imposed ordering on the economy. Instead of allowing people to make what they want and sell it as they please, intellectual property confers legalized monopolies on certain parties. The people so blessed with these monopolies are then able to sell their wares without the burden of competition. Indeed, some economic thinkers of a more purely libertarian stripe see intellectual

8. *See, e.g.*, Dastar Corp. v. Twentieth Century Fox Film Corp., 539 U.S. 23, 33 (2003) (discussing the general "right to copy"); Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 146 (1989) (recognizing that "imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy"); *In re* Morton-Norwich Prods., Inc., 671 F.2d 1332, 1336 (C.C.P.A. 1982) (describing "the judicial theory that there exists a fundamental right to compete through imitation of a competitor's product, which right can only be *temporarily* denied by the patent or copyright laws").

9. By this, I mean the kind of normative economic theory that is generally traced to ADAM SMITH, THE WEALTH OF NATIONS (1776).

property law as incompatible with free-market ideals.[10] Among free-market supporters, however, the most widely accepted view is that intellectual property rights are a necessary exception to an otherwise free market. Boiled down to its essence, the thinking is: *Why would anyone undertake the hard work of creating something valuable if everyone else can just use it without paying?*

That describes the essence of the traditional economic rationale for propertizing public goods. But the argument is both more elegant and more powerful than this simplified version suggests. The argument, in its full form, indicates not merely that intellectual goods won't be produced in a free market, but that they won't be produced at optimum levels.

To appreciate the complete argument, you need to start with the story of how the free market efficiently orders the production and consumption of tangible goods. For an example of a tangible good, I'll use that hallowed item made famous in economics classrooms everywhere: the widget. The widget could be a bushel of wheat, a doorstop, a gross of wooden dowels, or anything else.[11] The story goes like this: If a widget is worth $50 to a potential buyer, and if a widget can be produced at a cost of $50 or less, then someone will build the widget. The willingness of buyers to pay $50 and the willingness of producers to sell for $50 will, through the interactions allowed in the marketplace, result in the most efficient quantity of widgets being produced and used. Beyond this quantity, the production of an extra widget would be a waste. And below this quantity, the lack of a widget would be a regrettable loss. Thus, the market produces the efficient outcome. In general usage, the word "efficient" has all kinds of connotations, but as economists use it, the word "efficient" means simply that, from an economic point of view, it's how we'd like things to turn out.

Change the facts slightly. Let's suppose that no one wants to buy a widget unless it costs $20 or less. Perhaps people just don't value widgets that highly. If it remains the case that a widget cannot be produced for less than $50 (maybe the skill and labor required are just too great), then no widgets will be produced. This outcome—of nonproduction—is also efficient.

Running through these kinds of if-then scenarios demonstrates how the free market solves the problem of how much to produce and

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10. For example, many in what is called the "Austrian School of Economics" view intellectual property entitlements as compromising market freedom. *See* Peter J. Boettke, *Austrian School of Economics*, *in* THE CONCISE ENCYCLOPEDIA OF ECONOMICS (David R. Henderson ed., 2008), http://www.econlib.org/library/Enc/AustrianSchoolofEconomics.html.

11. The whole point of the word "widget" in explaining economic or business-management principles is that it doesn't mean any distinct thing. It's a placeholder word, denoting some unspecified manufactured item. I personally have always pictured a widget as an item you'd have on your desk—like a paper clip, but somehow more complicated. At any rate, for the purposes of the argument, it is intentionally left unspecified.

how much to consume. If the market is allowed to operate freely, the negotiations of buyers and sellers cause an efficient production (or nonproduction) of all goods. And a free market does this all without a central-planning committee in the government trying to divine the consumer needs of the future. In fact, with a smoothly operating free market, nobody needs to plan anything. That's what is particularly magical about the free market—it reaches efficient outcomes without conscious deliberation. This is where the familiar "invisible hand" metaphor comes in. It's almost as if some perfect central-planning committee in the sky figured out the perfect number of all goods of every kind to be produced and exactly to whom they should be distributed so as to maximize the total level of wealth in the society and then made this happen. This blissful result arises naturally out of prices being efficiently determined in a free market of buyers and sellers.

As you can see, it's a powerful argument. But wait, there's more. The argument includes more than prices and quantities. It can also be extended to show that a free market will also lead to ideal levels of quality and craftsmanship of all goods. In fact, the free-market theory applies to everything that goes into a consumer's purchasing decision—warranties, store ambiance, legal terms of the sale, and so forth. And the theory also applies to the efficient rendering of services, in addition to goods. Moreover, the free-market theory applies to employment and labor, as well as to loans, investments, stocks, bonds, and all aspects of finance. What is beyond the ability of any human or group of humans to calculate—the needs of consumers and all other economic actors along all dimensions and the corresponding capacities of industry—can and will be determined by the market, so long as we just leave the market alone.

B. The Problem with Jefferson's Candle

The elegant analysis of basic free-market economics changes, however, when certain kinds of goods are involved. Namely, copyable goods.

A frequently repeated quote of Thomas Jefferson indicates the unique economic characteristics of those most copyable of goods, ideas. "He who receives an idea from me," Jefferson wrote, "receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me."[12]

Jefferson's quote, like its hypothetical object, radiates warmth and light. It makes intellectual goods seem like a loophole in an otherwise hard-knock economic existence: something available truly for free—no strings attached. But thinking it through, we quickly encounter a

12. Letter from Thomas Jefferson to Isaac McPherson (Aug. 13, 1813), *available at* http://ericejohnson.com/docs/Letter_Thomas_Jefferson_to_Isaac_McPherson_August_13_1813_text-based.pdf.

big problem. Not only are flames and ideas nonrivalrous, which is Jefferson's point, but they are also nonexcludable. The nature of flames and ideas allows buyers to simultaneously keep them and re-sell them. It takes but a skip and a hop of economic reasoning to see that the market for flames and ideas will quickly become glutted. As soon as a market opens up, the prices for freely copyable flames and ideas will drop almost instantly to zero.

Imagine you are a cave dweller living thousands of years ago. You are the only person who can figure out how to make fire. If that's the case, then you can sell a flame for a lot of money. But only once. After you've lit just one stick, torch, or widget on fire and handed it over to just one buyer, you will face an immediate business calamity. You can expect your feckless customer to instantly get into the flame-selling business and undercut your price. The invention of intellectual property can be re-imagined from this cave-society hypothetical. We want clever cave dwellers to have the proper incentive to make a fire from scratch. To make sure someone will undertake the effort to start a fire—supposing doing so is worth the trouble—then we want to make sure there is an incentive commensurate with how valuable fire is for cave society. The fire-starter, in order to have the proper incentive, needs to be able to sell flames at premium prices. And to allow the fire-starter to keep selling flames at premium prices, we need either a monsoon or a law. Of course, it's easier to lobby a legislature for a law than to command the clouds to rain.

Nonexcludable, nonrivalrous goods thus make a mockery of the elegant equations of free-market economics. If goods can be copied for no cost, then prices sink to zero. Markets, of course, need prices to be able to function and calculate efficient outcomes. Without prices, there are no sellers, no buyers, and, inevitably, no goods. Thus, we end up with a "market failure": the benevolent invisible hand stops its benevolent ordering of society and ascends into the sky to scratch its invisible forehead.

This is a convincing account for the need for intellectual property laws. But, once again, there's more. The economic argument, in its full form, shows not only that external rewards are needed for nonexcludable goods but also that in order to incentivize just the right amount of nonexcludable goods, the cumulative amount that people are willing to pay must equal the innovator's cumulative receipts. That is, optimal production of intellectual goods will not occur unless the full value is recoupable by the people who produce them.

The reason why is best explained with an example. If a movie is worth $10 to each of 10 million people, then the value of the movie to the world as a whole is $100 million. That means that the optimal economic outcome is for someone to produce the movie so long as it can be done for $100 million or less. Thus, according to this line of

thinking, some intervention in the market is necessary so that the movie's producer can receive $100 million. Doing so is the only way to ensure that the movie *will* be produced so long as it *can* be produced for $100 million or less. At least that's the theory.

Note that if the movie can be produced for less than $100 million, then the producer gets to keep the extra as surplus profits. But the existence of surplus profits doesn't change the fact that the outcome is economically efficient. Why not? As long as the movie is worth more than it costs to produce, then someone is going to wind up reaping some kind of surplus. Either the producer will get more than it costs to make the movie, or the public will get a bargain when moviegoers pay less than they were willing to. In the first case, there's a "producer surplus." In the second case, there's a "consumer surplus." In either case, there's someone who can walk away from the deal feeling smug.

While consumers and producers might care about who gets the surplus, from the point of view of societal welfare, the distribution of the surplus is irrelevant. All that is important in reaching an efficient result is that the market system ensures that the movie be produced if, and only if, its aggregate worth equals or exceeds its aggregate cost.

So, according to traditional thinking, something needs to be done to intervene in the market in order to make sure that nonexcludable, nonrivalrous intellectual goods will not just be encouraged, but that they will be produced at optimal levels.[13] It bears mentioning that this particular aspect of the incentive theory is often glossed over or neglected by legal scholars, including those who support intellectual property on the basis of the incentive theory. I emphasize it here because, once understood, the power of the incentive theory as a policy prescription is considerably strengthened.

Thus we arrive at the fundamental assumption of intellectual property—that intellectual goods need powerful external incentives. As long as intellectual goods can be copied, the producers of those goods are guaranteed only to get an efficient price for the sale of the first copy. After that, competition will drive the price down to zero. Granting the filmmaker (or whomever) the legal ability to exclude persons from the movie (or whatever) assures that the intellectual labor will be compensated commensurate with its worth. That legal ability to exclude is the intellectual property entitlement—copyright, patent, or other.

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13. *See, e.g.*, Christian Handke, *The Economics of Copyright and Digitisation: A Report on the Literature and the Need for Further Research*, STRATEGIC ADVISORY BOARD FOR INTELLECTUAL PROPERTY POLICY 7 (2010), http://www.ipo.gov.uk/ipresearch-economics-201005.pdf ("[S]tandard economic theory predicts that in a free market, fewer creative works would be supplied than would be socially desirable.").

This is the story of the free market and its failure to properly incentivize nonexcludable, nonrivalrous goods of an intellectual nature. It has an irresistible logic. Its intellectual appeal, in fact, is sparkling. Its utter good sense has even caused it to be enshrined in that most admired document in American law: the Constitution.

In the summer of 1787, while the most rudimentary aspects of the American government were being hammered out at the Constitutional Convention in Philadelphia, some thought was given to intellectual property and how it would be justified. Among its four pages of dense handwritten text, the Constitution expressly harnessed Congress's lawmaking power in the area of intellectual property to the external-incentive theory. Article I, Section 8 provides: "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."[14]

In consonance with this constitutional charge, the U.S. Supreme Court has explained that the purpose of copyrights is a public one: to motivate creativity.[15] The intended beneficiaries of copyright law are not the copyright holders, but the public at large.[16] The view is summed up in the words of Justice Blackmun:

> Copyright is based on the belief that by granting authors the exclusive rights to reproduce their works, they are given an incentive to create, and that "encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in Science and the useful Arts."[17]

The story with regard to patent law is the same. The U.S. Supreme Court has said that Congress's authority to create patent entitlements "is exercised in the hope that '[t]he productive effort thereby fostered will have a positive effect on society through the introduction of new products and processes of manufacture into the economy, and the emanations by way of increased employment and better lives for our citizens.' "[18]

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14. U.S. Const. art. I, § 8.

15. Sony Corp. of Am. v. Universal City Studios, Inc., 464 U.S. 417, 429 (1984); *see also* Harper & Row, Publishers, Inc. v. Nation Enters., 471 U.S. 539, 546 (1985) (citing *Sony Corp. of Am.*, 464 U.S. at 429).

16. United States v. Paramount Pictures, Inc., 334 U.S. 131, 158 (1948) ("The sole interest of the United States and the primary object in conferring the monopoly lie in the general benefits derived by the public from the labors of authors. It is said that reward to the author or artist serves to induce release to the public of the products of his creative genius." (internal quotes omitted)); *see also* Sony Corp. of Am., 464 U.S. at 477 (Blackmun, J., dissenting) ("The monopoly created by copyright thus rewards the individual author in order to benefit the public.").

17. Sony Corp. of Am., 464 U.S. at 477 (Blackmun, J., dissenting) (quoting Mazer v. Stein, 347 U.S. 201, 219 (1954)) (internal quotes omitted).

18. Diamond v. Chakrabarty, 447 U.S. 303, 307 (1980) (alteration in original) (quoting Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 480 (1974)).

III. THE DUBIOUS PEDIGREE OF THE INCENTIVE THEORY

With the beautiful logic of the incentive theory, and with its entrenchment by constitution-drafters and the judiciary, it is easy to understand why intellectual property law was developed in response to such a demonstrated privation. Yet it wasn't.

Today, we understand that the need to encourage artistic production and invention is intellectual property's *raison d'être*.[19] It is widely assumed that IP law was cleverly created to fill a hole in an otherwise well-developed microeconomic model of efficient markets. But this is a just-so story. The historical record tells a different tale. With intellectual property, the *d'être* preceded the *raison*.

If you travel back in time attempting to trace the origins of intellectual property law, you will find that in the vicinity of the 17th century, the ideas of "patents" and "copyrights" become snarled and intertwined not only with one another but also with "monopolies." All of these legal concepts represented variations on a theme: a monarchy's efforts at maintaining control and doling out favors in an era of increasing threats to royal power. Thus, the origins of modern IP law are not found in a scholarly disputation of economics, but rather in the vast political struggle between the monarchy and the various power bases in mid-millennium society.

To tell the story of how American intellectual property law came to be, we need to start in Britain. Beginning around the middle of the last millennium, there was a period of 200 years or so during which there was great change in British governance. The power of the throne was progressively marginalized over that time as freedom was gained in the political and commercial spheres. Copyright and patent laws were leftovers of this process. They firmed up from what was left of the monarchical style of governance after rounds of democratization and economic liberalization.

The first red-letter date was 1557, when Queen Mary used her sovereign authority to charter the incorporation of the Stationer's Company, a guild with the exclusive authority to publish and sell books.[20] The fillip to bestow this exclusive royal province was the perception of an imminent need to control the press.[21] Subsequent to the printing press spreading through Europe, those in charge correctly

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19. *See, e.g.*, Kevin C. Hormann, Comment, *The Death of the DMCA? How* Viacom v. YouTube *May Define the Future of Digital Content*, 46 HOUS. L. REV. 1345, 1373 (2009) (discussing copyrights); Jerome H. Reichman & Rochelle Cooper Dreyfuss, *Harmonization Without Consensus: Critical Reflections on Drafting a Substantive Patent Law Treaty*, 57 DUKE L.J. 85, 122 (2007) (discussing patents).

20. *See* CYPRIAN BLAGDEN, THE STATIONERS' COMPANY: A HISTORY, 1403-1959, at 19 (1960); SIVA VAIDHYANATHAN, COPYRIGHTS AND COPYWRONGS: THE RISE OF INTELLECTUAL PROPERTY AND HOW IT THREATENS CREATIVITY 37 (2001).

