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The Incentives/Access Tradeoff

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By David W. Barnes*

I. INTRODUCTION

¶1 Courts, Congress, and commentators acknowledge that intellectual property law is a balance between providing incentives through exclusive rights and encouraging use of information through free access to creative works.¹ They all also recognize that performing this balance is extremely difficult.² When balancing is difficult, debates often turn from careful weighing of competing considerations to ideological arguments.

¶2 There is a conflict between the competing goals of ensuring access to intellectual property at a price equal to marginal cost and providing incentives for the production of information. Finding the balance between access and incentives arising from the free access and exclusive rights norms is characterized as the static/dynamic dilemma or the short-run/long-run dilemma.³ Free access is desirable, because once the creative work

* David W. Barnes is a Distinguished Research Professor of Law at Seton Hall University School of Law.

¹ See *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975) (“Creative work is to be encouraged and rewarded, but private motivation must ultimately serve the cause of promoting broad public availability of literature, music, and the other arts.”). In *Sony Corp.*, the Supreme Court held:

The monopoly privileges that Congress may authorize are neither unlimited nor primarily designed to provide a special private benefit. Rather, the limited grant is a means by which an important public purpose may be achieved. It is intended to motivate the creative activity of authors and inventors by the provision of a special reward, and to allow the public access to the products of their genius after the limited period of exclusive control has expired.

Sony Corp. of Am. v. Universal City Studios, 464 U.S. 417, 429 (1984). The Court further explained:

Congress must consider . . . two questions: First, how much will the legislation stimulate the producer and so benefit the public, and, second, how much will the monopoly granted be detrimental to the public? The granting of such exclusive rights, under the proper terms and conditions, confers a benefit upon the public that outweighs the evils of the temporary monopoly.

Id. at 429 n.10 (quoting H.R. REP. NO. 60-2222, at 7 (1909)). See also Brett Frischmann, *Spillovers Theory and Its Conceptual Boundaries*, 51 WM. & MARY L. REV. 801, 813 n.49 (2009) (“Of course, the need to balance incentives and access is nothing new and has been a long-standing feature of intellectual property scholarship in general and the economic analysis of intellectual property in particular.”).

² *Sony Corp.*, 464 U.S. at 429. Professor Lemley explains:

Economic theory does not, however, give us a very clear answer to the question “how much control is optimal?” The evidence is so ambiguous that Fritz Machlup once famously told Congress that he could not in good conscience recommend either that a patent system be created if one did not exist or that it be eliminated if it already did exist.

Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEX. L. REV. 1031, 1065 (2005) [hereinafter Lemley, *Free Riding*]. See also Katie Sykes, *Towards a Public Justification of Copyright*, 61 U. TORONTO FAC. L. REV. 1, 5 (2003) (“No one can agree on, much less explain, what the correct balance should be between incentives to produce and public access to what is produced . . .”); Richard A. Posner, *Misappropriation: A Dirge*, 40 HOUS. L. REV. 621, 638 (2003) (“Unfortunately it is very difficult to make this trade-off [between access and incentives] . . .”).

³ Compare Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89

has been produced (from a “static” perspective), it costs nothing in the short-run for another person to benefit from it. Someone in society can benefit at no cost to society. In the long-run (from a “dynamic” perspective), however, producers must charge a price sufficient to cover their costs, including a normal economic profit. For pure public goods, it is impossible to satisfy both goals simultaneously using market forces.

¶3 Addressing this dilemma between free access and positive incentives is the subject not just of scholarly research but also judicial opinions. Courts justify intellectual property law on the ground that incentives are necessary to lead to the production of public goods, but the aim is to stimulate creativity to benefit the public.⁴ The Supreme Court described the Patent Clause in Article I, section 8, clause 8 of the United States Constitution as “reflect[ing] a balance between the need to encourage innovation and the avoidance of monopolies which stifle competition without any concomitant advance in the ‘Progress of Science and useful Arts.’”⁵ The intellectual property statutes reflect Congress’s attempts to address “the difficult balance between the interests of authors and inventors in the control and exploitation of the writings and discoveries on the one hand, and society’s competing interest in the free flow of ideas, information, and commerce on the other hand”⁶ This is essentially the insight from public goods theory as well.⁷

¶4 Implementing this goal is notoriously difficult.⁸ Too little incentive and too much access means that society would benefit from diverting resources away from other endeavors to encourage more creative work. Too much incentive and too little access means that society would benefit from reducing exclusive rights and investing more resources in other projects.⁹ The problem is how to balance access and incentives. One prominent scholar went so far as to say that economists could tell lawyers virtually nothing about the appropriate scope of intellectual property rights.¹⁰

¶5 Intellectual property debates in Congress and the scholarly literature reflect opposing normative perspectives. Under the slogan “Information Wants to Be Free,”¹¹

MINN. L. REV. 917, 947 (2005) [hereinafter Frischmann, *Infrastructure*] (using the “static/dynamic” terminology), with Alan Devlin, Michael Jacobs & Bruno Peixoto, *Success, Dominance, and Interoperability*, 84 IND. L.J. 1157, 1197 (2009) (using the “short run/long run” terminology).

⁴ See *Sony Corp.*, 464 U.S. at 429; *Twentieth Century*, 422 U.S. at 156.

⁵ *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989).

⁶ *Sony Corp.*, 464 U.S. at 429.

⁷ Professors Conley and Yoo explain in the context of copyright:

The overwhelming majority of scholarly commentaries on the economics of copyright base their claims on the basic insights of public goods theory: that markets systematically produce too few public goods and underutilize those that are produced. Moreover, modeling nonrivalry as zero marginal cost leads the literature to frame copyright as an inherent tradeoff between optimal incentives to create works and optimal access to works that are created, with any feasible solution presumed to be necessarily [sic] second-best in both aspects.

John P. Conley & Christopher S. Yoo, *Nonrivalry and Price Discrimination in Copyright Economics*, 157 U. PA. L. REV. 1801, 1828–29 (2009).

⁸ See *supra* note 2.

⁹ See Lemley, *Free Riding*, *supra* note 2, at 1058–59 (identifying the costs of granting overbroad property rights as including deadweight losses from too little access by consumers, harm to incentives for other artists to create, rent seeking behavior, and administrative costs).

¹⁰ *Id.* at 1065, n.137 (referring to George L. Priest, *What Economists Can Tell Lawyers About Intellectual Property: Comment on Cheung*, 8 RES. L. & ECON. 19, 21 (1986)).

¹¹ See R. Polk Wagner, *Information Wants to be Free: Intellectual Property and the Mythologies of Control*, 103 COLUM. L. REV. 995, 998–99 & n.14 (2003) (arguing that exclusive rights may increase the amount of information that is free to all and exploring the origins of the slogan). Professor Wagner

proponents of limited rights emphasize the moral correctness of and social benefits obtained by allowing widespread use of intellectual creations.¹² “Nothing is more fundamental than the right to use ideas and the free access promotes further creation.” Alternatively, under the free market banner, proponents of strong exclusive rights argue that bargaining for the opportunity to exploit intellectual creations efficiently allocates resources to the production of intellectual property.¹³ Strong exclusive rights promote the efficient allocation of resources by providing creators an opportunity to profit from satisfying those who are willing and able to pay for access and excluding others.

¶16 Among the theoretical justifications for the incentives/access tradeoff in intellectual property law, public goods theory dominates. The economics of intellectual property law is based on public goods theory. Scholars frequently conclude that copyrighted expressions and patented inventions have the non-rivalrousness and non-excludability characteristics of public goods,¹⁴ and recent scholarship suggests that trademarked symbols also have these characteristics.¹⁵ “Non-rivalrous” means that it is costless to

describes the views of adherents of this perspective as follows:

[C]ontrol-critics emphasize the existence of the “public domain” or “open” information (information that is not subject to proprietary rights, offering anyone access, anytime, for low or no cost) as a critical source of the informational inputs necessary for creative and technological progress. Much of the intellectual property laws' restrictions on the rights of owners—temporal limits, allowances for “fair use,” forced disclosures—can be explained, they note, as attempts to build the public domain. Perceived recent trends of eliminating or reducing some of these restrictions, easing enforcement of rights, or the extension of intellectual property into new subject matter, fundamentally conflict, the argument goes, with the construction of the public domain. And as goes the public domain, so do our hopes for a richer, fuller, and more interesting tomorrow.

Id. at 998 (citations omitted).

¹² In *Graham*, the Supreme Court explained:

That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density at any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation.

Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 8 n.2 (1966) (quoting and citing THOMAS JEFFERSON, VI WRITINGS OF THOMAS JEFFERSON 180–81 (Washington ed.)).

¹³ See the discussion of markets for public goods *infra* Part III.C.

¹⁴ James Boyle, *The Second Enclosure Movement and the Construction of the Public Domain*, 66 LAW & CONTEMP. PROBS. 33, 41–42 (2003) (arguing that the distinguishing features of information as property are non-rivalrousness and non-excludability); Richard A. Epstein, *The Disintegration of Intellectual Property? A Classical Liberal Response to a Premature Obituary*, 62 STAN. L. REV. 455, 458 (2010) (characterizing modern intellectual property scholars as rejecting traditional law associated with physical property because information is non-rivalrous and non-excludable).

¹⁵ There has been some scholarly disagreement on whether trademarks are public goods. Compare Stephen L. Carter, *The Trouble with Trademark*, 99 YALE L.J. 759, 762 (1990) (“A trademark is not a public good . . .”), and Mark A. Lemley, *Ex Ante Versus Ex Post Justifications for Intellectual Property*, 71 U. CHI. L. REV. 129, 143 (2004) (stating with respect to trademarks that “there is no public goods problem for intellectual property to solve”), and William M. Landes & Richard A. Posner, *Trademark Law: An Economic Perspective*, 30 J.L. & ECON. 265, 268–70, 274 (1987) (“A proper trademark is not a public good; it has social value only when used to designate a single brand.”), with David W. Barnes, *A New Economics of Trademark*, 5 NW. J. TECH. & INTELL. PROP. 22 (2006) [hereinafter Barnes, *New Economics*] (arguing that the non-rivalrousness and non-excludability characteristics of copyrighted expressions and patented inventions apply to trademarked symbols as well). Among other recent scholarly works attributing public goods characteristics to trademarks are Margaret Ritzert, Comment, *Champagne Is From Champagne: An Economic Justification for Extending Trademark-Level Protection to Wine-Related Geographical Indicators*, 37 AIPLA Q.J. 191, 214 (2009); Ian J. Block, Comment, *Hidden Whois and*

allow additional consumers simultaneously to enjoy the benefits of a public good once it has been produced, and “non-excludability” means that producers have a hard time getting consumers to pay for the privilege.¹⁶

¶17 While it is desirable for many people to have access to the benefits of public goods for free, competitive markets will not supply these goods without the incentives created by positive prices.¹⁷ According to public goods theory, competitive markets do not supply efficient amounts of public goods.¹⁸ For intellectual property, the implication of public goods theory is that competitive markets will provide insufficient incentives for creative activity. The lack of incentives deprives the public of the benefits of knowledge and information.

¶18 Public goods theory originated as part of public finance economics, which is a branch of economics concerned with organizing and paying for government activities. In that field, public goods theory identified circumstances in which competitive markets failed to supply goods efficiently and described how governments could address those failures by collectively supplying or subsidizing the supply of goods, such as roads, and services, such as police and fire protection. Intellectual property scholars typically refer to the public finance literature when describing the tradeoff between the incentives resulting from exclusive rights for creators and the benefits of free access to the public.¹⁹ Intellectual property scholars also adopt the normative goal of allocative efficiency identified in the public finance literature when discussing the optimal production of intellectual property.²⁰

¶19 Applying the traditional prescriptions of public goods theory is difficult, however, because public finance theory was focused on collective rather than private provision of goods and services. Public goods theory focused on how much the collectivity should supply—how much should be invested in creative activity—rather than on how to design markets to supply the goods privately. Public finance theory assumed that the costs of production would be paid out of taxes or fees assessed by the collectivity (usually the state) and that the demand for public goods would be revealed by voting and the political process. Western democracies, however, generally rely on markets to determine the demand and supply of public goods, despite the inevitable inefficiencies. Intellectual property law attempts to define the scope, strength, and duration of rights in order to enable the market to do the best it can in allocating resources to the production and use of intellectual property information.

Infringing Domain Names: Making the Case for Registrar Liability, 2008 U. CHI. LEGAL F. 431, 434 (2008); William M. Landes, *Posner on Beanie Babies*, 74 U. CHI. L. REV. 1761, 1772 (2007).

¹⁶ Public goods are not classified as “public” simply because they are supplied by the government. Rather, some goods are classified as “public” because their characteristics of non-rivalrousness in consumption and non-excludability in production inevitably prevent efficient private market supply.

¹⁷ See WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* 13 (2003) (“[A] firm is less likely to expend resources on developing a new product if competing firms that have not borne the expense of development can duplicate the product and produce it at the same marginal cost as the innovator.”).

¹⁸ Barnes, *New Economics*, *supra* note 15, at 39–40; Mark Cooper, *From Wifi to Wikis and Open Source: The Political Economy of Collaborative Production in the Digital Information Age*, 5 J. TELECOMM. & HIGH TECH L. 125, 128–29 (2006); Ritzert, *supra* note 15, at 214–15.

¹⁹ See, e.g., Christopher S. Yoo, *Copyright and Public Good Economics: A Misunderstood Relation*, 155 U. PA. L. REV. 635, 638–43 (2007).

²⁰ See, e.g., generally, *id.*; sources cited *supra* note 15.

¶10 Both the economic theory of competitive markets and the economic theory of public goods ultimately fail when applied to intellectual property. The theory of exchange of private goods is the economic approach to understanding how markets allocate resources by facilitating the transfer of goods and resources from those who value them less to those who value them more. It fails to produce an optimal level of access to intellectual property information, because it does not take into account the non-rivalrous nature of information. Because many consumers simultaneously and without interference benefit from the provision of public goods, it is efficient to permit more access than easily enforceable, strong exclusive rights would allow. The problem of free access never arose in pure public goods theory, because supplying another consumer was assumed to be costless. Public goods theory fails, because public finance economics did not take into account the non-excludable nature of information. Public finance economists assumed that the government would determine the demand for public goods through voting and the political process and encourage the provision of public goods by paying producers from tax revenues.²¹ The problem of incentives never arose.