21. *See* VAIDHYANATHAN, *supra* note 20, at 37.

understood that the technological means to rapidly copy words could be perilous for authoritarian rule.[22]

The next year, in 1558, Queen Elizabeth I ascended to the throne. Her reign was marked by, among other things, an explosion in the issuance of letters patent.[23] These open letters—patent means "open," after all—gave exclusive franchise over some aspect of commerce to a lucky beneficiary. As crown-chartered monopolies, letters patent locked up various categories of goods or services, which, for a long time, had been open to all takers.[24] Letters patent were issued without concern for providing economic incentives to innovators.[25] Instead, in issuing patents, the monarchy was looking out for its cronies and, ultimately, itself.[26]

The monopoly-happy Elizabethan reign persisted until the dawning of the seventeenth-century. In the decades that followed, the political power of the monarchy declined. In 1623, Parliament passed the Statute of Monopolies.[27] This act sought to end the resented practice of royal favoritism through patent granting.[28] Though the statute banned letters patent as a general matter, an exception was carved out for inventions that were novel.[29] Thus, modern patent law was born not out of methodical intention, but as the residuum of a purge. In the meantime, the broader timeline of history depicts a decline in royal authority of a more far-reaching character. As students of English history will know, through the efforts of Oliver Cromwell, the crown was removed entirely from power from 1649 until the Restoration in 1660.[30] It was during this time that philosophical thinking evolved to provide a rational basis for a society with a weakened monarchy. In 1689, John Locke published his *Second Treatise on*

22. *See id.* (noting that Stationer's Company would only print books approved by the Crown).

23. *See* Adam Mossoff, *Rethinking the Development of Patents: An Intellectual History, 1550-1800*, 52 HASTING L.J. 1255, 1264-65 (2001); Joshua J. Wiener, *Patent Law—Federal Patent Policy Does Not Preclude Enforcement of Royalty Contract for Unpatented Device*, 50 MISS. L.J. 648, 649 n.14 (1979).

24. Bilski v. Kappos, 130 S. Ct. 3218, 3240 (2010) (Stevens, J., concurring) (quoting Graham v. John Deere Co., 383 U.S. 1, 5 (1966) (internal quotations omitted)). A copy of the slip opinion is publicly available at www.supremecourt.gov/opinions/09pdf/08-964.pdf.

25. MICHELE BOLDRIN & DAVID K. LEVINE, AGAINST INTELLECTUAL MONOPOLY 44 (2008).

26. *See* Mossoff, *supra* note 23, at 1265.

27. Statute of Monopolies, 1623, 21 Jac. 1, c. 3, § 6 (Eng.), *available at* http://www.statutelaw.gov.uk/content.aspx?activeTextDocId=1518308.

28. *See* Mossoff, *supra* note 23, at 1271-72.

29. Statute of Monopolies, 1623, 21 Jac. 1, c. 3, § 6 (Eng.), *available at* http://www.statutelaw.gov.uk/content.aspx?activeTextDocId=1518308; *see also* Bilski, 130 S. Ct. at 3240.

30. RONALD HUTTON, THE BRITISH REPUBLIC, 1649-1660, at 5-6 (2d ed. 2000).

Government, giving the idea of property rights a rational foundation other than their justification as derivative of the divine right of kings.[31]

In the midst of these changes, modern copyright law sprang up. Like patent law, copyright law, too, was royal jetsam. In the late 1600s, government inaction allowed the Stationer Company's royally chartered monopoly to expire.[32] The Stationers went to Parliament seeking a statute to replace the royal charter.[33] But the book industry was rebuffed—at least partially.[34] In 1710, seeing no point in rewarding the book industry for the efforts of authors, Parliament replaced the Stationers' monopoly with a specially crafted limited-term monopoly to authors over their published works—a "copyright."[35] While this wasn't precisely what the book business desired, it was good enough, because it provided the legal foundation for a transfer of rights from authors to publishers.[36] That, in turn, allowed proprietors in the book trade to avoid competition with regard to individual titles.[37] Without copyright law, booksellers would have been reduced to trading on quality—the secureness of bindings, the crispness of print, and the like—and price. That would have been very good for consumers, but it would have made the book trade a much less profitable enterprise for its proprietors.

Thus, by the first quarter of the eighteenth-century, modern patents and copyrights had been established. Their establishment had little or nothing to do with careful economic reasoning and had everything to do with political reordering and special-interest jockeying.

The history of copyrights and patents as preferential dispensations is, of course, at odds with the imagined account of calculated design, but the conclusion that the development of modern intellectual property was *not* guided by modern economics is further confirmed when you consider what happened distinctly *after* the development of modern patent and copyright law: Modern economics was developed.

Following the 1623 Statute of Monopolies and the 1710 Statute of Anne, Enlightenment philosophers undertook the project of bringing rational thought to economic ordering. The watershed moment was in

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31. An alternative justification for intellectual property rights that is sometimes advanced is the same as Locke's justification for property rights in land and tangibles, that people deserve to own the product of their own labor. It is thus worth noting that intellectual property law not only preceded its economic-incentive rationale but also largely preceded Locke's articulation of this labor-desert theory.

32. BLAGDEN, *supra* note 20, at 175; LYMAN RAY PATTERSON, COPYRIGHT IN HISTORICAL PERSPECTIVE 143 (1968); VAIDHYANATHAN, *supra* note 20, at 39.

33. *See* VAIDHYANATHAN, *supra* note 20, at 39.

34. *Id.*; *see also* BLAGDEN, *supra* note 20, at 175-76.

35. BLAGDEN, *supra* note 20, at 175-77; PATTERSON, *supra* note 32, at 143-44 (discussing the passage of the Statute of Anne); VAIDHYANATHAN, *supra* note 20, at 40-41.

36. PATTERSON, *supra* note 32, at 145-46.

37. *Id.* at 146.

1776, when Adam Smith published his carefully reasoned defense of free markets, *The Wealth of Nations*.[38] The event signaled the beginning of economics as a disciplined way of thinking about the production and consumption of wealth. The book was an immediate success—the first edition sold out within six months of hitting store shelves.[39]

Notably, the same year Smith's masterwork was published, the American Colonies declared independence from the British Crown. The subsequent American Constitutional Convention in 1787 drafted a set of powers for Congress that included the ability to issue patents and copyrights, but with two facial limitations: the granted monopolies could only be for limited times, and they were to be for the purpose of encouraging creators and inventors.[40] America's first copyright law, the Copyright Act of 1790, used the 1710 Statute of Anne as its "doctrinal blueprint," largely mimicking its "basic concepts, structure, and text."[41]

Over the course of the next century, the notion of the normative superiority of free markets solidified. The result was a "hands off" prescription for governments as a way of permitting free markets to develop. But in the last third of the 1800s, radical industrialization and rapid concentration of industrial power in the hands of corporate magnates changed the prescription. Free-market boosters saw a new role for government: guaranteeing free and competitive markets through antitrust laws. That evolution in thinking was marked by the passage of the Sherman Act in 1890,[42] the cornerstone of contemporary American antitrust law.

In today's law school catalogs, antitrust and intellectual property are treated as separate subjects. Their crisp delineation is not, however, a matter of rational foreordination, but rather of historical vicissitude. Antitrust law and intellectual property come from the same place. What we now think of as antitrust law began as an Enlightenment absolution of kingly corruptions and mercantilist market manipulations. We've given the name "intellectual property" to the legal doctrines that survived that process.

Some have argued that "intellectual property" is a pernicious misnomer. Richard Stallman—a persistent critic of intellectual property—has called it a "seductive mirage."[43] As he explains:

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38. SMITH, *supra* note 9.

39. JACK RUSSELL WEINSTEIN, ON ADAM SMITH 57 (2001).

40. U.S. CONST. art. I, § 8, cl. 8.

41. Oren Bracha, *The Statute of Anne: An American Mythology*, 47 HOUS. L. REV. 877, 878 (2010).

42. Sherman Act, ch. 647, §§ 1-2, 26 Stat. 209 (1890) (codified as amended at 15 U.S.C. §§ 1–7 (2006)).

43. Richard M. Stallman, *Did You Say "Intellectual Property"? It's a Seductive Mirage*, GNU OPERATING SYSTEM, http://www.gnu.org/philosophy/not-ipr.html (last updated Sept. 20, 2011).

> It has become fashionable to toss copyright, patents, and trademarks—three separate and different entities involving three separate and different sets of laws—plus a dozen other laws into one pot and call it "intellectual property[.]"
>
> . . . .
>
> . . . There is no such unified thing as "intellectual property"—it is a mirage. The only reason people think it makes sense as a coherent category is that widespread use of the term has misled them.
>
> The term "intellectual property" is at best a catch-all to lump together disparate laws. Nonlawyers who hear one term applied to these various laws tend to assume they are based on a common principle and function similarly.
>
> Nothing could be further from the case. These laws originated separately, evolved differently, cover different activities, have different rules, and raise different public policy issues.[44]

Stallman is only partially right. It's true that many people, including politicians, diplomats, lobbyists, lawyers, and others, commonly trumpet disparate doctrines under the banner of "intellectual property" in a way that inures to the benefit of special interests. But those doctrines did not originate separately. Rather, they are legal threads that are rejoining one another after a couple of centuries of separate travels.

What's more, Stallman's historical reconstruction gives the law credit it doesn't deserve, which is ironic, since Stallman is a prominent detractor of intellectual property entitlements:

> Copyright law was designed to promote authorship and art, and covers the details of expression of a work. Patent law was intended to promote the publication of useful ideas, at the price of giving the one who publishes an idea a temporary monopoly over it—a price that may be worth paying in some fields and not in others.[45]

The verbs "designed" and "intended" are too flattering by far. It's a kind instinct to assume such thoughtful planning on the part of those who incrementally evolved our intellectual property laws. But a skeptical eye on the past indicates that it didn't happen that way.

One wonders, if the incentive theory was not the motive force behind intellectual property in the English common law countries, perhaps it was elsewhere. The evidence, however, is to the contrary. Throughout Western civilization, as well as in Asian countries with

44. *Id.*
45. *Id.*

strong Confucian influences, press censorship and state control appear to be the prime motivations behind copyright-type laws.[46]

Despite the fact that modern intellectual property came into this world without the incentive theory, it is of course true that the incentive theory has been used to justify the retention and expansion of IP law. The shame of it is, by sneaking into legal thought as it did, the incentive theory was never subjected to the skepticism it deserved in the beginning. We can, however, put history to one side. For now, developments in scholarship and trends in culture and industry are begging us to confront the theory's congenital flaws.

IV. CREATION, INNOVATION, AND INTRINSIC MOTIVATION

It is increasingly clear to social scientists that intrinsic motivation is generally more important than extrinsic motivation when it comes to tasks that are creative in nature. This line of research has already been disruptive to the field of economics. Once it is understood in a legal context, it necessarily puts intellectual property theory into a state of crisis.

A. Digging Up Homo Economicus

According to classical economics doctrine, extrinsic incentives are necessary for the production of intellectual property for the simple reason that extrinsic incentives are necessary for *all* human behavior. In the eyes of classical economics, people are rational and self-interested, which means, to economists, that they are always looking to maximize their assets. Their assets, in this sense, include money and everything that is exchangeable for money.

This concept of a rational, economic-utility-maximizing actor—branded *Homo economicus*—has lent enormous power to the discipline of economics. Thanks to this perspective, economics has become susceptible to a kind of mathematical rigor almost unheard of outside the physical sciences. Most people, most economists, even, would acknowledge that people are motivated by more than money. But within economics, it was nearly universally agreed that whatever differences there might be between real people and economic stick figures, those differences were immaterial for the purposes of economic analysis.

That view is beginning to erode. Swiss economist Bruno S. Frey has written that nothing less than a revolution in economics is currently underway.[47] Sometimes referred to as "behavioral economics," this new, ascendant mode of thinking views the differences between

46. *See* Jiarui Liu, *The Tough Reality of Copyright Piracy: A Case Study of the Music Industry in China*, 27 CARDOZO ARTS & ENT. L.J. 621, 654-55 (2010).

47. BRUNO S. FREY, HAPPINESS: A REVOLUTION IN ECONOMICS, at ix (2008).

Homo economicus and the real megillah to be of crucial importance in understanding how markets work.

One thing that humans don't have in economic models, but do have in real life, is intrinsic motivation. In the real world, people have "the drive to engage in [an] activity because it is interesting and involving."[48] That is, even if the activity doesn't make them any money. As Frey explains, new research shows that:

> [I]ndividuals derive utility not only from income (as is implied in much of received theory) but also from highly valued social relations and from [a sense of] self-determination, as well as [from capitalizing upon] their own competence. Moreover, individuals derive utility from *processes*, not just from outcomes.[49]

This realization strikes at the very core of economic thinking. For economics to maintain its predictive strength in all its classical, rigorous, mathematical splendor, people must be motivated only by external punishments and rewards. Thus, it threatens the entire enterprise of classical economics to uphold the idea that intrinsic motivations are not only important, but are *more important* than extrinsic incentives.

To be sure, people are not intrinsically motivated to do everything and anything. Behavioral economists have not traded one monochromatic view of human nature for another. In the new view, intrinsic motivation only goes so far. For example, people generally don't seem to have a lot of intrinsic motivation to engage in dull, repetitive tasks—such as making wooden dowels or milling flour. Indeed, the kind of tangible property that is the mainstay of classical economics—the archetypal "widget"—is exactly the sort of thing people are not intrinsically impelled to produce. People are, however, intrinsically motivated to undertake novel and challenging intellectual tasks. That is, people are naturally driven to create, to invent, to tinker, to write, and to compose—all those labors that are the celebrated province of intellectual property. Indeed, a growing literature, primarily from social scientists, shows that for creative labor, intrinsic motivation—as opposed to extrinsic motivation—is the most important stimulus to action.

Lawyer and business writer Daniel H. Pink has surveyed that literature and has explored the implications for modern business-management thinking. He says:

> Too many people hold a very narrow view of what motivates us. They believe that the only way to get us moving is with the jab of a stick or the promise of a carrot. But if you look at over 50 years of

48. TERESA M. AMABILE, CREATIVITY IN CONTEXT 17 (1996).
49. FREY, *supra* note 47, at x.

> research on motivation, or simply scrutinize your own behavior, it's pretty clear human beings are more complicated than that.[50]

In saying this, Pink isn't talking about intellectual property. His intended audience is business people—particularly those managing employees who are called upon to engage in creative, innovative work. But most of what Pink says has tremendous implications for intellectual property policy. Pink explains that beyond primal urges and responses to rewards and punishments, we have what he calls "a third drive."[51] He explains, "We do things because they're interesting, because they're engaging, because they're the right things to do, [and] because they contribute to the world."[52]

These claims are both banal and revolutionary. On the one hand, it is entirely obvious that people are motivated in creative endeavors by something other than extrinsic rewards and punishments. On the other hand, in the context of economics and business-management discourse, these contentions are positively heretical. In conventional economic models, money is understood to be the universal currency for all wants and desires. And in the business world, it is rare to regard employees as being inherently motivated to do challenging, brain-intensive creative work.

Close investigation of what is currently motivating artistic production is in accord with the new economic and psychological research. Recent work by Rebecca Tushnet makes the persuasive case that commercially successful authors generally have the same essential motivations to write as amateur authors of fan fiction.[53] This holds even though fanfic authors must, of course, not be motivated by money, since their works are legally infringing and are thus commercially unexploitable. Tushnet writes:

> [T]he desire to create can be excessive, beyond rationality, and free from the need for economic incentive. Psychological and sociological concepts can do more to explain the creative impulses than classical economics. As a result, a copyright law that treats creativity as a product of economic incentives can miss the mark and harm what it aims to promote.[54]

Notice that the research by Tushnet on the motivations of fiction writers is in perfect accord with the conclusions drawn by Bruno Frey.

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50. Interview with Daniel Pink & Clay Shirky, *The Great Cognitive Surplus*, 18.06 WIRED 128, 130 (June 2010) [hereinafter Pink & Shirky, Interview] (quoting Daniel Pink).

51. *Id.*

52. *Id.*

53. Rebecca Tushnet, *Economies of Desire: Fair Use and Marketplace Assumptions*, 51 WM. & MARY L. REV. 513, 528-32 (2009).

54. *See id.* at 515.

B. Twain on the Fence

There is more. A great volume of research shows that external rewards can actually *disincentivize* creative labors. As business and psychology scholar Teresa M. Amabile has written, "Intrinsic motivation is conducive to creativity, but extrinsic motivation is detrimental."[55] Or, as Pink puts it, "rewards can perform a weird sort of behavioral alchemy: They can transform an interesting task into a drudge. They can turn play into work."[56]

In pioneering experiments conducted in the early 1970s by research psychologist Edward L. Deci, subjects performed more poorly at a creative problem-solving exercise when they were offered a cash incentive than when they were simply allowed to engage in the puzzle for the fun of it.[57] These and subsequent experimental results were roundly dismissed by economists as an aberration. But decades worth of follow-up experimentation has corroborated the original findings.

Conducting a meta-analysis in 1999, Deci and two colleagues wrote: "Careful consideration of reward effects reported in 128 experiments lead to the conclusion that tangible rewards tend to have a substantially negative effect on intrinsic motivation."[58] As to why this happens, Deci explains that people "begin to see the activities merely as instruments for attainment of monetary rewards, so they lose the excitement and vitality they once had for the activities."[59]

These are not merely phenomena observable on short time frames. A longitudinal study of students at the School of the Art Institute of Chicago looked at extrinsic motivation experienced by art students and their later record of career success.[60] The relationship was inverse: The less evidence there was of a person having extrinsic motivation during art school, the more professional success the person tended to have in an art career 20 years later.[61]

Pink describes the disincentivization of creative/innovative labor as the "Sawyer Effect"—named for Tom Sawyer's famed manipula-

55. AMABILE, *supra* note 48, at 15.

56. DANIEL H. PINK, DRIVE: THE SURPRISING TRUTH ABOUT WHAT MOTIVATES US 37 (2009).

57. Edward L. Deci, *Effects of Externally Mediated Rewards on Intrinsic Motivation*, 18 J. PERSONALITY & SOC. PSYCHOL. 105, 114 (1971).

58. Edward L. Deci, Richard Koestner, & Richard M. Ryan, *A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation*, 125 PSYCHOL. BULL. 627, 658-59 (1999); *see also* PINK, *supra* note 56, at 39.

59. EDWARD L. DECI & RICHARD FLASTE, WHY WE DO WHAT WE DO: THE DYNAMICS OF PERSONAL AUTONOMY 29 (1995).

60. *See* PINK, *supra* note 56, at 45-46 (citing Jean Kathryn Carney, Intrinsic Motivation and Artistic Success (1986) (unpublished dissertation, University of Chicago)).

61. *Id.*

tion of his boyhood friends into whitewashing a fence for him and even paying for the privilege of doing so.[62]

A passage from Mark Twain's *Tom Sawyer*, quoted by Pink, illustrates the point nicely:

> There are wealthy gentlemen in England who drive four-horse passenger coaches twenty or thirty miles on a daily line, in the summer, because the privilege costs them considerable money; but if they were offered wages for the service, that would turn it into work and then they would resign.[63]

As Pink explains, "People use rewards expecting to gain the benefit of increasing another person's motivation and behavior, but in so doing, they often incur the unintentional and hidden cost of undermining that person's intrinsic motivation toward the activity."[64] Pink calls this phenomenon "one of the most robust findings in social science—and also one of the most ignored."[65]

Pink summarizes the potential for harm by identifying "deadly flaws" in extrinsic motivations.[66] Among them are extinguishing intrinsic motivation, diminishing performance, crushing creativity, and crowding out good behavior.[67]

So if it is not helpful to provide creators with money, is there anything that it is helpful to give them? Yes. According to Pink, creators thrive if they are given positive feedback, gratitude, and useful information about their contribution.[68] All of these abet a person's experience of intrinsically felt motivation.[69]

The nonmonetary rewards that boost intrinsic motivation can be thought of in a framework that Deci and Richard M. Ryan have called "self-determination theory."[70] According to self-determination theory, people have three innate psychological needs: competence, autonomy, and relatedness.[71]

Today, the destructive effect of extrinsic incentives on innovation and creativity is well established. But there is a lag in its acceptance

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62. *Id.*

63. *Id.* at 36-37 (quoting MARK TWAIN, THE ADVENTURES OF TOM SAWYER 23 (Oxford Univ. Press 1998) (1876)). *See also* ROY F. BAUMEISTER & BRAD J. BUSHMAN, SOCIAL PSYCHOLOGY AND HUMAN NATURE 84 (2008).

64. PINK, *supra* note 56, at 39 (quoting JON MARSHALL REEVE, UNDERSTANDING MOTIVATION AND EMOTION 143 (4th ed. 2005)).

65. *Id.* at 39.

66. *Id.* at 59.

67. *Id.*

68. *Id.* (citing Edward L. Deci et al., *Extrinsic Rewards and Intrinsic Motivation in Education: Reconsidered Once Again*, 71 REV. EDU. RES. 14 (2001)).

69. *Id.*

70. *Id.* at 71.

71. *Id.* at 72 (citing to Richard M. Ryan & Edward L. Deci, *Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being*, 55 AM. PSYCHOL. 68 (2000)).

among social scientists.[72] Perhaps for that reason, relatively scant attention has been paid in legal scholarship to the behavioral literature on intrinsic motivation. But the work has not escaped notice entirely. Recently, legal scholars have begun to look into this literature for a variety of purposes.

John Quiggin and Dan Hunter have explored the role of intrinsic motivation in the explosion of amateur production and innovation on the internet.[73] Yochai Benkler has discussed the role of intrinsic incentives in explaining what he calls "commons-based peer production," an economic mode of which open-source software is an example.[74] Rebecca Tushnet has touched on the new understandings in economics within the context of her recent article looking at the motivations of authors of fiction.[75] Steven J. Horowitz has cited Deci's work in urging a view of the public domain that is more liberal and conducive to democratic culture.[76] And Lydia Pallas Loren has cited Amabile in arguing that motivation should be a factor in determining the proper scope of rights under copyright law.[77]

One legal scholar who has begun to substantially appreciate the importance of this new social science literature for intellectual property theory is Diane Leenheer Zimmerman. In January 2011, Zimmerman published an article directly applying the work of Deci, Amabile, and others to the incentive theory of copyright.[78] On this basis, Zimmerman recognizes, quite correctly, that "the idea that for copyright to be any kind of useful incentive, it must offer the prospect of a larger and larger pot of gold through more control spread out over longer and longer times seems simply disconnected from what is really going on in the creative sphere."[79] But while Zimmerman is skeptical of copyright as a way to incentivize creativity as a psychological process, she does not foresee a subversion of IP's ultimate assumption—the public goods problem. Zimmerman continues to see a need for "incentives to invest time and capital in the production of works."[80] Thus, she concludes that in light of the new social science,

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72. *Id.* at 39.

73. *See* John Quiggin & Dan Hunter, *Money Ruins Everything*, 30 HASTINGS COMM. & ENT L.J. 203 (2008).

74. Yochai Benkler, *Coase's Penguin, or Linux and the Nature of the Firm,* 112 YALE L.J. 369, 426 (2002). *See also* YOCHAI BENKLER, THE WEALTH OF NETWORKS: HOW SOCIAL PRODUCTION TRANSFORMS MARKETS AND FREEDOM 106-16 (2006).

75. *See* Tushnet, *supra* note 53.

76. Steven J. Horowitz, Note, *Designing the Public Domain*, 122 HARV. L. REV. 1489, 1498 (2009), *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1350454.

77. Lydia Pallas Loren, *The Pope's Copyright? Aligning Incentives with Reality by Using Creative Motivation to Shape Copyright Protection*, 69 LA. L. REV. 1, 11 (2008).

78. Diane Leenheer Zimmerman, *Copyrights as Incentives: Did We Just Imagine That?*, 12 THEORETICAL INQUIRIES L. 29 (2011).

79. *Id.* at 57.

80. *Id.*

"[c]opyright becomes a way, simply, to overcome the public goods problem [faced by] authors and disseminators."[81] The insights gathered from the new social science, as she sees it, may be applied "at the margins," adjusting the potency of various copyright doctrines and defenses.[82]

In my view, the implications of the social psychology and behavioral economics of creativity are absolutely fundamental. The new social science is much more important to the field of intellectual property law than the explorations of these other scholars suggest. Once the social science is squarely confronted, it requires us to engage in a fundamental rethinking of the field. That rethinking must ultimately lead to a rejection of the fields' most sacrosanct precepts. If intrinsic motivations are the dominant driver for creative and innovative labor and if external incentives have a substantial effect of diminishing intrinsic motivations, then the public goods problem itself is a phantasm, one rooted in our blind love of a beautiful microeconomic theory that is ultimately not borne out by observation or experiment.

C. Clemens on the Hill

So, what are the implications for IP policy? The Sawyer Effect would seem to suggest that copyright, by providing financial rewards for activities like creative writing, may actually work to extinguish the motivation to write. Such a conclusion is particularly tickling, because Samuel Clemens (who, of course, wrote as Mark Twain) was a big booster of lengthened copyright terms. Clemens argued before the British Parliament and U.S. Congress in favor perpetual copyright. As he testified in a joint-session committee hearing on Capitol Hill:

> I want [the authors' trade] to be represented and protected and encouraged. They are all worthy, all important, and if we can take them under our wing by copyright, I would like to see it done. I should [also] like to have you encourage oyster culture and anything else.[83]

Twain, through the allegory of Tom Sawyer's whitewashing, tells us that extrinsic rewards can crush a natural enthusiasm to work. Clemens, through his testimony, tells us we ought to encourage authors with copyright. Whose message should we believe? Twain or Clemens? If you look at the science, it supports the Twain view.

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81. *Id.* at 58.

82. *Id.* at 55.

83. *Arguments Before the Committees on Patents of the Senate and House of Representatives, Conjointly, On the Bills S. 6330 and H.R. 19853, to Amend and Consolidate the Acts Respecting Copyright*, 59th Cong. 116 (1906) (statement of Samuel L. Clemens).

There's also a sense of candor that comes through the lens of one's fiction. Clemens, on the other hand, was saddled with bias in offering his opinions to lawmakers. As he admitted, he had an "extraordinary interest" in the copyright-extension bill he testified in favor of.[84]

If we step back from self-interested rhetoric and take a hard look at the science, it's clear that our confidence in the classical economic view—with its understandings of incentives and public goods—has been seriously misplaced.

V. THE SUDDEN FLOURISHING OF CREATIVE PRODUCTION IN CYBERSPACE

Serendipitously, as scholars have been coming to grips with the nonclassical economics of creative labor, humanity has arrived at a moment in history—the digital revolution—that is providing an empirical confirmation, on a grand scale, that creative labors will flourish in the absence of external incentives. The reason for burgeoning creative production in the online world can be summed up in a word: *opportunity*. While people do not need extrinsic motivation to invent and create, they do need opportunity. And that opportunity has arrived with digital computers and the internet.

A. Opportunity Beeps

One way of defining human behavior is to think of it as "motivation filtered through opportunity."[85] Historically, the opportunities for creating and inventing have been tightly circumscribed. Even if one found the leisure time to engage in substantial creative or inventive activity, there was limited opportunity to share the resulting intellectual goods with the world at large. But as society has become wealthier and as standards of living have climbed, our lives' fractional share of leisure time has also been on the rise. At this point in history, most people in the industrialized world have considerable time left over after working and sleeping. That time is important, because intrinsically motivated people can use that extra time to create and invent.

Beyond having the spare time, there is also a question of whether the proper tools are available. Beginning in the 1980s, increasingly sophisticated and affordable computer technology has put more and more creative power in the hands of the masses. First, there were word processors. Then came programs for layout, photography, and illustration. Most recently, editing suites for high-definition video and multi-channel audio have become available to everyone with a

84. *Id.* at 120.

85. Pink & Shirky, Interview, *supra* note 50, at 132 (quoting Clay Shirky).

fairly up-to-date computer. These tools allow for the making of a vast amount of creative content.

Once the technology and economics are there to permit creative production, there remains the question of whether the opportunity exists to distribute that content. Since the turn of the millennium, the broadband internet, along with ultra-cheap storage capacity, has provided just such an opportunity. Ordinary people—ones who are neither professionals nor obsessive hobbyists—can now distribute text, images, films, music, and audio programs worldwide. And it's not even hard. If anything, some people think it's too easy. (Understandably, many parents grimace at the terabytes worth of teen-created content circling the planet—content that is frequently confessional, compromising, or both.)

True to theory, and consistent with experimental results obtained in the social scientist's laboratory, legions of everyday nonprofessionals have rushed in to seize creative opportunities as they have opened up—even when there has been zero expectation of getting paid. The great passive audience, which, not long ago, sat in front of television sets surfing channels and relaxing, has now turned into a hunched-forward production militia, pointing and clicking into existence a staggering amount of new content.[86] To describe this material, we've created the oxymoronic neologism "user-generated content." It's also called "Web 2.0." I like to use the term "nano media."[87] But whatever you call it, this citizen-made media multiplies like an exotic alien virus. Open-source software, blogs, shared photo collections, videoed skits, free podcasts, and a fire hose of tweets and Facebook updates have risen to comprise an enormous portion of worldwide data production. Taken together, this wave of homebrew creative product is proof writ large that people don't need external rewards to be creative and share the resulting product with the whole world.

Media scholar Clay Shirky writes, "Because all the public media we've known until recently abided by Gutenberg economics, we assumed, without even really thinking about it, that media needed professionals to guarantee its very existence."[88] But as the post-millennial media boom shows, we humans will create and invent without receiving so much as a dime in return.

Of course, some people will resist the idea that the user-generated media revolution stands as an empirical refutation of classical economic wisdom. Many will suggest that creating things for free and sharing them over the internet is some sort of weird, digitally in-

86. *See generally* CLAY SHIRKY, COGNITIVE SURPLUS: CREATIVITY AND GENEROSITY IN A CONNECTED AGE (2010).

87. *See* Eric E. Johnson, *Rethinking Sharing Licenses for the Entertainment Media*, 26 CARDOZO ARTS & ENT. L.J. 391, 396 (2008).