¶11 From the theory of exchange and the theory of public goods come three bootless principles. They are bootless not because they are incorrect in context but because they are fruitlessly cited as principles for resolving the balance between access and incentives in intellectual property law. These bootless principles are:

BP #1: From exchange theory:

Resources are allocated efficiently when price equals marginal cost.

BP #2: From public goods theory:

Increasing amounts of public goods should be produced until the marginal rate of transformation equals the sum of individuals' marginal rates of substitution.

BP #3: From exchange theory:

If public goods were excludable, private markets could efficiently allocate resources to their production.

These are the sacred cows of intellectual property theory—the foundations for the economic analysis of IP rights, in descending order of prominence in the scholarly literature. This article demonstrates the limits to their utility as balancing rules and suggests an alternative analytical approach that draws from both theories.

²¹ Public finance economists were concerned with how to structure taxation to pay for the production of public goods in the least distortionate way. See Erik Lindahl, *Just Taxation—A Positive Solution*, in CLASSICS IN THE THEORY OF PUBLIC FINANCE 168 (Elizabeth Henderson trans., Richard A. Musgrave & Alan T. Peacock eds., 1958) [hereinafter Lindahl] (describing a financing structure in which different consumers are charged different prices—and thus bear a different proportion of the fixed costs—based on their marginal valuations of the total quantity); F.P. Ramsey, *A Contribution to the Theory of Taxation*, 37 ECON. J. 47, 58–59 (1927) (describing a pricing structure in which fixed costs are allocated among buyers based on the elasticity of their demand, with those buyers with the least elastic demand bearing the heaviest burden).

- ¶12 This article derives the competing free access norm and exclusive rights norm from pure public goods theory and offers a general rule for mediating between them. It considers competing scholarly standards for defining the optimal scope, strength, and duration of intellectual property rights,²² while explaining why a variant on the “cost-benefit” approach is superior to the alternative “average-cost” approach.
- ¶13 Part II of this article considers the characterization of the informational content of trademarks, copyrighted expression, and patented inventions as public goods. Public goods are different from private goods in the way they are consumed and the way arrangements for their provision need to be structured. In the basic economic exchange theory of private goods, competitive markets more or less automatically provide optimal quantities and reward suppliers for their efforts. In basic public goods theory, competitive markets fail to provide optimal quantities of public goods or provide sufficient reward for suppliers of public goods. If the government is going to manage the provision of public goods where the competitive market fails, it must figure out what to produce and how much. If markets are to be used to provide public goods, the law must be structured to overcome the market failures.
- ¶14 The ways in which public and private goods differ in their consumption and production affects the structure of intellectual property rights. Part II also presents the fundamental characteristics of public goods (non-rivalrousness and non-excludability), discusses the public finance origins of public goods theory in government provision of public goods, and describes how opting for market provision of intellectual property information necessitates careful delineation of rights. This section rejects suggestions of some scholars that non-excludability should not be considered a characteristic of a public good on the grounds that intellectual property law focuses on providing creators with financial incentives to produce information.
- ¶15 The ability of creators to exclude users who do not pay is critical to the structure of intellectual property rights. The scope of those rights affects people’s incentives to create and people’s ability to enjoy the benefits of other’s creativity, reflected in the exclusive rights norm and free access norm, respectively. The correct structure of rights provides the optimal amount of incentives and results in the optimal output of creative work. It also provides optimal access to creative work. The job of intellectual property scholars is to find that correct structure of rights.
- ¶16 Part III describes the policy dilemma inherent in balancing exclusive rights and free access and develops a prescriptive rule for addressing issues involving the scope, strength, and duration of intellectual property rights. It is well-recognized that intellectual property policy must consider the balance between incentives and access. None of the three basic principles of the theory of exchange and the theory of public goods provide a rule for balancing these competing interests, because they insufficiently consider the non-rivalrous nature of intellectual property, the difficulty of determining how much people benefit from the creation of intellectual property, or the non-exclusive nature of intellectual property.

²² Compare Lemley, *Free Riding*, *supra* note 2, at 1057 (arguing for intellectual property rights sufficient to ensure that creators can cover their average costs), with John F. Duffy, *Intellectual Property Isolationism and the Average Cost Thesis*, 83 TEX. L. REV. 1077 (2005) [hereinafter Duffy, *Isolationism*] (objecting to Lemley’s approach generally, and suggesting that intellectual property be treated more like physical property).

¶17 Part IV offers a general rule that recommends considering the net benefits from extending or contracting rights derived from cost-benefit approaches articulated by other scholars. In application, this requires comparing the incremental benefits from information creation resulting from increased rights and from increased access. Analysis underlying the rejection of the three basic principles in Part III informs the net benefit analysis.

¶18 The net benefit approach is similar to judicial approaches in some areas, such as the doctrine of equivalents in patent law, and is contrary to judicial approaches taken in other current analyses. Part IV illustrates how the net benefits approach leads to a different analysis in two areas: fair use in copyright, which focuses on the effect on the copyright owner's economic opportunities rather than the incremental effect on incentives; and Internet initial interest trademark confusion, which often focuses on whether the mark owner's property was "used" rather than the incentives/access tradeoff and rarely on the incentive/access tradeoff.

II. TRADEMARKS, COPYRIGHTS, AND PATENTS AS PURE PUBLIC GOODS

¶19 Public goods theory is the dominant economic theoretical foundation for intellectual property law. For decades, scholars have routinely referenced public goods theory in their discussion of patent and copyright law.²³ Recent scholarship has argued that trademarks, like inventions and expressions, have characteristics of public goods.²⁴ From these characteristics flow the policy prescriptions that form the basis of intellectual property's economic theory.

¶20 Pure public goods are non-rivalrous in consumption and non-excludable in production.²⁵ A classic definition of "non-rivalrous" appears in the leading exposition of

²³ The intellectual property literature is so rife with reference to public goods that it is difficult to collect them all, but for recent examples, see Alan Devlin, *Indeterminism and the Property-Patent Equation*, 28 YALE L. & POL'Y REV. 61, 96 (2009); Alan Devlin & Neel Sukhatme, *Self-Realizing Inventions and the Utilitarian Foundations of Patent Law*, 51 WM. & MARY L. REV. 897, 952 (2009); Glynn S. Lunney, Jr., *Copyright, Private Copying, and Discrete Public Goods*, 12 TUL. J. TECH. & INTELL. PROP. 1 (2009); Conley & Yoo, *supra* note 7; Ariel Simon, *Reinventing Discovery: Patent Law's Characterizations of and Interventions upon Science*, 157 U. PA. L. REV. 2175, 2182 (2009). See also sources collected at David W. Barnes, *One Trademark Per Source*, 18 TEX. INTELL. PROP. L.J. 1, 12 n.55 (2009); Barnes, *New Economics*, *supra* note 15, at 23 n.2 (2006).

²⁴ See sources cited *supra* note 15.