88. SHIRKY, *supra* note 86, at 56.

duced aberration. But it is not. Shirky explains, "Human motivations change little over the years, but opportunity can change a little or a lot, depending on the social environment. . . . [W]hen opportunity changes a lot, behavior will as well, so long as the opportunities appeal to real human motivations."[89]

Michael Lewis, in his book *Next*, echoes Shirky's point when he describes how he stopped worrying about "the social consequences of the Internet" and started getting interested in "the Internet consequences of society"[90]:

> People take on the tools they are ready for, and only make use of what they need, how they need it. . . . If the Internet was giving the world a shove in a certain direction, it was probably because the world already felt inclined to move in that direction. . . . Inadvertently, it was telling us what we wanted to become.[91]

New media has not somehow changed human nature. New media has *revealed* human nature. Our new digitally networked reality has laid bare an aspect of humanity that, in turn, reveals a fatal flaw in classical economics. The upshot is that a simple tinkering with classical economics will not do. What is called for is a wholesale change in how we think about the law's relationship with technology and creativity.

The internet has long been regarded as a watershed for intellectual property law because of its capacity to abet "piracy." But the real crisis for intellectual property precipitated by the internet is metaphysical. By providing opportunity for intrinsically motivated individuals, the internet shows that IP's central economic tenet, its mission in life, is a misapprehension. Widespread digital production and distribution capacity has provided an outlet whereby the fruits of intrinsically motivated creative labor can be widely distributed and consumed. And so they have.

As Shirky writes, "Evidence accumulates daily that if you offer people the opportunity to produce and to share, they'll sometimes take you up on it, even if they've never behaved that way before and even if they're not as good at it as the pros."[92] What is more, the production of intellectual goods and the desire to share them with others are inextricably linked. "The sharing, in fact, is what makes the making fun," Shirky explains.[93]

As discussed, the most important feature of intellectual property, economically speaking, is that it is nonrivalrous—it can be *given*

89. *Id.*
90. MICHAEL LEWIS, NEXT: THE FUTURE JUST HAPPENED 16 (2001).
91. *Id.*
92. SHIRKY, *supra* note 86, at 22-23.
93. *Id.* at 19 (writing in the context of lolcats).

without being *given away*. What's more, it can be given over and over again. The fact that nonrivalrous goods are developed through creative labors is very fortuitous, because the same intrinsic motivation that encourages creative labor also encourages altruistic sharing. As Daniel Pink explains, intrinsic motivation simultaneously pushes people to undertake tasks because those tasks are naturally interesting and engaging, because they are "the right things to do," and because they "contribute to the world."[94]

B. The Great Geek Giveaway

Perhaps the two most prominent examples of freely distributed content that comprises enormous value are Wikipedia and open-source software.

From a classical economic frame of reference, Wikipedia is a big, expensive absurdity. How big and expensive? The English-language Wikipedia has more than 3.9 million articles,[95] which makes it by far the largest encyclopedia ever written. Trying to put a price tag on Wikipedia is not easy, but one can determine very quickly that it represents an enormous amount of uncompensated labor. An estimated 100 million hours of labor have gone into writing and editing Wikipedia.[96] To make a rough translation of that figure into dollars, we can use the median hourly wage for writers in the United States, which is $25.91.[97] Thus, the development cost of Wikipedia is something in the neighborhood of $2.5 billion. That kind of feat is entirely inexplicable in terms of traditional economics. But it can be understood readily in the context of the desires that Deci and Ryan explained by way of self-determination theory.[98]

As valuable as Wikipedia is, its economic contribution is dwarfed by open-source software.[99] Open-source software is "free" in both senses of the word. It is free in the sense that the price for a copy of the software is zero. The software is also free in the sense that it is liberated—it is without a master, and anyone can undertake to revise it, improve it, reconfigure it, and redistribute it. Open-source software is written under the terms of a special set of legal restrictions—

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94. Pink & Shirky, Interview, *supra* note 50, at 130 (quoting Daniel Pink).

95. Erik Zachte, *Wikipedia Statistics English*, http://stats.wikimedia.org/EN/TablesWikipediaEN.htm (last updated Apr. 30, 2012).

96. SHIRKY, *supra* note 86, at 9-10.

97. *Occupational Employment Statistics, Occupational Employment and Wages, May 2009: 27-3043 Writers and Authors,* U.S. BUREAU OF LABOR STATISTICS, http://www.bls.gov/oes/2009/may/oes273043.htm (last modified May 14, 2010).

98. *See* Deci, *supra* note 57; *supra* Part IV.B (regarding self-determination theory).

99. Open-source software is software that is deliberately unencumbered by the traditional entitlements of copyright. Instead of being held as proprietary, open-source software is released and perpetuated under a license that requires follow-on users to maintain it as unbound by copyright restrictions.

most commonly the provisions of the GNU Public License—which act to prevent the software from becoming subject to a copyright monopoly controlled by any single creator or firm.[100]

Most people have little idea of how ubiquitous open-source software is. For average computer users, the most visible software tends to be proprietary—largely creations of Microsoft or Apple. But this view belies open-source's importance and pervasiveness. According to Microsoft's CEO, some 60% of internet servers use the Linux open-source operating system.[101] That means that everyone who's made more than a trivial use of the internet has used open-source software. Open-source also roams the streets as Android, the most prevalent operating system on smart phones.[102] In high-end research computing, Linux's market share is even greater. About 90% of the world's supercomputers use Linux,[103] including U.S. Department of Energy computers that provide modeling for nuclear weapons research.[104] Estimating the total economic value of open-source software is naturally hard to do, but one estimate put it at $30.6 billion per year.[105] Thus, if the open-source community were a country, it would have a level of GDP ranking seventy-seventh in the world, putting it right between Bulgaria and Lithuania.[106] Alternatively, using corporate revenues as a basis for comparison, the open-source community's output is about half that of a company such as Microsoft or Boeing and appreciably larger than a company such as Time Warner or 3M.[107]

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100. *See* GNU General Public License, Version 1 (Feb. 1989), http://www.gnu.org/licenses/old-licenses/gpl-1.0.txt (the original GPL); *see also* GNU General Public License, Version 2 (June 2007), http://www.gnu.org/licenses/gpl-3.0.txt (the most recent GPL).

101. James Niccolai, *Ballmer Still Searching for an Answer to Google*, PCWORLD (Sept. 26, 2008), http://www.pcworld.com/businesscenter/article/151568/ballmer_still_searching_for_an_answer_to_google.html.

102. *See Android Open Source Project – Welcome to Android*, http://source.android.com/index.html (last visited May 14, 2012); *Android Developers – What is Android?*, http://developer.android.com/guide/basics/what-is-android.html (last visited May 14, 2012); *In U.S. Smartphone Market, Android is Top Operating System, Apple is Top Manufacturer*, NIELSEN WIRE (July 28, 2011), http://blog.nielsen.com/nielsenwire/?p=28516.

103. Steven J. Vaughn-Nichols, *Linux: It Doesn't Get Any Faster*, COMPUTERWORLD BLOGS (June 23, 2009, 10:43 AM), http://blogs.computerworld.com/linux_it_doesnt_get_any_faster.

104. Sharon Gaudin, *IBM's Roadrunner Smashes 4-Minute Mile of Supercomputing: Hybrid Machine Breaks Petaflop Barrier Using Cell Chip and Running Linux*, COMPUTERWORLD BLOGS (June 9, 2008, 12:00 PM), http://www.computerworld.com/s/article/9095318/IBM_s_Roadrunner_smashes_4_minute_mile_of_supercomputing?taxonomyId=12&intsrc=kc_top&taxonomyName=hardware.

105. Palle Pedersen, *The Open Source Community as a Top 100 Country*, INSIDE OPEN SOURCE (Nov. 9, 2007, 3:50 PM), http://www.inside-open-source.com/2007/11/open-source-community-as-top-100.html.

106. *Id.*

107. *See Global 500*: *Our Annual Ranking of the World's Largest Corporations*, CNN MONEY, http://money.cnn.com/magazines/fortune/global500/2011/full_list/index.html (last visited May 14, 2012) (ranking the top 500 companies worldwide by revenue).

A large part of the explanation for why open-source software has been such a success is intrinsic motivation. Karim Lakhani of MIT and Bob Wolf of Boston Consulting Group surveyed 684 open-source software programmers about why they participated in open-source projects.[108] Lakhani and Wolf found that "enjoyment-based intrinsic motivation—namely how creative a person feels when working on the project—is the strongest and most pervasive driver."[109] In 2007, economists Jürgen Bitzer, Wolfram Schrettl, and Philipp J.H. Schröder concluded from studying open-source projects around the world that open-source work resulted from "a set of predominantly intrinsic motives," particularly "the fun . . . of mastering the challenge of a given software problem [and the] desire to give a gift to the programmer community."[110] Daniel Pink wrote that "ultimately, open source depends on intrinsic motivation with the same ferocity that older business models rely on extrinsic motivation."[111]

Open-source software and Wikipedia are creative efforts that form a kind of geek niche. Most people use the fruits of these labors, but only a relative few contribute. Nonetheless, they are the leading edge of a bigger explosion of a digitally enabled creative flourishing—one that is getting closer and closer to involving everybody.

C. The Hella-Huge Explosion

To begin to get a grasp on the size of the creativity explosion, you can start with the worldwide expansion of data. While not all data represents copyrighted material, much of it does. And a quick review of the numbers shows that the growth of data has been supernova-like.

Researchers estimated that in 2010, humanity's total data production, measured by network throughput, would reach 1.2 zettabytes.[112] That's an astonishing 62% year-over-year increase from 2009's output of 800 exabytes.[113] At these rates of growth, within the next decade or two, the human race could well be sitting on top of more than

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108. Karim R. Lakhani & Robert G. Wolf, *Why Hackers Do What They Do: Understanding Motivation and Effort in Free/Open Source Software Projects*, *in* PERSPECTIVES ON FREE AND OPEN SOFTWARE 1 (Joseph Feller et al. eds., 2005).

109. *See id.* at 3; *see also* PINK, *supra* note 56, at 23 (citing Lakhani & Wolf, *supra* note 108, at 12).

110. PINK, *supra* note 56, at 23 (quoting Jürgen Bitzer, Wolfram Schrettl & Philipp J.H. Schröder, *Intrinsic Motivation in Open Source Software Development*, 35 J. COMPARATIVE ECON. 160 (2007)) (internal quotations omitted).

111. *Id.*

112. *See* Joe McKendrick, *Data Explosion: Enough to Fill DVDs Stretching to the Moon and Back*, SMARTPLANET (May 14, 2010, 7:27 AM), http://www.smartplanet.com/business/blog/business-brains/data-explosion-enough-to-fill-dvds-stretching-to-the-moon-and-back/7010/. One zettabyte equals one sextillion bytes or one billion trillion bytes, i.e., 1×10^{21} bytes.

113. *Id.* One exabyte equals one quintillion bytes or one million trillion bytes, i.e., 1×10^{18} bytes. An exabyte is one one-thousandth of a zettabyte.

1×10^{27} bytes of data[114]—that's a whole *hellabyte*. That is a number so huge, it doesn't even exist. At least not officially. The metric system currently only goes up to *yotta*, a prefix designating 1×10^{24}.[115] The international bodies that oversee the metric system have been receiving petitions to add *hella* as a recognized standard.[116] Worldwide data accumulation is an example of why doing so might be warranted.

It might seem as if most of the explosion in digital data would come from industry, rather than individuals. But that's not true. An estimated 75% of current data output is created by consumers.[117] One estimate predicted a total production of 692 exabytes of user-generated content in 2010.[118] And an increasing fraction of the world's population is contributing. Almost half of internet users in the 13-to-75-year age range have created some kind of online content—such as blogs, photos, videos, web pages, or something else.[119] One way to grasp the size of individual contributions is to compare the digital output of one user-generated-content website, YouTube, to the total digital volume of all the world's medical imaging. They are nearly equal.[120]

Digital photography is a large part of data expansion. At the turn of the millennium, digital cameras, at least in the hands of consumers, were a rarity. Ten years later, they are ubiquitous. The cost of taking, storing, and displaying a digital picture is infinitesimal compared with the cost of taking, developing, and printing a picture with photochemical film and paper stock. The price-per-image difference between film and digital, combined with the plummeting drop in the price of digital cameras, has led to skyrocketing rates in the creation of photographs. About 25% of the world's current data production is

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114. *Id.* (stating that by 2020, "the amount of data will have grown . . . to 35 trillion gigabytes").

115. Wendy Rose Gould, *Experts Say Hellabyte Campaign Has No Chance in, uh, Hell*, ASYLUM (Mar. 22, 2010), http://www.asylum.com/2010/03/22/make-hella-official-hellabyte-campaign-austin-sendek/.

116. *Id.*

117. John Gantz & David Reinsel, *Extracting Value from Chaos*, IDC IVIEW, EMC CORP. 1 (June 2011), http://www.emc.com/collateral/analyst-reports/idc-extracting-value-from-chaos-ar.pdf. I should note that calling this class of people "consumers," while noting that they are responsible for the bulk of something being produced, is a bit oxymoronic. But here I mean those actors in the economy traditionally regarded as the audience, that is, individuals acting on their own who have traditionally been on the receiving end of media.

118. JOHN F. GANTZ, INT'L DATA CORP., THE EXPANDING DIGITAL UNIVERSE: A FORECAST OF WORLDWIDE INFORMATION GROWTH THROUGH 2010, at 8 (2007), *available at* http://www.emc.com/collateral/analyst-reports/expanding-digital-idc-white-paper.pdf.

119. *See* Edward Lee, *Warming Up to User-Generated Content,* 2008 U. ILL. L. REV. 1459, 1500 (2008).

120. JOHN F. GANTZ, INT'L DATA CORP., THE DIVERSE AND EXPLODING DIGITAL UNIVERSE: AN UPDATED FORECAST OF WORLDWIDE INFORMATION GROWTH THROUGH 2011, at 7 (2008), *available at* http://www.emc.com/collateral/analyst-reports/diverse-exploding-digital-universe.pdf.

estimated to be from cameras and camcorders.[121] Virtually all of it is copyrighted, since copyright applies by default.[122] Moreover, picture-taking is overwhelmingly an individual, as opposed to industrial, activity.

How many more pictures are being taken today thanks to digital photography? At the peak of photochemical film's popularity, approximately at the turn of the millennium, about 25 billion photographs were being taken each year.[123] Digital cameras have exploded that total. In 2006, around 250 billion photos were taken.[124] An estimate for 2010 predicted 500 billion,[125] and the percentage of photos currently taken on film is currently declining into insignificance. Digital photography has thus caused, at minimum, more than an order-of-magnitude increase in photographic production over film. And there is still a long way to go before everyone who wants a digital camera has one, especially outside of Europe, North America, and coastal East Asia.

It's clear that producing copyrightable content for reasons other than money is not an activity just for blockheads. In today's world, the copyright incentive is demonstrably irrelevant to the production of *most* of the world's copyrightable content.

It being the case that most of the world's copyrightable content is motivated intrinsically, there remains open a big question: What is the corresponding worth of that content? Just because external incentives are irrelevant to its production, it does not necessarily follow that most of the *value* in copyrightable content is not externally motivated.

One might point to a movie like *Spider-Man 3,* which set a record for movie budgets in 2007 with an acknowledged $258 million price-tag.[126] Television produced on the copyright-revenue model is also, of course, very valuable. Indeed it must be if producers agreed to pay Charlie Sheen nearly $2 million per episode for appearing in the CBS half-hour comedy *Two and a Half Men.*[127] Money paid upfront by producers is, admittedly, an attenuated way to measure value to consumers. But outlays do reflect a rational calculation of what the ex-

121. *See* GANTZ, *supra* note 118, at 7.

122. This has been the case in the United States since the Berne Convention Implementation Act of 1988, 17 U.S.C. §§ 101–810 (2006). *See also* WIPO, Berne Convention for the Protection of Literary and Artistic Works, Status on April 13, 2012 [hereinafter Berne Convention Status], *available at* http://www.wipo.int/export/sites/www/treaties/en/documents/pdf/berne.pdf.

123. Katie Hafner, *Film Drop-Off Sites Fading Fast as Digital Cameras Dominate*, N.Y. TIMES, Oct. 9, 2007, at C1.

124. *See* GANTZ, *supra* note 118, at 7; *see also* GANTZ, *supra* note 120, at 3 (finding that less than 10% of still images were captured on film in 2007).

125. *See* GANTZ, *supra* note 118, at 7.

126. Diane Garrett, *Big-Budget Bang-Ups*, VARIETY, Apr. 23, 2007, at 5, *available at* http://www.variety.com/article/VR1117963551?refCatId=1019.

127. Cynthia Littleton, *Sheen Returning to 'Two and a Half Men,'* VARIETY (May 17, 2010, 7:10 PM), http://www.variety.com/article/VR1118019521?refCatId=1236.

pected returns are, and those returns spring ultimately from consumer demand priced by the market. Moreover, revenue-side numbers are indicative of great value as well. In 2010, Hollywood reported about $10.5 billion in domestic box office receipts.[128] Not all of that reflects the value of the movies themselves, since cineplex operators provide value in the form of the physical space in which to watch the show. But such numbers are a clear demonstration that copyright-centered industry generates a tremendous amount of economic value.

Comparing the economic value of copyright-model media and citizen-generated nano media is difficult to do. One might argue that citizen-generated media has no value, since it is being created on a budget of virtually zero, is distributed for free, and is generating almost nothing in receipts. But such a contention is specious. One can only hope to measure value by receipts where production and distribution are purposely tailored to maximize receipts. When moneymaking and production are knowingly unhitched, some other measure is needed.

A fair way to begin to draw a comparison with traditional copyright-model media is to look at the amount of time people spend consuming media. A time-spent comparison allows an apples-to-apples sort of juxtaposition. Looking at consumption by units of time, it is clear that nano media has immense value. One study found that as of late 2010, Americans were spending about the same amount of time online as they were watching television.[129] Of the time they spend online, about a quarter of that time is on blogs, social media, and video sites such as YouTube.[130] Based on this data, assuming that aggregate time spent consuming equates with value, then nano media would seem to constitute one quarter the worth of traditional television media. But, for a couple of reasons, this comparison may be too flattering to TV. First, we must consider that much of television airtime is advertising—in the range of 13% to 30%.[131] Advertisements

128. YEARLY BOX OFFICE RESULTS, BOX OFFICE MOJO, http://boxofficemojo.com/yearly/.

129. Lauren Indvik, *Americans Now Spend As Much Time Using Internet as TV [STATS]*, MASHABLE TECH (December 13, 2010), http://mashable.com/2010/12/13/internet-tv-forrester/.

130. *What Americans Do Online: Social Media and Games Dominate Activity*, NIELSENWIRE (August 2, 2010), http://blog.nielsen.com/nielsenwire/online_mobile/what-americans-do-online-social-media-and-games-dominate-activity/.

131. *See, e.g.*, HOWARD J. BLUMENTHAL & OLIVER R. GOODENOUGH, THIS BUSINESS OF TELEVISION 435 (2d ed. 1998); Erik Blythe, *How Many Minutes of Commercials are Typically Included in One Hour of Basic Cable Programming?*, QUORA.COM, http://www.quora.com/How-many-minutes-of-commercials-are-typically-included-in-one-hour-of-basic-cable-programming (last visited May 14, 2012); Wayne Schmidt, *Growth of TV Time Taken Up by Commercials*, WAYNE'S THIS AND THAT, http://www.waynesthisandthat.com/commerciallength.htm (last visited May 14, 2012); Gaebler Ventures, *How Much Do Television Ads Costs?*, GAEBLER.COM, http://www.gaebler.com/Television-Advertising-Costs.htm (last visited May 14, 2012) ("The standard half-hour of television contains 22 minutes of program and 8 minutes of commercials.").

are produced to sell products, they are not produced as creative ends in themselves. Thus, any external incentive provided by copyright is essentially irrelevant to that fraction of television viewing. Backing out advertising time, then, citizen-made media noses upward to have about a third of the aggregate value of traditional TV fare. Second, and more importantly, we must consider that a television can be left on in the background and not watched directly. The internet generally doesn't work that way. The time spent viewing television thus deserves discounting for engagement in other activities during that time—cooking, cleaning, etc. If we compensate for level of engagement, then user-generated content becomes much more valuable still. For instance, if it were fair to say that online media consumption involves three times as much actual attention or "mindshare" as traditional TV, then nano media is equal to television in value to the consuming public.

Even this comparison, however, doesn't take into account the fact that citizen-produced media and social networks are still maturing. As of the summer of 2010, Nielsen measured a 43% gain in share of time online for the "social networks" category from twelve months prior.[132] And the growth continues.

One could make too much of these numbers. Different data on internet usage and television viewing would result in different comparisons, many of which might be far more kind to TV. Nonetheless, it is clear that user-generated content—for which copyright is clearly irrelevant—rivals the sort of media produced under old-business models that are understood to lean heavily on copyright. Moreover, it certainly seems possible that, going forward, the value of citizen-produced media will come to overshadow the value of traditional Hollywood copyright-model-produced content. Indeed, more of an increase can be expected as newer generations, comprising people with less of an ingrained preference for older forms of media, form larger and larger portions of the media-consuming population.

Considered all together—open-source software, Web 2.0, social media, nano video production, and other citizen-made media forms—it is clear that external copyright incentives are irrelevant for a large and growing portion of the amount of value of total creative production. As opportunities for intrinsically motivated creative and innovative labor have opened up, those opportunities have been seized. Traditional business models reliant on external incentives remain prevalent, but it must be kept in mind that today's landscape of creative production reflects a heritage of legally imposed external incentives. The social science tells us that external incentives can stamp out intrinsic motivation. So the economic value in intrinsically motivated

132. *What Americans Do Online, supra* note 130.

creative and innovative production, as enormous as it is right now, may nevertheless be only a small fraction of what it would be if it weren't for society's pervasive ethos of external incentives. It may be impossible to know to what extent the current value of copyright-model creative production is obtained at the expense of intrinsically motivated creative production. We can't go back in time and rerun history with changed intellectual property laws to see what happens. We can, however, look backward in time to get a perspective on what motivations were prevalent before today's business models of television and motion pictures were developed.

VI. AN ARCHAEOLOGY OF COPYRIGHT INCENTIVES

The archaeologist's job is to reconstruct knowledge about people in the past by studying what they have left behind. Archaeology is especially well adapted to studying prehistoric societies that did not have written language and, therefore, left no written record. But oddly enough, an archaeological technique is apt for studying copyright and its incentive effect.

Today, copyright has the peculiar feature of attaching to your work whether you want it to or not.[133] That is, the application of copyright law is automatic: as soon as a work is "fixed" in some tangible form, it is copyrighted. But in decades past, creators had to take affirmative steps in order to secure the copyright entitlement. Looking back to the era when these formalities were required for protection, we see that most creators skipped them, foregoing their opportunity to claim copyright.[134] It follows that the copyright monopoly was not incentivizing their labors.

Beginning in 1790, under the first version of American copyright law, there were three requirements to procure a copyright: Authors had to register their work, deposit a copy of their work, and then affix copyright notices to all publicly distributed copies.[135] With the Copyright Act of 1909, the deposit and registration requirements were sidelined, giving creators the ability to garner copyright protection merely by placing a copyright notice of the prescribed format on all

133. For a discussion of the effect of the default application of copyright, see LAWRENCE LESSIG, FREE CULTURE: HOW BIG MEDIA USES TECHNOLOGY AND THE LAW TO LOCK DOWN CULTURE AND CONTROL CREATIVITY 287-91 (2004).

134. *See* Christopher Sprigman, *Reform(aliz)ing Copyright*, 57 STAN. L. REV. 485, 503, 509-10 (2004).

135. *See* Copyright Act of 1790, ch. 15 §§ 1, 3, 4, 1 Stat. 124, 124-25 (1790) (repealed 1831). These were the requirements of the Copyright Act of 1790, which were retained in the Copyright Act of 1831, ch. 16, §§ 1-5, 4 Stat. 436, 436-37 (1831) (repealed 1870). *See also* Kahle v. Ashcroft, 72 U.S.P.Q. 2d (BNA) 1888, 1891 (N.D. Cal. 2004) (describing the history of copyright formalities).

copies.[136] The notice requirement was eventually eliminated in 1989, when Congress changed American copyright law in order to accede to the international community's major treaty on copyright, the Berne Convention.[137] Since then, all creators have automatically received copyright protection on all newly created works, whether those creators cared for it or not.[138] These changes marked American copyright's "flipp[ing] over from a system that protected only rights that were claimed to one that vests all rights, whether claimed or not."[139]

Since copyright was once an "opt out" regime of legal protection, we can use past practice as a way of gauging the amount of reliance people had on the copyright entitlement. What we find is that in the past most authors and publishers chose not to "opt in." In the United States, in the decade after the passage of the 1790 Copyright Act, only 10% to 20% of eligible works were copyrighted,[140] leaving 80% to 90% of available copyrights unclaimed. A study of works in the period of 1800 through 1870 indicates a potentially higher ceiling, with at most only about 50% of eligible works being copyrighted.[141] But other studies indicate much lower rates of claiming copyright. A study of works published in San Francisco from 1850 to 1870 found less than 14% contained the copyright notice that was necessary to claim the protection of the law.[142] A survey of library-held publications from 1908 or before, found that only about 21% of works were copyrighted.[143] A similar survey, which looked at posters published before 1976, found that less a third were copyrighted.[144]

It is a reasonable assumption that if creators did not take the required affirmative step of copyrighting their works, they would have

136. *See* Copyright Act of 1909, Pub. L. No. 60-349, §§ 9, 18, 35 Stat. 1075, 1077, 1079 (1909) (repealed in 1976). Note that for the copyright to be extended beyond its initial 28-year term, it had to then be registered, at which point the copyright was valid for another 28 years, for a total of 56 years. *See id.* at § 23; *Kahle*, 72 U.S.P.Q. 2d at 1891. The notice requirement was retained when the law was overhauled with the Copyright Act of 1976. Copyright Act of 1976, Pub. L. 94-553 §§ 302, 401-06, 407(a), 408(a), 90 Stat. 2541, 2572, 2576-80 (codified at 17 U.S.C. §§ 302, 401-06, 407(a), 408(a) (2006)); *Kahle*, 72 U.S.P.Q. 2d at 1891.

137. Berne Convention Implementation Act of 1988, Pub. L. No. 100-568 § 7, 102 Stat. 2853, 2857-58 (codified at 17 U.S.C. §§401–406); *see also* Berne Convention for the Protection of Literary and Artistic Works art 5., adopted Mar. 1, 1989, S. Treaty Doc. No. 99-27, 1161 U.N.T.S. 3, *available at* http://www.wipo.int/export/sites/www/treaties/en/ip/berne/pdf/trtdocs_wo001.pdf).

138. *See* Berne Convention Implementation Act, § 9 (codified at 17 U.S.C. §408(a)); Berne Convention Status, *supra* note 122.

139. *See, e.g.*, Richard A. Epstein, *The Dubious Constitutionality of the Copyright Term Extension Act*, 36 LOY. L.A. L. REV. 123, 124 (2002).

140. *See* Sprigman, *supra* note 134, at 503.

141. *See id.* at 509-10.

142. *See id.* at 510.

143. *See id.* at 512.

144. *See id.* at 513 (surveying "the poster collection of the Hoover Institution Archives at Stanford University").

created those works without the incentive provided by copyright. This data thus indicates that the copyright incentive was mostly irrelevant to the production of copyrightable content. Assuming that the attitudes that prevailed in prior eras continue to persist today, at a minimum, somewhere between 50%–90% of the current output of copyrighted works would have been created without the incentive of the copyright entitlement.

There is, however, a very strong reason to think that copyright was unnecessary to the production of an even greater proportion of works than these numbers indicate. Persons who would have created works with or without copyright's incentive might nonetheless have helped themselves to the copyright entitlement after the fact. After all, the copyright entitlement has never depended on the creators' motivations in undertaking the creative labor. Thus, for people who would have created their works anyway, copyright could have been claimed as a gratuitous bonus. We can call this *the bonus-taking effect*.

This effect should probably be especially large after 1909, when registration was reduced from a threshold requirement for protection to a means of extending copyright beyond the initial 28-year term.[145] At that point, all that was required to gain the copyright entitlement was a notice on all published copies.[146] Yet people still steered clear of the copyright claim in droves. Taking into account the bonus-taking effect, we can say that the rate of unclaimed copyrights strongly disconfirms the incentive theory, indicating, as it does, the irrelevance of the external incentive of copyright in the ordinary course.

There is another effect that can be expected to skew the numbers in the direction of overestimating the possible reach of the incentive effect: the costs of production and distribution. In many cases where the copyright incentive was not necessary to get an author to decide to write, we can imagine the incentive might have nonetheless been necessary to make it economically feasible for the publisher to pay to typeset, print, market, and distribute the author's book. Yet the rate of unclaimed copyright was very high despite the Gutenberg economics of production and distribution in the pre-1989 era.

Once you take into account the bonus-taking effect and the effects of production/distribution economics, it is likely that the needlessness of copyright incentives was much closer to 90% or significantly beyond that. From this data, we can infer that the external incentive of copyright has had little to do with the vast majority of widely distributed creative production. It may be noted that the cited historical studies do not necessarily indicate that creative production and dis-

145. Copyright Act of 1909, Pub. L. No. 60-349, § 23, 35 Stat. 1075, 1080 (repealed 1976).

146. *Id.* at §§ 8, 18.

tribution was not externally incentivized. There are other vectors for external incentives other than copyright, since creative content, even if given away, can create rewards for its creator through advertising, sponsorships, and other means.[147] Regardless, however, the evidence does strongly indicate a lack of incentive effect of copyright, and it thus contradicts the incentive theory as advanced in favor of intellectual property law.

Let's take account of some possible objections to this line of reasoning.

It may be argued that there are various alternative explanations that could be given for these numbers. For example, some creators may have been mistaken about copyright law and thought that their works were protected by copyright without registration or notice. It is also possible that that some persons were incentivized by copyright to produce their works but, after finishing those works, changed their minds and decided to forgo the law's aegis. These scenarios are perfectly plausible on a small scale. But there is no reason to believe that mistakes or changed minds had any significant effect on the numbers. To the contrary, it is reasonable to think the bonus-taking effect should entirely overtake any effect of mistakes and changed minds.