²⁵ Professor Crimm explains:

As a starting point, public or collective goods and services can be divided into two categories: pure public goods and services and impure, or mixed, public goods and services. Both categories are characterized by features of availability to an indefinite class of beneficiaries, and of the inability to force the public to directly pay a sufficient price to induce the production in the private marketplace. Pure public goods and services are characterized by non-rivalry—that is, "one person's consumption of the good does not interfere with its availability to others"—and by non-excludability—that is, no person can be excluded from consumption of the good or service even if unwilling to pay for it (a "free-rider").

Nina J. Crimm, *An Explanation of the Federal Income Tax Exemption for Charitable Organizations: A Theory of Risk Compensation*, 50 FLA. L. REV. 419, 440 (1998) (Internal citations omitted). See also Shyamkrishna Balganesh, *Demystifying the Right to Exclude: Of Property, Inviolability, and Automatic Injunctions*, 31 HARV. J.L. & PUB. POL'Y 593, 627 (2008) ("A resource is said to be non-rivalrous when its use by one person does not interfere with its use by another (or in other words, when such additional use entails no marginal cost) and non-excludable when it cannot easily be controlled in such a way as to exclude others from using it."); Joseph A. Franco, *Why Antifraud Prohibitions Are Not Enough: The*

public goods theory by Richard Cornes and Todd Sandler²⁶: a good is non-rivalrous “when a unit of the good can be consumed by one individual without detracting, in the slightest, from the consumption opportunities still available to others from that same unit.”²⁷ A good is non-excludable if it is impossible, extremely difficult, or prohibitively expensive to prevent people from using the good once it is produced.²⁸ Public finance economists formalized public goods theory.²⁹ The context in which they derived the fundamental principles of public goods theory was quite different from the context of intellectual property. The most obvious difference is that they were thinking about physical goods (i.e., highways, courts, lighthouses, national defense systems) rather than intangible information. This allowed them to structure their rules around the optimal number of units of a public good to produce and draw analogies to the production of private goods. It is hard to think in terms of units of information other than as measured by bits and bytes, which hardly capture the essence of information’s quality. This is not a critical difference, however, because we can still think about the optimal amount of creative work, even if we cannot measure it like the optimal number of highway lanes.

¶21 More important for our purposes, public finance economists were thinking about the collective provision of these physical goods, rather than the private creation of information.³⁰ These goods might be produced by the government itself or by contractors hired or subsidized by the government; in either case, the government paid for the work. If the government was going to pay for the work, the theorists could focus on the optimal quantity of public goods, because the government would pay for whatever the optimal amount was. From public goods theory, economists derived principles for determining how much of any good the government should provide.³¹

¶22 While governments subsidize some creative work, western industrialized nations largely rely on independent economic actors to produce intellectual property. Suppliers

Significance of Opportunism, Candor and Signaling in the Economic Case for Mandatory Securities Disclosure, 2002 COLUM. BUS. L. REV. 223, 344 n.246 (2002) (“A public good is characterized by two features: non-rivalrous consumption (i.e., consumption by one person does not generally preclude or exhaust the ability of others to consume the good) and allocative non-excludability (i.e., an inability to capture the economic benefits of supplying the good after it is produced).”).

²⁶ RICHARD CORNES & TODD SANDLER, *THE THEORY OF EXTERNALITIES, PUBLIC GOODS, AND CLUB GOODS* (2d ed. 1996).

²⁷ *Id.* at 8.

²⁸ See ADAM GIFFORD, JR. & GARY J. SANTONI, *PUBLIC ECONOMICS: POLITICIANS, PROPERTY RIGHTS, AND EXCHANGE* 32 (1979) (“A characteristic of some public goods (and some private goods) is that, once the good is produced, it is extremely costly to prevent individuals from consuming the good.”). See also CORNES & SANDLER, *supra* note 26, at 9 (stating that goods are non-excludable if “once they are provided, it is difficult, if not impossible, to exclude individuals from their benefits”).

²⁹ For an overview of public finance economics in general and public goods theory as it relates to public finance, a classic in the field of public finance is RICHARD A. MUSGRAVE & PEGGY B. MUSGRAVE, *PUBLIC FINANCE IN THEORY AND PRACTICE* (5th ed. 1989).

³⁰ See *id.*

³¹ This work was first formalized by Professor Paul Samuelson in a famous trio of articles: Paul A. Samuelson, *The Pure Theory of Public Expenditure*, 36 REV. ECON. & STAT. 387 (1954) [hereinafter Samuelson, *Pure Theory*]; Paul A. Samuelson, *Diagrammatic Exposition of a Theory of Public Expenditure*, 37 REV. ECON. & STAT. 350 (1955); Paul A. Samuelson, *Aspects of Public Expenditure Theories*, 40 REV. ECON. & STAT. 332 (1958). As the previous discussion suggests, it is not critical for public goods theory that the government is the producer. The government may indeed produce the goods, but may alternatively pay someone else to do so. The government “provides” rather than “produces.” The key question is the quantity of public goods the government, rather than a market, determines should be provided.

of goods and services select and promote their own trademarks, authors devise and fix in tangible media their own ways of expressing ideas, and inventors create their own novel processes and compositions of matter. To apply public goods theory to intellectual property law, public goods theory has to be turned on its head. Rather than avoiding markets and figuring out the optimal level of government provision of public goods, the challenge is to correct market failures and let markets figure out the optimal output.

¶23 This section first explores the meaning of non-rivalrousness in the intellectual property context, then turns to non-excludability.

A. *Non-Rivalrousness*

¶24 If intellectual property is a public good, then it is consumed differently from private goods. One “unit” can be consumed simultaneously by many. One person’s consumption does not diminish, in the slightest, the “consumption opportunities” still available to others from that unit. It may be sensible for public finance economists to speak in terms of the “units” of physical goods that may be “consumed.” The government may provide another mile of road, another police officer, or another library. A consumer drives down a piece of road, enjoys the protection of another police officer, or appreciates the convenience of another library. It is odd to think of “units” of intellectual property or the “consumption opportunities” that the provision of intellectual property creates.

¶25 The public good in intellectual property is information—the idea transformed by the creative process into something from which people may benefit. The information may be about who supplied a good or the characteristics of a good, about how to express an idea, or about a novel composition of matter or way to produce goods. The intangible information should not be confused with the physical manifestation of that information, because the physical manifestation is not a public good. The physical manifestation of intellectual property information may be a book, a CD, or a machine. These physical manifestations are easily seen as “units” but they do not have the characteristics of public goods. A particular physical manifestation (i.e., book, CD, or machine) is not simultaneously available for many consumers and a person can keep others from enjoying it. The physical manifestation is a private good. By contrast, it is the information resulting from the creative process that is non-rivalrous and the essence of the intellectual property public good.

¶26 We do not usually think of intellectual property information as creating “consumption opportunities.” People may benefit from information, but we do not think of anyone “consuming” source-indicating symbols, ways of expressing ideas, or inventive concepts. But people do benefit from information without “using it up.” Information is a pure public good, because, once produced, it can be used simultaneously by many individuals without detracting, in the slightest, from the benefits still available to others from that information. It is the very characteristic of non-rivalrousness that makes us think that ideas are not consumed. For this reason, in the intellectual property context, “consumption opportunities” refer to the benefits that users of the good obtain from the supply of the good.³²

³² Frischmann, *Infrastructure*, *supra* note 3, at 942 (“For economists, ‘consumption’ simply refers to the realization of benefits by virtue of one’s access to the good.”).