Corroborating these conclusions is a research review commissioned by the United Kingdom's Strategic Advisory Board for Intellectual Property. That review found, "Historical investigations of copyright's effect on authors' supply of works rarely support the view that copyright promotes either the number or the quality of works supplied."[148]

An additional objection might be that quantity does not necessarily correspond with value—that is, perhaps the legions of noncopyrighted works were worthless or nearly so. Yet what is measured in the historical studies cited above can be expected to correlate in great part with value. That is because the historical data, derived from libraries, measures rates of copyright declinance among only those works that were deemed important enough for a publisher to publish and for a library to collect and save. In other words, the data already looks at the cream of creative production.

In sum, the historical/archaeological evidence strongly disconfirms the incentive theory. Moreover, this evidence from the past corresponds well with the lessons of today's user-made media boom. Copyright does not now, nor did it ever, have ineluctable importance to the production and distribution of creative expression.

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147. *See, e.g.*, Eric Schlachter [n/k/a Eric Goldman], *The Intellectual Property Renaissance in Cyberspace: Why Copyright Law Could Be Unimportant on the Internet,* 12 BERKELEY TECH. L.J. 15, 23-30 (1997).

148. Handke, *supra* note 13, at 10.

VII. NATURAL ENCOURAGEMENTS FOR CAPITAL-INTENSIVE PUBLIC GOODS

I hope that what I've laid out up to this point shows that it is misguided to presume that external incentives are necessary for creative, innovative labors that result in public goods—at least insofar as those labors are engaged in by individuals. Empirical observation—experimental and historical—is inconsistent with the incentive theory as holding true for individuals. Moreover, the rival intrinsic-motivation hypothesis agrees well with the facts we observe.

There is, however, a substantial gap. Not all intellectual goods are produced by individuals. Many, of course, are produced by firms. New theory in the vein of social psychology or behavioral economics does not apply straightforwardly to the behavior of firms. With layered management and shareholder governance, firms, we can stipulate, are directly oriented toward making money. Corporate managerial decisions may depart from the ideal. That is, managers, as stewards of shareholder interests, may be imperfect in their decisionmaking. But, as a general matter, corporations clearly act much more like the hypothetical *Homo economicus* than individuals do.

Moreover, the corporate side of creation and invention cannot be ignored as trivial or nonessential. A talented tinkerer, for instance, can make gadgets using commercially available microprocessors. But developing and fabricating microprocessors takes a huge corporation. One such corporation, Intel, recently announced it would spend $5 billion to build a new fabrication facility in Arizona to manufacture chips with a new level of nanoscale miniaturization.[149] An intrinsically motivated individual can't do that in a garage. We can stipulate also that firms, as such, do not have intrinsic motivation.[150] They do not feel love, passion, or the triumph of spirit that comes from contributing to society. So does that mean that the external-incentive theory, if it does not hold for individuals, at least holds for corporations? The answer is no, at least not as a general principle. Empirical investigation disproves it.

Various characteristics of the real-world marketplace make creation and innovation profitable even in the absence of externally provided rewards—at least in most cases. Indeed, empirical research indicates that in most industries, intellectual property rights are considered unimportant to appropriating returns. Further, empirical studies show that business managers are, in large part, ignorant of

149. *See Intel to Invest $5 Billion in New Arizona Plant*, PHYSORG.COM (Feb. 18, 2011), http://www.physorg.com/news/2011-02-intel-invest-billion-arizona.html.

150. *But see infra* Part VIII, explaining that firms must enjoy an intrinsic-motivation subsidy in the form of lower wages for workers who are doing creative or innovative work on behalf of the firm.

what must be done to claim intellectual property entitlements, suggesting that those entitlements are not vital to business decisions to innovate and create. This research supports the conclusion that the need for external incentives is the exception rather than the rule.

Returns on research-and-development costs are frequently garnered through marketing strategies and particular ways of doing business. These modes of appropriating profits include "lead time" or "first-mover advantage,"[151] sales-and-service expertise, superior manufacturing capacity, increasing returns through scale,[152] and what has been called "quick[ness on] the learning curve."[153] None of these means of garnering a profit involves getting an external reward. Inside the world of an economic abstraction, the ability to copy the innovations or creative output of a firm seems to be perfectly ruinous to that firm's ability to profit from its investment. But the problem with abstract models is that they assume away friction and delay. They also don't take account of the buzz that can develop around a brand that is at the leading edge of a cultural or technological phenomenon. In the real world, copying takes at least a little bit of time. And copyists look a little less lustrous to consumers. Moreover, it can be easier to maintain market share than to take it away from others. These little differences between economic models and the real world can translate into fortunes. Facebook founder Mark Zuckerberg illustrates the point in talking about his management philosophy. "[O]ne of the core values of Facebook is *move fast*," Zuckerberg has said.[154] "And we used to write this down by saying, 'move fast and break things.' And the idea was, unless you are breaking some stuff, you are not moving fast enough."[155] If a company moves fast enough, then by the time competitors succeed in copying innovations, they are far behind.

The importance of non-IP factors in appropriating returns has been empirically demonstrated. Economists Michele Boldrin and David K. Levine have looked deeply into the role of intellectual property in innovation, and their account might come as a shock to denizens of patent law. They report: "[I]t turns out that businesses do not regard patents as a significant factor in their decisions to innovate."[156] To reach this conclusion, Boldrin and Levine looked at a number of surveys of R&D directors. Being first to the market was rated as the

151. Eric E. Johnson, *Calibrating Patent Lifetimes,* 22 SANTA CLARA COMPUTER & HIGH TECH. L.J. 269, 278 (2006).

152. *See id.* at 279-80.

153. *Id.* at 279.

154. *Mark Zuckerberg, Moving Fast and Breaking Things*, BUSINESS INSIDER (Oct. 14, 2010, 6:29 PM), http://www.businessinsider.com/mark-zuckerberg-2010-10 (min. 15).

155. *Id.*

156. BOLDRIN & LEVINE, *supra* note 25, at 62.

most effective way to profit from a product innovation.[157] For novel processes, maintaining secrecy was rated as the most effective means.[158] Not only were other means of appropriating gains seen as more effective, but patents were largely regarded as being *ineffective*.[159] Astonishingly, only about a third of respondents found that patents were even minimally effective in appropriating gains from R&D spending.[160]

In fact, multiple empirical studies confirm that patents are highly effective for appropriating gains only in certain industries.[161] One of those industries is pharmaceuticals.[162] But even there, the evidence is mixed.[163] Economist Edwin Mansfield conducted research by surveying business executives to determine how many inventions required the incentive of patents. His results indicated that 65% of pharmaceutical inventions would not have been introduced to the market without the incentive of the patent regime.[164] So even while most drugs required the patent inducement, more than a third did not. That being said, the pharmaceutical industry is unique. In other industries, including motor vehicles, office equipment, and textiles, Mansfield found no evidence that patent protection was necessary for the development of *any* invention; patents were likewise unnecessary for those inventions' introduction to the market.[165]

In some contexts, patents have turned out not only to be largely worthless to own, but, even worse, costly to defend against. That is to say, for many commercial sectors, patents are just bringing everyone down. Software patents are a famous example where patents seem to provide no incentive, yet do produce a tangled mess of entitlements that frustrates industry.[166] In many sectors, businesses have joined with their competitors to moot the patent system by creating "patent pools," whereby they collectively agree not to enforce their patents against one another.[167]

A report commissioned by the British government, having reviewed the available research regarding the effects of the patent system, found:

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157. *Id.*
158. *Id.*
159. *See id.*
160. *Id.*
161. *See* Johnson, *supra* note 151, at 301 (citing empirical studies on the issue).
162. BOLDRIN & LEVINE, *supra* note 25, at 62-63.
163. *Id.*
164. *See* Edwin Mansfield, *Patents and Innovation: An Empirical Study*, 32 MGMT. SCI. 173, 175 (1986).
165. *See id.* at 174-75.
166. *See, e.g.*, Robert E. Thomas, *Debugging Software Patents: Increasing Innovation and Reducing Uncertainty in the Judicial Reform of Software Patent Law*, 25 SANTA CLARA COMPUTER & HIGH TECH. L.J. 191 (2008).
167. BOLDRIN & LEVINE, *supra* note 25, at 63.

> Despite the emphasis on patents in the economic literature and policy debate, secrecy and lead-time advantages seem to be much more important for firms . . . [T]he number of sectors where patents are necessary to generate and sustain firms' competitive advantage are few and concentrated in high-tech and science-based markets.[168]

In sum, while there is evidence of a need for external incentives in certain situations, those situations are quite clearly the exception, not the rule. Across the landscape of artistic endeavor and industrial R&D, it can be seen that innovation and creativity have the general propensity to flourish in the absence of external rewards. To put this in the language of economics: There is no general public goods problem in corporate innovation. The reason why is that the market already efficiently prices much of the cost of innovation into goods—without government interference in the market.

There is another, simpler set of questions that can be asked to shed light on the effectiveness and necessity of the intellectual property system: Are firms even aware of the intellectual property entitlements of which they can avail themselves? If firms are proceeding largely in ignorance of intellectual property entitlements, and if firms are innovating in spite of that, then it follows that IP entitlements must not be driving the innovation. A study commissioned by the U.K. government about the intellectual property system noted correctly that "awareness of the system is a pre-requisite for it to work."[169] That same study found that the firms "which form the cradle of IP," those that are medium-sized or smaller, "are in the main effectively unaware of the IP system."[170] Larger firms had better awareness of intellectual property rights than smaller firms but still a lot less than you might expect.[171] One question in the study asked whether the publishing of a disclosure of an invention before filing an application would prevent a valid U.K. patent from being issued.[172] This gets at an important piece of knowledge, because an invention's prior publication invalidates a patent application in the United Kingdom.[173] More than two-thirds of respondents for companies with over 250 employees either didn't know or guessed wrongly that pre-application publication doesn't surrender patent rights.[174] Astound-

168. Alan Hughes & Andrea Mina, *The Impact of the Patent System on SMEs*, CENTRE FOR BUSINESS RESEARCH 27 (2010), http://www.ipo.gov.uk/ipresearch-impact-201011.pdf.

169. ROBERT PITKETHLY, *UK Intellectual Property Awareness Survey 2006*, UK INTELLECTUAL PROPERTY OFFICE 11 (2006), http://www.ipo.gov.uk/ipsurvey.pdf.

170. *Id.* at 8.

171. *See id.* at 17.

172. *Id.*

173. Patents Act, 1977, c. 37, § 2, sch. 2 (U.K.), *available at* http://www.ipo.gov.uk/patentsact1977.pdf.

174. *See* PITKETHLY, *supra* note 169, at 17. A total of 34.0% didn't know, and 32.9% thought prepublication did not prejudice patentability. *Id.* Of course, it can be assumed that some of the 33.1% that answered correctly were guessing. *See id.*

ingly, the persons answering were generally persons in the firm who dealt specifically with intellectual property, or they were among the most senior persons in the entire company.[175] For smaller companies, the percentage in the dark was even higher, ranging between 79% and 89%.[176]

The U.K. report also carried other indications that firms did not worry too much about external incentives from intellectual property. A total of 98.4% of companies reported not offering any specific incentives to staff to obtain intellectual property rights, such as a patent.[177] Of the companies that did report owning intellectual property rights, 87.7% reported that they do not actively check for potential infringements.[178]

Even though the report's data strongly suggested that IP entitlements are generally unimportant to innovation, the report drew the strange conclusion that efforts should be undertaken to promote IP awareness, encouraging firms to make use of intellectual property entitlements. But why? If firms are innovating without knowing about IP, then apparently IP is not what's driving innovation.

Whether they incentivize innovation and creation or not, the availability of intellectual property entitlements can be counted upon to incentivize cunning firms to use such entitlements to extract money whenever possible. This bonus-taking behavior—looking to grab gratuitous profits from a monopoly advantage or other distortion of the free market—is what economists call "rent-seeking." While not illegal or unethical, rent-seeking is socially pernicious. By definition, it means income from something other than the kind of free competition that undergirds capitalism's virtue. Thus, it leads to economic inefficiencies and degrades society's general level of wealth.

The rent-seeking effect is important to consider in thinking about the applicability of the incentive theory for business. The existence of rent-seeking means that the empirical evidence alluded to above is too friendly by far to the case for intellectual property. For example, to the extent that some companies have incentivized their employees to obtain patents, such behavior may spring from opportunistic rent-seeking. And to the extent industries value patents and appropriate returns using patents, because of rent-seeking, it does not follow that those patents are necessary inducements to innovation. For instance, there is robust empirical data showing that many *patented* inventions would have been developed even in the absence of the patent system.[179] Indeed, research has shown that even where patents were

175. *Id.* at 47.
176. *Id.* at 17.
177. *Id.* at 26.
178. *Id.*
179. *See, e.g.*, Mansfield, *supra* note 164, at 180 (observing from gathered empirical data that the patent system had little effect on many industries).

generally ineffective in helping companies appropriate returns, they were nonetheless pursued.[180] Why? In his research, Mansfield found that half of patentable inventions were patented because the patents were useful as a way to delay potential competitors or because the patents were useful as bargaining chips in negotiations.[181]

The existence of rent-seeking effects thus means that we should take the data to be conservative in indicating a lack of incentive effect, and, therefore, quite robust in refuting the external-incentive theory in the firm context.

VIII. INTRINSIC MOTIVATIONS MULTIPLIED

I conceded above that firms are not motivated by intrinsic motivations as individuals are. There are, however, a couple of important caveats to this. While firms, per se, are not intrinsically motivated, there are nonetheless means by which individually experienced intrinsic motivations can lead firms to produce public goods: First, firm behavior is mediated through individuals and is affected by the intrinsic motivations of its workers and managers. Second, persons can be driven by intrinsic motivation to aggregate capital to be employed by firms for large-scale public-goods projects too expensive or time-consuming for an individual or a small group. In these two ways, intrinsic motivations get multiplied and expressed through the actions of firms.

We must begin with the observation that, despite being artificial creations of law, firms are nonetheless made up of individuals, and firms are capable of acting only through the actions of those individuals. Firm behavior will thus be affected by intrinsically motivated individuals to some extent. For one thing, managers are subject to intrinsic motivation and economic irrationality. But even if managers are able to operate relatively close to the economic ideal of seeking profit maximization, the firm will nonetheless feel the effects of intrinsically motivated employees. Specifically, intrinsically motivated employees will end up providing a kind of economic subsidy for innovative and creative corporate work. This will happen simply as a result of individuals being willing to accept lower wages and being self-motivated to be productive.

Such effects will, admittedly, only distort corporate action so much. The economically rational tendency of firms will often defeat the intrinsic proclivities of employees to produce public goods. But intrinsically motivated philanthropy can fill the gap, aggregating capital in the place of shareholders. There have long been philanthropic efforts aimed at public goods such as cures for diseases and

180. *See id.*
181. *Id.* at 176.

funding for the arts. But now, because of the internet, a whole new form of philanthropy is taking off: crowd-sourced funding. This new mode of aggregating capital for public goods has proven that it is possible for large-scale creative or innovative projects to obtain needed capital though decentralized generosity.