¶27 Some scholars have rephrased the definition of non-rivalrousness in a way somewhat divorced from the technical public finance definition. These alternatives are more amenable to application to intellectual property law. Professor Balganesh, writing about the right to exclude others from intellectual property information,³³ stated that non-rivalrous means that “one person does not interfere with its use by another.”³⁴ Focusing on the “use” of goods and one person’s use “interfering” with another’s use assists in the application of public goods theory to intellectual property. A chair is a private good because one person using a chair interferes with another’s use of it; both cannot simultaneously benefit from it. Two people with ordinary skill in the relevant art can, however, simultaneously use the information specified in a patent to build a machine. Neither interferes with the other and both can benefit from it. The information is never “used up.” The information can be shared by all non-rivalrously.

¶28 Another person can benefit from a piece of information without imposing any costs on others. In economic terms, information can be supplied to another person at zero marginal cost.³⁵ Once Porsche or Hyundai uses a trademark in interstate commerce, many consumers would be able to refer to that mark when searching for, rejecting, or discussing their goods. Once the song “Happy Birthday” has been created and published, many would be able to sing it simultaneously to celebrate their friends’ special occasions. Once the method for exchanging instant digital messages by cell phone has been revealed, many would be able to simultaneously exploit that information.³⁶ People “would be able” to use the information without interfering with the benefits others obtain if the law allowed.³⁷

³³ Balganesh, *supra* note 25.

³⁴ *Id.* at 627.

³⁵ *Id.* (“A resource is said to be non-rivalrous . . . when such additional use entails no marginal cost . . .”).

³⁶ We did not need public goods theory to appreciate the peculiar nature of ideas. Thomas Jefferson observed that, like the flame of one candle from which many people can light their own candles, “He who receives an idea from me, receives instruction himself without lessening mine.” Letter from Thomas Jefferson to Isaac McPherson (Aug. 13, 1813), in 6 THE WRITINGS OF THOMAS JEFFERSON, 1790–1826, at 180–81 (H.A. Washington ed., 1854) (quoted in *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 8–9 & n.2 (1966)). At least to some extent, others may use the signaling power of a trademark, the ideas reflected in a tangible expression, and the information embodied in a patent without diminishing the utility others derive from that information.

Nor did we need public goods theory to appreciate that the free access principle flows from the non-rivalrous characteristic. Thomas Jefferson stated:

That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density in any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation.

Graham, 383 U.S. at 8 n.2. The first part of this quote anticipates the non-rivalrous characteristics—“expansible over all space, without lessening their density in any point”—as well as the free access principle—“ideas should freely spread.”

³⁷ These examples are particularly powerful illustrations of the idea that use by more than one person does not detract from the use by others. It is apparent that as more people simultaneously use each of these examples of information, the benefit to each increases. These “network effects” arise from shared knowledge of shopping opportunities, cultural practices, and a web of communication options. Regarding network effects generally, see Mark A. Lemley & David McGowan, *Legal Implications of Network Economic Effects*, 86 CAL. L. REV. 479 (1998).

¶29 Simultaneous use of intellectual property information is never rivalrous in the sense that private goods are rivalrous. Simultaneous use by one person does not eliminate the utility of the information to another, as one bite of an apple can benefit only one person. Even if used by many, the intellectual property information is usually still useful, often equally useful, regardless of the number of simultaneous consumers. The way information is expressed in a John Phillip Sousa marching song is still as stirring. The information about how to design a device that conveys messages wirelessly through the air is still as functional. Many people can simultaneously rely on the information conveyed by the NIKE symbol when searching for footwear without diminishing the utility of that symbol as a source indicator.

¶30 The non-rivalrous character of information gives rise to the first normative principle of intellectual property: the price people ought to pay for information should be equal to the cost they impose on others by their use. Because use of information is non-rivalrous, that cost is zero. So, the price ought to be zero.³⁸ This is the *free access norm* in intellectual property—all people should have the right freely to use information about inventions, ways of expressing ideas, and source-indicating symbols. It appears to be closely related to the principal found in the theory of exchange of private property that resources are allocated efficiently when price equals marginal cost. Part III will show why the price equals marginal cost principle is bootless and why the free access norm is an impractical and ultimately undesirable aspiration.

B. Non-Excludability

¶31 As applied to intellectual property, non-excludability refers to the impossibility, extreme difficulty, or infeasibility of excluding people from freely enjoying the benefits of the supply of information.³⁹ Once a trademark is used in commerce or a song or method of manufacture is disclosed to the public, how is a creator of such intellectual property to keep consumers from using it without paying? Information is non-excludable, because once the information has been disclosed, it is a challenge to prevent people who have not paid for the information from exploiting it. If creators cannot get paid, they may lack sufficient incentives to create.

¶32 Opposing the free-access norm derived from the non-rivalrous characteristic is the *exclusive rights norm*: producers *should* be able to exclude people from using the intellectual property information they have created.⁴⁰ Methods of exclusion were not strictly necessary for public finance applications of public goods theory, because the government can force people to pay taxes to support production of public goods.⁴¹ The

³⁸ MUSGRAVE, *supra* note 29, at 43 (“Exclusion is inappropriate in the case of social goods because their consumption is *nonrival*. . . . Efficient resource use requires that price equal marginal cost, but in this case marginal cost (the cost of admitting an additional user) is zero, and so should be the price.”) (emphasis in original).

³⁹ See *supra* note 28.

⁴⁰ MUSGRAVE, *supra* note 29, at 42 (“The market can function only in a situation where the ‘exclusion principle’ applies, i.e., where A’s consumption is made contingent on A’s paying the price, while B, who does not pay, is excluded. Exchange cannot occur without property rights, and property rights require exclusion.”).

⁴¹ *Id.* at 8.

government can rely on people's expressions of preferences through the electoral process to determine how much demand there is for the goods.⁴²

¶33 If producers are obliged to seek returns through a market, however, they must be able to exclude people who do not pay. If producers cannot exclude, consumers lack an economic reason to pay; they can acquire the good without paying.⁴³ If producers cannot exclude, they cannot find out how much demand exists for their goods.⁴⁴ The exclusive rights norm says that people should be restricted in their right freely to use intellectual property information in order to provide incentives for production and information about how much to produce. Reconciling freedom and restrictions is the policy challenge presented and addressed by the use of public goods theory in intellectual property law.⁴⁵

¶34 Some scholars object to including non-excludability as a characteristic of public goods.⁴⁶ The most compelling reason is that goods that are typically thought of and treated as private goods may share the characteristic of non-excludability. If we think of non-excludability as extreme difficulty in exclusion or exclusion that is too costly relative to the benefits,⁴⁷ it is not hard to think of examples. My ranch in New Mexico is large enough that it is difficult to detect when someone is trespassing or to keep them out, but real property is typically treated as a private good. It is a trespass to interfere with right to exclusive possession. When I was in law school, I found no economically feasible technology that would keep people from helping themselves to the battery and wheels of my car, even when it was parked underneath my apartment in Philadelphia. My car components are private goods, protected by the law of trespass to chattels. As with public goods, it is very difficult to exclude others from using these private goods.

¶35 The difficulty of exclusion for both public and private goods depends on available technology and institutional structures. The law of trespass to land or chattels aids in

⁴² *Id.* at 8, 48.

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ Peter Drahos, *The Regulation of Public Goods*, 7 J. INT'L ECON. L. 321, 322 (2004) ("Intellectual property rights are essentially means of permitting exclusive use to knowledge in order to encourage its further development.").

⁴⁶ Harold Demsetz, for instance, identifies public goods as those for which "it is possible at no cost for additional persons to enjoy the same unit" and distinguishes the "collective good, which imposes the stronger condition that it is impossible to exclude nonpurchasers from consuming the good." Harold Demsetz, *The Private Production of Public Goods*, 13 J.L. & ECON. 293, 295 (1970). David Brennan explains:

[W]hether the attribute of non-excludability is necessary for a good to be classified as a "public good" has been a matter of controversy in economics. Terminology arose which categorized undepletable non-excludable goods as a "pure public good," goods which were [either] undepletable or non-excludable as "mixed goods," and depletable, excludable goods as private goods. Increasing acceptance, however, has been given to the proposition that a good only requires the attribute of undepletable to be categorized as a public good. As such, public goods are today usually categorized (although the "pure public goods"/"mixed goods" terminology remains in use) as either excludable or non-excludable.

David J. Brennan, *Fair Price and Public Goods: A Theory of Value Applied to Retransmission*, 22 INT'L REV. L. & ECON. 347, 350 (2002) (citations omitted).

⁴⁷ See GIFFORD & SANTONI, *supra* note 28, at 32 ("A characteristic of some public goods (and some private goods) is that, once the good is produced, it is extremely costly to prevent individuals from consuming the good."); Steven P. Croley, *Theories of Regulation: Incorporating the Administrative Process*, 98 COLUM. L. REV. 1, 13 n.23 (1998) (interpreting non-excludability as meaning infeasibility of excluding others from enjoying a good) (citing MANCUR OLSON, *THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS* 14 n.21 (1965)).

enforcing exclusive rights to real or personal property. The law of trademark, copyright, or patent infringement aids in enforcing the exclusive rights to information. These legal institutions supplement technical devices, such as fences, keys, and digital rights management, as mechanisms for excluding others. It may be more expensive to employ some technologies or to enforce some rights than others, but this is as true for private as well as for public goods.

¶36 This similarity between public and private goods cannot be sufficient reason to include non-rivalry but exclude non-excludability from the definition of a public good. Some private goods are non-rivalrous to some extent and some public goods are rivalrous to some extent. While my car's battery is strictly rivalrous, a fair number of horse riders can simultaneously use my New Mexico ranch without interfering with each other's use. Highways and courts, classic examples of public goods in both the public finance literature and legal literature,⁴⁸ can become overcrowded, which slows down traffic, limits access, generally interferes with other's use, and decreases the benefits others derive from simultaneous consumption. If non-excludability is out, then non-rivalry is out and there is nothing left.

¶37 Another objection to non-excludability is strategic, or perhaps political. Professor Brett Frischmann's concern is that identifying non-excludability as a characteristic diverts attention from the potential benefits resulting from non-rivalrousness.⁴⁹ He concludes that focusing on non-excludability causes analysts to turn their focus from non-rivalrousness to preventing free-riding by designing market mechanisms that exclude people and reveal people's demand for public goods.⁵⁰ This means that those analysts will ignore the free access norm and end up with over-restrictive policy prescriptions that define the scope, strength, and duration of exclusive intellectual property rights too broadly and undesirably limit access.

¶38 Fear of exclusively focusing on the problems of exclusion is no idle concern. The second principle from exchange theory is that if public goods are excludable, private markets can theoretically efficiently allocate resources to their production. A number of scholars focus exclusively on excludability problems, as if solving those problems would result in optimal incentives for production of intellectual property.⁵¹ Failing to account for non-rivalrousness ignores the access part of the incentives/access tradeoff.

¶39 Either public goods theory is at fault or analysts are at fault. If non-excludability is not part of public goods theory, then the failure to consider the incentive problems associated with non-excludability is a serious but understandable theoretical defect. It is understandable, because public finance theorists did not have to be concerned with who would pay for the provision of public goods—taxpayers paid for public goods. If an analyst fails to consider the implications of non-rivalry, then the failure is with the

⁴⁸ See, e.g., MUSGRAVE, *supra* note 29, at 54 (discussing highway congestion); Rex E. Lee, *The American Courts as Public Goods: Who Should Pay the Costs of Litigation?*, 34 CATH. U. L. REV. 267 (1985) (discussing the non-rivalry and non-excludability characteristics of some outputs of courts); Tracey E. George & Chris Guthrie, *Induced Litigation*, 98 NW. U. L. REV. 545 (2004) (applying the public goods model of highway congestion to the courts and treating both as impure public goods).

⁴⁹ Frischmann, *Infrastructure*, *supra* note 3, at 948–49 (“Critically, focusing on free-riding and market-driven supply obscures the economic meaning and importance of non-rivalry.”).

⁵⁰ *Id.*

⁵¹ See, e.g., Richard Adelstein, *Equity and Efficiency in Markets for Ideas*, 17 CONN. J. INT'L L. 249 (2002).

analyst. We could either conclude that public goods theory itself is bootless, or we could conclude that some analysts fail to see the big picture. Either way, if financial incentives are necessary for the creation of intellectual property information, the implications of non-excludability must be included. Frischmann does recognize that while finding ways to make goods excludable will not reconcile the access/exclusive right norms, excludability can increase incentives and help make markets for public goods function more efficiently.⁵²

¶40 Finally, there is a reason to believe that non-excludability was, from the beginning, a concern of public goods theorists. Professor Samuelson, in his original formulation of the conditions necessary for optimal provision of public goods, wrote of the “impossibility of a decentralized spontaneous solution” to the question of how much of a public good the government should provide.⁵³ He was referring to the inability of a competitive market to determine the amount of consumption of public goods for which people are willing and able to pay. People conceal their preferences, because they can “hope to snatch some selfish benefit” from the fact that, once produced, public goods are freely available for all, regardless of whether they pay or not.⁵⁴ Samuelson’s view was that the government would solve this demand revelation problem through voting or other signaling methods.⁵⁵ The “impossibility of a decentralized spontaneous solution” comes from the non-excludability characteristic. People do not reveal their preferences for public goods, because they cannot be excluded. Regardless of whether non-rivalrousness and non-excludability should be part of the characterization of a public good, both are essential to the analysis of the incentives/access tradeoff.

III. POLICY PRESCRIPTIONS FROM PUBLIC GOODS THEORY

A. *Markets for Intellectual Property*

¶41 The normative implications of characterizing intellectual property as a pure public good are well known. Because pure public goods are non-rivalrous once produced, people should have access to them at no cost. Because pure public goods are non-excludable, however, people have no incentive to reveal their demand for public goods or to reward suppliers for producing them. Because pure public goods are costly to produce, suppliers must have some way of paying for the costs of production. Free access and incentives to invest in creative activity are in tension.