A. Intrinsic Motivations Inside the Firm

To consider how intrinsic motivations of individuals can mediate firm behavior, take robots. Few things epitomize leading-edge innovation as well as robots. Why do robots get built? You can start to answer the question by asking roboticists.

"Hands down, robots are just plain cool as hell. Ask any roboticist why they do it, and that's the answer you get," says Daniel Wilson, a researcher at Carnegie Mellon University.[182] "When you are deciding on what to do for your life, there's nothing like the sense of making something so tangible, so active."[183]

That attitude goes well beyond the university context. Colin Angle found himself in graduate school developing the "most sophisticated, cool, crazy-ass robot."[184] Yet he says doing so left him "with an empty feeling" upon graduation.[185] Angle then joined some schoolmates and formed iRobot Corporation.[186] He is now its CEO.[187] Among other products, the company makes military robots that dispose of roadside bombs.[188]

"Getting a robot back, blown up, is one of the more powerful experiences I've lived through," Angle says.[189] "Nothing could make it so clear that we have just saved lives. Somebody's son is still alive. Some parent didn't just get a call."[190]

Helen Greiner, another iRobot co-founder, explaining why she and her schoolmates founded iRobot, summed it up by saying, "We always knew we would change the world."[191]

The idea that all actions undertaken by a corporation are rationally calculated to inure to the benefit of shareholders is a theoretical ideal, useful for constructing some models, but it doesn't reflect reality.

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182. P.W. SINGER, WIRED FOR WAR 139 (2009) (internal quotation marks omitted).
183. *Id.* (internal quotation marks omitted).
184. *Id.*
185. *See id.*
186. *See id.*; s*ee Colin Angle, Bio*, IROBOT, http://www.irobot.com/filelibrary/pdfs/corp/about/Colin_Angle-2-12.pdf.
187. *Management Team*, IROBOT, http://www.irobot.com/en/us/Company/About/Management.aspx (last visited May 14, 2012).
188. *About iRobot*, IROBOT, http://www.irobot.com/us/Company/About.aspx?pageid=74 (last visited May 14, 2012).
189. SINGER, supra note 182, at 139 (internal quotation marks omitted).
190. *Id.* (internal quotation marks omitted).
191. *Id.* (internal quotation marks omitted).

A corporation employing intrinsically motivated people will, at some level, behave in accordance with those intrinsic motivations. That doesn't mean that corporate behavior can be said to be intrinsically motivated in the aggregate. But it does imply that there is a behavioral-economic subsidy for corporations undertaking endeavors that accord with human passions to invent, create, and contribute. The existence of the intrinsic-motivation subsidy means that intrinsic motivation can be expected to cheapen the cost of capital and labor for companies that are engaged in innovation and creative activity. It's the concept that is embodied in the phrase, "Don't tell my boss, but I can't believe they're paying me to do this. I'd do it for free."

This behavioral-economic subsidy does not by itself mean that capital-intensive innovation would be undertaken by corporations in the absence of external rewards, such as patents. But the existence of the subsidy does change the equation, so that corporations need to anticipate less of a monetary return from R&D than they would using simple classical-economic assumptions.

The intrinsic-motivation subsidy for business is probably most clearly visible on the expressive/artistic side. Careers such as journalism and book publishing—which just about anyone would agree are not roads to riches—are more than jobs: they are vocations for which people feel a calling. Nothing better exemplifies the intrinsic-motivation subsidy better than Hollywood. As someone who practiced entertainment-industry law in Los Angeles and who also did some stand-up comedy, I can personally attest to the effect. If the television networks and Hollywood studios had to pay wages to compete, on an equal basis, with jobs such as reviewing boxes of legal documents, all of Tinsel Town would grind to a halt.

As it is, the entertainment unions are probably the single largest factor in driving up the price of mainline film and television production. The Screen Actors Guild (SAG) well understands that most of its membership would be tempted to work for slave wages if offered the chance. That's why SAG is so vociferous about Global Rule One,[192] which prohibits all SAG members from accepting work from a producer that has not signed on to the Guild's minimum wage-and-benefit standards. The rule is "global" because it even follows SAG members overseas to low-budget production havens in New Zealand and Eastern Europe.[193] Global Rule One illustrates that the only way

192. *Global Rule One*, SCREEN ACTORS GUILD, http://www.sag.org/content/global-rule-one (last visited May 14, 2012).

193. *Id.* ("Rule One is one of the founding principles and strengths of our union: we stand together as actors and do not work without a Guild contract. Up until May 1, 2002, Rule One was enforced on productions shot in the United States. Now global rule one applies to members working outside the U.S. for foreign producers.").

actors can overcome the temptation to work for below scale is to enter into a group pledge to punish one another for doing so.

Movie star Kristin Stewart, most famous for her role in the *Twilight* saga, but whose other roles including playing the babysitter who fought alongside a giant robot in *Zathura*, articulated how a lot of actors feel when she confessed: "I would do it for free every day [even] if nobody saw it. I cannot describe how good it feels to actually have something that is truly into your heart and soul actually affecting people. And that's amazing."[194]

B. Crowdfunding of Public Goods

Thanks to the internet, a new form of financing has arisen. Dubbed "crowdfunding," it is a means to wrangle intrinsic motivation to a scale beyond the individual, thus allowing the production of large-size public goods.

Robots again provide an illustration. Uniquely apropos of the concept of "public good" is RoboCop—especially represented as a bronze statue on the streets of Detroit. As the half-man/half-machine police officer from Paul Verhoeven's film of the same name. RoboCop endeared himself to moviegoers in 1987 by cleaning up the crime-ridden streets of a dystopic future Detroit.[195] And RoboCop's iconism persists today. Suggesting it would one-up Philadelphia's statue of Rocky, a Twitter user tweeted Detroit mayor Dave Bing to suggest the Motor City ought to have a giant likeness of RoboCop gracing the urban environment.[196] What began as a cheeky Twitter exchange with city hall soon turned into an all-hands-on-deck real-world project using Kickstarter.com.

The Manhattan-based Kickstarter provides creative projects with the means to get funding from a widely dispersed community of donors who tend to give in small amounts. It can be described as "micropatronage."[197] For the RoboCop project, the stated goal was to build "a weatherized 7 foot tall iron statue . . . perhaps bronze and perhaps larger, depending on cost and other factors."[198] Individuals

194. *Kristen Stewart–Biography*, IMDB, http://www.imdb.com/name/nm0829576/bio (last visited May 14, 2012) (alteration in original).

195. *RoboCop*, IMDB, http://www.imdb.com/title/tt0093870/ (last visited May 14, 2012).

196. *See* Brian Braiker, *A RoboCop Statue for Detroit*, ABC NEWS, Feb. 17, 2011, http://abcnews.go.com/Entertainment/internet-robocop-statue-detroit/story?id=12943449.

197. *See* Jenna Wortham, *A Few Dollars at a Time, Patrons Support Artists on the Web*, N.Y. TIMES, Aug. 24, 2009, at B1 (internal quotation marks omitted), *available at* http://www.nytimes.com/2009/08/25/technology/start-ups/25kick.html.

198. Imagination Station Detroit, *Detroit Needs A Statue of Robocop!*, KICKSTARTER, http://www.kickstarter.com/projects/imaginationstation/detroit-needs-a-statue-of-robocop (last updated Mar. 26, 2011).

responded, and the money poured in. On March 26, 2011, the effort was successful, having brought in a total of $67,436 from 2,718 backers.[199]

The crowdfunding of the RoboCop statue is not unique by a long shot. Kickstarter has funded full-length motion pictures, each requiring hundreds of thousands of dollars.[200] Capital-intensive musical recordings have also been crowdfunded through Kickstarter: Tens of thousands of dollars have been raised to hire an internationally renowned orchestra to record symphonies by Beethoven, Brahms, Tchaikovsky, and Sibelius, with the recordings to then be released copyright-free into the public domain.[201] Nor are Kickstarter projects limited to expressive works. The biggest-money project so far was technological—an endeavor to develop watches from Apple's iPod nano music players. The effort was funded with close to $1 million.[202] The Kickstarter venture itself is funded by taking a cut of the money raised,[203] and it explicitly disclaims any ownership or intellectual property rights to the funded projects.[204]

Why would people fork over money, even in small amounts, to help crowdfund creative and innovative projects? It may be, in part, the acknowledgement rewards that donors of certain levels get.[205] But the phenomenon is not entirely explainable by reference to the self-interested model of human behavior of classical economics. The reason crowdfunding works is that human beings are a lot less like *Homo economicus* than we've been led to believe. Humans, happily, are more like RoboCop himself, whose first prime directive is: *Serve the public trust*.[206]

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199. *Id*.

200. Steve Taylor, *SAVE Blue Like Jazz! (The Movie)*, KICKSTARTER, http://www.kickstarter.com/projects/2128223578/save-blue-like-jazz-the-movie-0 (last updated Oct. 25, 2010) (noting $345,992 was raised from 4,495 backers); 2 Player Productions, *Minecraft: The Story of Mojang*, KICKSTARTER, http://www.kickstarter.com/projects/2pp/minecraft-the-story-of-mojang (last updated Mar. 26, 2011) (noting $210,297 was raised from 3,631 backers).

201. Aaron Dunn, *Musopen: Record and Release Free Music Without Copyrights*, KICKSTARTER, http://www.kickstarter.com/projects/Musopen/record-and-release-free-music-without-copyrights (last update Sept. 14, 2010) (noting $68,359 raised from 1,276 backers).

202. Scott Wilson, *TikTok+LunaTik Multi-Touch Watch Kits*, KICKSTARTER, http://www.kickstarter.com/projects/1104350651/tiktok-lunatik-multi-touch-watch-kits (last updated Dec. 16, 2010) (noting $941,718 was raised from 13,512 backers).

203. *Frequently Asked Questions (FAQ)*, KICKSTARTER, http://www.kickstarter.com/help/faq (last visited May 14, 2012).

204. *Id*.

205. *See, e.g.*, Ryan James Yezak, *Second Class Citizens Documentary: A Documentary Project in Los Angeles, CA*, KICKSTARTER, http://www.kickstarter.com/projects/ryanjamesyezak/second-class-citizens-documentary?ref=discover_pop (last updated Mar. 9, 2012) (providing an autographed movie poster for donations of $35 or more; a special edition DVD for donations of $50 or more; and a limited edition t-shirt, special edition DVD, and film poster for donations of $100 or more).

206. *RoboCop - Memorable Quotes*, IMDB, http://www.imdb.com/title/tt0093870/quotes (last visited May 14, 2012).

IX. PRESCRIPTIONS

If the basic assumption underlying our gargantuan structure of intellectual property law is in error, then what do we do with that?

To begin with, we need to make the initial observation that intellectual property has an economic downside. As a restriction of competition and artificial imposition of scarcity in the market, intellectual property has deleterious effects. There is an honest debate to be had as to how large those negative effects are and whether or not they are offset by advantages. It is, however, uncontroversial that, all else being equal, government imposition of monopoly entitlements incurs some level of harm. In fact, it is not only uncontroversial, it is fundamental. The problem that intellectual property is imagined to solve—the public goods problem—is one that springs from an acceptance of the classical economic model, a model that upholds the classical virtues of a free market, a free market that is partially undone by intellectual property. Since intellectual property exhibits an inherent tendency to injure, it becomes all-important to know if the problem it is imagined to solve doesn't exist.

Stated another way, to use a pharmaceutical analogy, if we suppose that intellectual property is potent medicine for the market, then that necessarily means it interrupts the market's normal metabolism. Up until now, the debate has always been whether the benefits outweigh the harmful side effects. Some have thought IP is bad medicine, while others have upheld it as a wonder drug. My thesis, by contrast, is that the disease we thought we were treating doesn't exist.

With that in mind, I offer a few prescriptions.

A. Avoiding a Fashionable Fallacy

At the outset, the clearest implication of the demonstrated unsoundness of the incentive theory is that legal scholars, judges, and lawmakers should tighten their discourse. We should no longer tolerate easy assertions that intellectual goods need external incentives. Indeed, the current legal literature on intellectual property is rife with reliance on the incentive theory. It undergirds IP discourse generally. Today, as scholars weigh in about the future direction of intellectual property law, this great fallacy causes them to draw erroneous conclusions and to champion ill-considered changes in the law.

One good example comes from the red-hot debate about whether intellectual property law should be extended to the world of fashion design. The law in the United States has long permitted free copying of clothing designs.[207] But many are currently urging that intellectual

207. Fashion designs are not susceptible to copyright protection. *See, e.g.*, Galiano v. Harrah's Operating Co., 416 F.3d 411 (5th Cir. 2005); Poe v. Missing Persons, 745 F.2d 1238 (9th Cir. 1984). *See also* 17 U.S.C. § 102 (2006) (enumerating permissible subject

property should step in to bolster the fashion industry's capacity to generate fresh couture.

A recent article by C. Scott Hemphill and Jeannie Suk argues for the creation of a new intellectual property entitlement for fashion designers that would allow lawsuits against those who make close copies of new designs.[208] Hemphill and Suk's argument is a nuanced one, taking careful measure of the culture of fashion and looking deeply into its industrial geography. At base, however, their argument is built upon IP policy's hoary mistake, and, as such, it is folly.

"With respect to close copies, there is no reason to reject the standard justification for intellectual property, that permissive copying reduces incentives to create," Hemphill and Suk write.[209] Relying on anecdotes and common-sense-style reasoning, the authors argue that unauthorized close copies of fashion designs reduce designers' earnings.[210] Then, proceeding from this premise, they posit: "The reduced profits can be expected to have a negative effect on the amount of innovation; this is a standard result of economic theory."[211]

Standard, but—it should now be seen—wrong. Hemphill and Suk's article is by no means unique in embarking on this error. I choose it as an example here because it is well argued in its particulars and because of its current policymaking relevance. There are, to be sure, a multitude of such ultimately faulty ventures in contemporary legal scholarship. More surface continuously. No matter how well-developed their logic, to the extent they rest on unsound footing in the form of the incentive theory, they need to be rethought.

B. Not Confusing the Exceptions with the Rule

There are undoubtedly exceptions. Valuable intellectual assets whose development almost certainly required the incentive of external rewards, such as those made possible by intellectual property rights, include virtually all large-budget major motion pictures, virtually all large-budget television series, and many or most new pharmaceutical compounds.

The exceptions to the general rule of spontaneous creative labor, however, do not disprove the rule. Why not? The exceptions arise out

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matter of copyright) and 17 U.S.C. § 101 (2006) (definitions of "pictorial, graphic, and sculptural works" and "useful article," which work to exclude clothing designs). In addition, the U.S. Supreme Court's holdings regarding trade dress make trademark protection for fashion designs generally untenable. *See* Wal-Mart Stores, Inc. v. Samara Bros., 529 U.S. 205 (2000).

208. C. Scott Hemphill & Jeannie Suk, *The Law, Culture, and Economics of Fashion*, 61 STAN. L. REV. 1147 (2009).

209. *Id.* at 1153.

210. *Id.* at 1175-76.