¶42 The government could take responsibility for providing public goods: rely on voting and lobbying to reveal how much people want them, collect taxes to pay for their production, and give them to people at no additional cost. Public goods theory also suggests that, instead of directly producing goods, governments could subsidize private production of public goods out of tax revenues and determine how much people want through the political process. In either of these options, it does not matter who actually

⁵² *Id.* at 949 (quoting CORNES & SANDLER, *supra* note 26, at 56–57).

⁵³ Paul A. Samuelson, *The Pure Theory of Public Expenditure*, in PUBLIC GOODS & MARKET FAILURES: A CRITICAL EXAMINATION 31 (Tyler Cowen ed. 1999) [hereinafter Samuelson, *Pure Theory* in Cowen].

⁵⁴ *Id.* at 33. See also CORNES & SANDLER, *supra* note 26, at 24 (“The non-excludability property of pure public goods induces individuals to undercontribute to provision in the belief that they can rely on the contributions of others.”).

⁵⁵ Samuelson, *Pure Theory* in Cowen, *supra* note 53, at 32.

produces the public goods. The important feature is that the government figures out the optimal amount to supply and collects taxes to pay the suppliers. If—and this is a big if—governments could accurately determine the demand for public goods through voting, they could efficiently allocate resources to the supply of public goods.

¶43 Alternatively, governments could create exclusive legal rights to intellectual property and permit the exchange of those rights. Trademark, copyright, and patent laws theoretically enable markets to ensure widespread access to creations, reveal people's demand for them, and compensate creators. Because private markets cannot simultaneously provide free access and charge for access to public goods, private markets cannot simultaneously satisfy the free access and exclusive rights norms, nor can they efficiently allocate resources to the creation of information.

¶44 Intellectual property law defines the scope, strength, and duration of exclusive rights. If rights are narrow, either fewer consumers pay or consumers pay less to use intellectual property information. There is more access and less external financial incentive to create. If rights are broad, there is less access and more potential for financial incentive. By recognizing exclusive rights, intellectual property law addresses the non-excludability problem. Authors are entitled to protect their creative expressions of ideas. Copyright law protects the original, creative aspects of an expression.⁵⁶ Trademark law distinguishes among users. Trademark law excludes confusing proprietary use⁵⁷ but permits free fair competitive descriptive use and referential use.⁵⁸ Patent law limits duration by creating exclusive rights for twenty years.⁵⁹ Limits on the exclusive rights defined by intellectual property law affect how much producers earn, and therefore, their incentives to create.

¶45 The law provides an institutional structure (most generally, infringement actions) that creators of valuable information can use to exclude or force payment. Intellectual property law does not ensure that any particular creative work receives sufficient reward to provide an incentive to produce. The question of how much any particular producer gets paid is left to the market. Producers get paid what people think the information or the physical embodiment of that information—such as a good with trademark affixed, a copyrighted sculpture, or a patented machine—is worth. Once the law identifies the goods for which people must pay, who must pay, and for how long they must pay, markets do their work. By offering to sell their goods at various prices, producers can test people's willingness and ability to pay, and decide accordingly how much to produce. Intellectual property law creates an incentive for private persons to supply public goods by providing an opportunity to earn a profit.

⁵⁶ *Feist Publ'ns, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 345 (1991) (“The sine qua non of copyright is originality. To qualify for copyright protection, a work must be original to the author. Original, as the term is used in copyright, means only that the work was independently created by the author (as opposed to copied from other works), and that it possesses at least some minimal degree of creativity.”) (citation omitted).

⁵⁷ 15 U.S.C. § 1052(d) (2006) (prohibiting registration of marks likely to cause confusion); 15 U.S.C. § 1125(a) (creating a private cause of action of another's use of a mark that is likely to confuse consumers).

⁵⁸ 15 U.S.C. § 1115(b)(4) (stating that a supplier's use of another's mark is permitted if it is a use “otherwise than as a mark, . . . of a term or device which is descriptive of and used fairly and in good faith only to describe the goods or services of such party”).

⁵⁹ 35 U.S.C. § 154(a)(2) (limiting patent term to 20 years from the date on which the patent was filed in the United States).

B. IP's Bootless Principles

1. Price Equals Marginal Cost

¶46 A properly functioning market for intellectual property is one that reaches a proper balance between access and incentives. Economic theory explains how competitive markets efficiently allocate resources to the production of private goods by referring to the normative desirability of having prices equal to marginal costs.⁶⁰ Marginal cost is the additional (marginal) cost of supplying another unit of a good.⁶¹ A price equal to marginal cost is desirable, because it reflects the social costs of supplying that additional consumer.⁶² As a normative matter, classical economic theory concludes that if the additional consumer derives any benefit from the good, the additional consumer *ought* to be given access to the good at the additional cost of supplying the good.⁶³ This may be an adequate normative foundation for competitive markets for private goods, where marginal cost pricing is profitable, but not for public goods.

¶47 The marginal costs of supplying another consumer are generally positive for private goods. Marginal costs are generally positive, because sharing a unit of the good that has already been provided is not feasible, as it is for a non-rivalrous public good. Another unit must be produced. In a properly functioning, perfectly competitive market, those positive prices cover producers' costs of production.⁶⁴ The sum of the marginal costs for all consumers and the fixed costs (costs that do not vary with the amount produced)⁶⁵ equals the total costs of production.⁶⁶ The costs of supplying each consumer with his or her own private goods mount up because consumption is rivalrous; each person consumes individually.

¶48 The difficulty in achieving an efficient market allocation of resources to the creation of intellectual property information arises from the formulation of the first bootless principal:

BP#1: From exchange theory:

⁶⁰ JACK HIRSCHLEIFER, PRICE THEORY AND APPLICATIONS 481, 479–81 (3d ed. 1984). In markets for private goods, a price equal to the marginal cost of supplying the good efficiently allocates resources to production of that good. Such a price results in a proper incentive to a supplier of goods, because that price allows the supplier to cover its costs including a normal economic profit. Such a price also results in a proper level of supply as measured by a benefit/cost analysis. The benefit a buyer obtains from acquiring the good is measured by the buyers' willingness and ability to pay for the good. The cost in the balance is the cost of the resources consumed by the supplier providing the good. The normative parts of this explanation are the assertion that revenues sufficient to cover costs provide a "proper" incentive and that the resulting level of supply of the good is the "proper" level. All of the economics of competitive markets for private goods is based on the price equals marginal cost equality and the assumptions about the desirability of allocative efficiency. The challenges to those assumptions are well known, but not worth repeating here.

⁶¹ JAMES F. RAGAN, JR. & LLOYD B. THOMAS, JR., PRINCIPLES OF ECONOMICS 522 (1990).

⁶² *Id.* at 565.

⁶³ *Id.*

⁶⁴ *Id.* at 548–58.

⁶⁵ *Id.* at 520.

⁶⁶ *Id.* at 548–58. Because marginal costs are the additional costs of producing each unit, starting with the first, the additional costs of producing the first and all subsequent units plus the fixed costs incurred to start up in the first place equals the total costs.