211. *Id.* at 1176.

of the costs of production and distribution of creative and innovative labors, not the creative labor per se.

The best case that can be made for the necessity of copyright incentives is probably major-motion pictures with budgets in the hundreds of millions of dollars. Such financing is way out of the range of current Kickstarter crowdfunding. Thus, I would readily agree that this kind of motion-picture production appears to require external incentives, such as copyright. Now, it cannot be said with conviction that a film's underlying creative labor necessarily requires extrinsic incentives. But the project, overall, does. A group of friends, motivated to do something cool, might make a short, low-budget film. But for a big Hollywood film, the friends model is unthinkable. The copyright reward is needed to get the studio to finance a production that coordinates all that labor. Moreover, for a big film, there is also the necessity of a lot of non-creative labor—driving trucks, sawing boards, and, in many cases, waiting hand-and-foot on insufferable celebrities. This kind of labor can't be reasonably thought to be intrinsically motivated. Yet none of this confirms a *general* case for the necessity of external incentives. At most, it appears to make the case for a specific need for external incentives for a large and important segment of motion-picture production.

We should be careful not to extrapolate too broadly from looking at particular modes of production. The book publishing industry, not long ago, could have been described in much the same way as I've described the film industry. In the 1970s and before, producing a book meant the coordination of the work of a lot of people, and it meant a lot of non-creative labor, such as typesetting, layout, and bookstore distribution. It also meant a substantial capital investment in committing to a print run of enough copies to have a chance to recover the costs of burning plates and setting up a multi-ton offset lithographic press. These days, however, using widely available software—even free, open-source software—authors can typeset a book and design a cover without professional help. Moreover, with on-demand printing and distribution through online bookstores, authors can reach roughly the same audience with books of roughly the same quality as could be achieved through traditional publishers.

The recorded music industry is similar. Albums can now be recorded in someone's home, using a personal computer, and they can achieve a quality that not so many years ago would have required a massive recording studio and the involvement of engineers and supporting musicians. High-quality microphones and musical instruments have become extremely cheap. Moreover, the capacity of software to simulate and manipulate instrument sounds has led to a current climate where studio musicians may be thought of as something of a luxury. Distribution in the music arena has been democratized

even more thoroughly than production. Artists can take a home-recorded album and make it available to a worldwide audience over the internet instantly. As recently as the mid-1990s, record companies had to spend massive amounts of money just to schmooze radio station disc jockeys and music directors to get a song played on broadcast radio so that people would be able to hear it.[212]

When assessing any continuing place for the incentive theory, we must bear in mind that technological capabilities, production costs, and distribution costs are wildly in flux, and the trend line is one of steep decline. Thus, even if there is currently a strong case for the need for monopoly entitlements for big-budget motion pictures, there is no reason to believe it will be persistent. While Disney's *Tron: Legacy* movie cost around $170 million to produce in 2010,[213] many years from now the same movie might be produced by a small group of friends for the levels of investment that one would sink into a hobby. It may seem impossible to imagine, but it is only impossible in the same way that the current state of music production would be impossible to imagine from the viewpoint of the 1960s.

Moreover, the concept of crowdfunding is in its infancy. Someday soon, crowdfunded projects may well run to millions of dollars. If crowdfunding becomes more powerful, which it may, and if production costs decrease, as they most certainly will, it is at least plausible that today's biggest Hollywood productions could be financed entirely without copyright.

In other spheres, there is already a long history of donor-funded creation of intellectual goods, such as advances in medicine. And, similar to the way costs have dropped for creative production, the costs of developing pharmaceutical compounds could drop to casual at-home levels as well. If that seems impossible to imagine, consider Stanford University's Folding@home project.[214] Affiliated with the Stanford University School of Medicine, Folding@home uses distributed computing to run billions and billions of simulations of protein folding, a process that is implicated in diseases such as Alzheimer's, Parkinson's, bovine spongiform encephalitis ("mad cow"), and many cancers.[215] Volunteers for Folding@home download a piece of software onto their home computers in order to donate spare computing capacity to the effort. During the computer's downtime—such as when a screensaver is running—the computer crunches numbers for enor-

212. I would know: I was an on-air radio personality and worked in music radio in the early and mid-1990s.

213. *Tron Legacy: Details*, IMDB, http://www.imdb.com/title/tt1104001/ (last visited May 14, 2012).

214. *Folding@home - Home*, STANFORD.EDU, http://folding.stanford.edu/English/HomePage (last visited May 14, 2012).

215. *Id.*

mously complex mathematical models.[216] By banding together thousands of computers across the internet, the project manages to create one of the world's largest supercomputers.[217] The project has already developed multiple leads for new drug development.[218] Thus, in a sense, pharmaceutical development is already beginning to happen at home.

So, although there are cases where valuable sorts of creative and innovative endeavors appear to require external rewards to proceed, those cases are neither necessarily permanent nor indicative of a general principle. Thus, even where IP entitlements seem justifiable now, we should not assume that they will stay that way.

C. Sunsetting Intellectual Property Entitlements

I certainly would not argue, on the basis of what I have presented here, that IP laws are economically unjustifiable. Furthermore, even if IP laws were unjustifiable on the basis of the economic incentive argument, we might as a society find certain restrictions on copying desirable for non-economic reasons, such as giving artists a right to restrict reproductions and modifications of their art in order to protect their sense of artistic integrity. Thus, it does not follow from my argument that intellectual property is unjustifiable.

That being said, there is a difference between "unjustifiable" and "unjustified." Much of intellectual property law may ultimately be *justifiable*; that is, it may ultimately turn out, after data is gathered and carefully weighed, that a persuasive case can be made to justify wide swaths of entitlement-granting IP law. But, by the same token, most of intellectual property law is currently *unjustified*; that is, no such persuasive case has been presently put forth.

The legal doctrines of patent and copyright law—in the manifold kinds of works to which they are applied and the many forms of industry in which they inhere—exist almost wholly without a careful case having been laid for their existence. In light of that, I can offer the overall prescription that intellectual property law, in general, should be sunsetted.[219] That is, it should be set on a path of being phased out entirely. Then, going forward, only very targeted, industry-sector-specific, application-specific rights should be developed and only then upon a showing of compelling evidence for why they are needed. When such cases are persuasively made, we should consider

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216. *See Folding@home - Frequently Asked Questions*, STANFORD.EDU, http://www.stanford.edu/group/pandegroup/folding/FoldingFAQ.pdf.

217. *Folding@home - Home*, *supra* note 214.

218. *See Folding@home - Papers*, STANFORD.EDU, http://folding.stanford.edu/English/Papers (last visited May 14, 2012).

219. Again, let me emphasize the limited way in which I use the term "intellectual property" here. *See supra* Part I.

having the government interfere in the free market in some way, which might mean creating a tightly tailored, time-limited regime of monopoly entitlement. When I say "time-limited," I am not referring to the term of the entitlement; rather, I am referring the regime itself. In other words, the law itself should have a sunset provision. Art and technology change; thus, so should our means of encouraging them.

There is precedent for tightly tailored IP entitlements. One excellent example is the Semiconductor Chip Protection Act of 1984, which protects semiconductor mask works for a term of 10 years.[220] Another example is the Vessel Hull Design Protection Act of 1998, which protects boat hull designs for a term of 10 years.[221] Both of these forms of *sui generis* entitlements were created after it became clear that the current configuration of copyright and patent laws, as interpreted by the courts, prevented assertions of IP rights for the subject matter within their scope.[222] Both with boat hulls and chip masks, industry made its case, and Congress listened. After considering the arguments, Congress responded with narrow forms of protection having a much shorter term of duration than is the case in either of our catch-all systems of copyright and patent.[223]

There is precedent as well for sunsetting. It comes not from IP law, but from legislation intended to stimulate the economy, such as time-limited tax cuts, tax hikes, and tax credits. In fact, when IP law is properly thought of as a form of legislated economic stimulus, then the idea of providing a sunset clause seems natural. Sunset clauses in tax legislation often result from political wrangling and compromise, but their principled implementation goes along with the idea that macroeconomic circumstances change. Thus, what is appropriate for the economy now may not be appropriate in a few years. We ought to treat intellectual property law the same way. Recall how the changed circumstances in the record and book industries have largely obviated the need for capital-intensive models of production and distribution, therefore undercutting any case for the need for external incentives such as monopoly grants to overcome public-goods problems with copyability.[224]

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220. Semiconductor Chip Protection Act of 1984, 17 U.S.C. §§ 901–914 (2006).

221. Vessel Hull Design Protection, 17 U.S.C. §§ 1301–1308 (2006).

222. *See, e.g.*, Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141 (1989) (holding that Florida state law that provided a monopoly privilege on vessel hulls was preempted by federal intellectual property law).

223. *See supra* note 1 and accompanying text.

224. Of course, the recording industry famously has argued for changes in IP law based on changes in technology. But those changes were premised on the idea of increased easy of copying, not decreased costs of production and distribution. The two prime examples are the Audio Home Recording Act of 1992, 17 U.S.C. §§ 1001–1010 (2006), and the Digital Millennium Copyright Act of 1998 (DCMA), Pub. L. 105-304, 112 Stat. 2860 (1998). Neither had a sunset provision, though the DMCA does include something in that vein with time-

Sunsetting all of intellectual property law would not be easily accomplished. It is a system of entrenched doctrines and expectations, girded by special interests. What's more, that entrenchment is a global problem, one made all the more severe by the trend of harmonization of IP rights as a part of world trade negotiations. As a consequence of being swept up in world trade talks, treaty-hardened minima now govern the scope and duration of IP entitlements. For example, the world trade framework, largely because of the negotiating efforts of the United States, now requires countries to provide patents with a minimum term of 20 years.[225]

While sunsetting all IP law is not a modest proposal, it should be kept in mind that ill-considered interferences with the free market are not a modest problem. Mischievous laws exact their own price. Pushing the market away from what it would do if left alone forecloses opportunities. The lost gains that come with foreclosed opportunities—what economists call "opportunity costs"—are likely huge in the arena of intellectual property. The world's economic production is increasingly oriented toward the creation of intellectual goods, and it is a very large part of the American economy already. According to a 2006 report by the International Intellectual Property Alliance, the estimated value added by core copyright industries in 2005 was $819 billion, with the estimated value added by total copyright industries—a more inclusive categorization than core copyright industries—being $1.388 trillion.[226] That's equivalent to about 11% of U.S. GDP.[227] Just imagine what it means if copyright law is miscalibrated and built on faulty assumptions. The opportunity costs incurred from a needlessly perverted market may quite reasonably be some multiple of current copyright-system receipts. That is, the losses could quite plausibly be in the trillions of dollars per year, adding up to a substantial fraction of U.S. GDP. That would only go to the invisible shadow cast by the copyright system. The patent system's effects could plausibly be similar or even substantially larger.

If we get innovation law wrong—and I think we have in a big way—then we are squandering enormous wealth. As the world increasingly becomes industrialized and computerized, and as human labor inputs are increasingly mental as opposed to physical, this effect will only grow. It may seem like pie-in-the-sky thinking to sug-

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limited exemptions created by a rulemaking authority provided to the Library of Congress. DCMA § 103 (codified at 17 U.S.C. § 1201 (2006)).

225. Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, art. 27 & 33, Apr. 15, 1994, *available at* http://www.wto.org/english/docs_e/legal_e/27-trips.pdf.

226. STEPHEN E. SIWEK, COPYRIGHT INDUSTRIES IN THE U.S. ECONOMY: THE 2006 REPORT 2 (2006), *available at* http://www.iipa.com/pdf/2006_siwek_full.pdf.

227. *GDP (Current US$)*, THE WORLD BANK, http://data.worldbank.org/indicator/NY.GDP.MKTP.CD (indicating that the 2005 U.S. GDP was $12.579 trillion).

gest phasing out all IP law and starting over from scratch, but if the potential economic gain is large enough, then it's worth pursuing. And, eventually, the prospect may become politically feasible.

Consider the global movement toward free trade. When you think about the politics involved, it is amazing that free-trade policies have succeeded as much as they have. While popular with academics in business schools and economics departments, free trade is a political nightmare. Economist Pietra Rivoli notes, "There is perhaps no other issue . . . in which the professional opinion of economists differs so markedly from the opinion of the American public."[228] Not only are voters in general turned off by free trade, but global trade liberalization has an incredible array of special interests lined up against it.[229] Yet trade liberalization has progressed nonetheless. Why? The reason it has, I believe, is because the economic argument in its favor is so persuasive. Economic historian Douglas Irwin wrote:

> The case for free trade has endured . . . because the fundamental proposition that substantial benefits arise from the free exchange of goods between countries has not been overshadowed by the limited scope of various qualifications and exceptions. Free trade thus remains as sound as any proposition in economic theory which purports to have implications for economic policy is ever likely to be.[230]

I think a fundamental change in the flow of IP law can also succeed if it is a good enough idea. It is just too important, and the case for it is, I believe, too overwhelming to ignore.

X. CONCLUSION

The economic centerpiece in the conventional wisdom justifying intellectual property law is a longstanding blunder. There is no broad necessity for incentives for intellectual labor. As a general matter, innovative and creative activity will thrive without artificial support.

The social science itself, including Amabile's principle and the Sawyer Effect, casts tremendous doubt on the continuing validity of the incentive theory.[231] But what really seals the deal is to consider the social science alongside current history. What is happening right now on the internet fits stunningly well with ideas about intrinsic motivation—blogs, Twitter, YouTube, Flickr, Facebook, Wikipedia, and the like. Whatever you call this revolution, one thing is certain: Viewed from a classical perspective, it's all surreal nonsense. It simp-

228. PIETRA RIVOLI, THE TRAVELS OF A T-SHIRT IN THE GLOBAL ECONOMY 182 (2d ed. 2009).

229. *See id.* at 182-83.

230. DOUGLAS A. IRWIN, AGAINST THE TIDE: AN INTELLECTUAL HISTORY OF FREE TRADE 8 (1996); RIVOLI, *supra* note 228, at 182 (quoting the same).

231. *See supra* Part IV.B.

ly *can't* be happening. But it is. The fair conclusion to draw is that the incentive theory has been falsified, and thus it should no longer be viewed as providing general wisdom for policymaking. That conclusion is supported on all sides by unrelated streams of breakthrough scholarship regarding human nature and real-world markets. It ought not to be ignored.

While cherished beliefs about incentives and intellectual output can now be revealed as myth, it does not follow that external incentives are never necessary. There would seem to be ample support for the proposition that, in many specific cases, innovation would stymie without external rewards. But it is critical to understand that those situations are the exceptions. Naturally flourishing intellectual production is the norm.

My bottom line is that the general case for intellectual property rights, in so far as it is based on the idea that external incentives are needed to encourage art and invention, should no longer be accorded credibility in policy debates about intellectual property law. Thus, I am urging a paradigm shift.

The stakes are large. More and more of the worldwide economy is moving to intellectual production. How that production is regulated, and whether it is encouraged or discouraged by intellectual property law, will have a vast effect on overall levels of wealth and standards of living. Our collective misapprehension over the economics of innovation and creativity has no doubt already done incalculable mischief. Going forward, it becomes progressively important to get the policy right, even if that means scrapping it and starting over.