Resources are allocated efficiently when price equals marginal cost.⁶⁷

The private goods intuition behind this principle lies in the tradeoff between the cost of making goods and the benefits obtained from consuming goods. Society is concerned with both the value of the resources sacrificed to produce goods and the value of the resulting goods to the consumer compared to other goods he or she might have consumed. The rate at which additional resources are used up to produce another unit of the good is referred to as the “marginal rate of transformation” (“MRT”).⁶⁸ The MRT measures the rate of sacrifice of resources in production of another unit of the good, while the “marginal cost” in BP#1 is the dollar value of those resources sacrificed. When buying an additional unit of one good, consumers also give up an opportunity to purchase other goods. The rate at which consumers are willing and able to give up other goods to obtain another unit of a particular good is referred to as the “marginal rate of substitution” (“MRS”).⁶⁹ The MRS depends on the opportunity cost of buying another unit expressed in terms of the other goods sacrificed, while “price” in BP#1 is expressed in terms of the dollar value of those opportunities. The dollar value of those opportunities reflects the benefits the consumer expects from the purchase of an additional unit.

¶49 The price equals marginal cost rule reflects a wealth maximizing perspective on the tradeoff. If the value of resources given up is less than the value of the benefits gained, it is worthwhile to invest the resources to produce the benefits. For private goods, resources are allocated efficiently if MRS equals MRT for all consumers.⁷⁰ As long as the marginal cost of producing another unit of a private good is less than the benefit an individual would obtain from that unit, it is efficient to produce that unit.

¶50 Two related desirable features arise from market prices that are equal to marginal costs. The first is a distributional concern. Marginal cost is the additional (marginal) cost of supplying another unit of a good.⁷¹ A price equal to marginal cost is desirable because it reflects the social costs of supplying that additional consumer.⁷² As a normative matter, classical economic theory concludes that if the additional consumer is willing and able to pay a price equal to the resources sacrificed to supply a unit of the good to him, the additional consumer *ought* to be provided with that unit of the good.⁷³ That is an appealing rule because the resources used to provide the good are being reallocated from a less valuable use (e.g. iron ore lying in the ground or devoted to another use, an artist lying in his bed or doing something other than creative work) to a more valuable use (e.g. the frame of a car, an expression of ideal beauty in a sculpture).⁷⁴

⁶⁷ The proof of this assertion has been thoroughly discussed by others in both the economics and legal literature. See, e.g., Conley & Yoo, *supra* note 7, at 1808–09 (describing optimality conditions for production of private and public goods).

⁶⁸ HIRSCHLEIFER, *supra* note 60, at 411.

⁶⁹ PAUL A. SAMUELSON & WILLIAM D. NORDHAUS, *ECONOMICS* 88 (15th ed. 1995) [hereinafter SAMUELSON & NORDHAUS, *ECONOMICS*].

⁷⁰ CORNES & SANDLER, *supra* note 26, at 22–3.

⁷¹ RAGAN & THOMAS, *supra* note 61, at 522.

⁷² *Id.* at 565.

⁷³ *Id.*

⁷⁴ See SAMUELSON & NORDHAUS, *ECONOMICS*, *supra* note 69, at 136 (“Allocative efficiency (or efficiency) occurs when no possible reorganization of production can make anyone better off without making someone else worse off.”).

Resources are efficiently allocated by exchanges from people who place a lower value on the goods to people who place a higher value on the goods.⁷⁵

¶51 Second, pricing at marginal cost can create desirable incentives. In perfectly competitive markets in equilibrium, suppliers of goods choose an output level where the marginal cost of supplying another unit of the good equals the average cost of supplying that unit.⁷⁶ Pricing at marginal cost and producing at that level is profitable enough to encourage that supplier to stay in business.⁷⁷ Unfortunately, neither of these characteristics applies to intellectual property public goods.

¶52 Because intellectual property law is concerned with determining the optimal degree of access and exclusion, a number of translations from the private market context are necessary. Neither of those desirable benefits associated with the price equals marginal cost rule can be realized in a market for intellectual property. First, if policymakers followed the price equals marginal cost rule, intellectual property law would be very straightforward, because a price equal to zero would mean free access for everyone. A price equal to marginal cost does not, however, reflect the social costs of supplying a good everyone can share non-rivalrously. The marginal cost of making information available to another consumer is zero, once the information has been produced. Most analysts just slide over that “once the information has been produced” qualification, but it is critical. Second, creators cannot produce information at a level where marginal cost equals average cost and hope that supplying that level of output will be profitable. The marginal costs of supplying a public good to another customer are zero, but the average costs will never be zero if it costs anything to produce the information. If creators need an external incentive, it will not be supplied by the zero revenues they would obtain under the price equals marginal cost principle. Creators of intellectual property, like producers of other goods,⁷⁸ must be able to cover all of their costs in order to encourage them to produce information.

¶53 The price equals marginal cost principle is useful without supplying a guiding rule. It identifies the interest in permitting access to as many as are willing to pay (some measure of) the costs of making access available to them. It also identifies the interest in ensuring returns that encourage an (identified) amount of creative activity. It does not, however, provide a rule upon which analysts can rely in deciding questions of scope, strength, and duration of intellectual property rights.

2. Marginal Cost and Summed Marginal Benefits

¶54 Public finance theory attempts to fill the gap resulting from the inapplicability of the price equals marginal cost rule with another principle, also bootless, that describes the optimal amount of a particular public good the government should provide:

BP #2: From public goods theory:

⁷⁵ See HIRSCHLEIFER, *supra* note 60, at 218.

⁷⁶ SAMUELSON & NORDHAUS, *ECONOMICS*, *supra* note 69, at 129–131.

⁷⁷ See EDWIN MANSFIELD, *ECONOMICS* 546–47 (5th ed. 1986); HIRSCHLEIFER, *supra* note 60, at 253 (defining normal economic profit as the amount necessary to attract and retain the resources employed in the industry).

⁷⁸ MANSFIELD, *supra* note 78, at 737–38; STANLEY FISCHER, RUDIGER DORNBUSCH & RICHARD SCHMALENSEE, *INTRODUCTION TO MICROECONOMICS* 168 (1988).

Increasing amounts of public goods should be produced until the marginal rate of transformation equals the sum of the marginal rates of substitution.

This principle of public goods theory is similar to the private optimum approach in that it describes the optimum level of production of goods. For public goods, consumers benefit equally from the provision of a good, even if they share. So, the total benefits to all consumers, as measured by the summed marginal rates of substitution, should be equated with the marginal rate of transformation, $\sum MRS = MRT$.⁷⁹ This means that as long as the marginal cost of producing another unit of a public good is less than the benefits all members of society non-rivalrously sharing that unit would obtain from that unit, it is efficient to produce that unit. This equality reflects the focus of public finance economists concerned with the size of highways, the number of police on the street, and the number of lighthouses.

¶55 The focus of intellectual property scholars is quite different. The incentives/access tradeoff is concerned with two different values. The incentives side of the balance is concerned with the value of additional information that results from any increase in incentives that accompanies broader exclusive rights to a particular type of information. The access side of the balance is concerned with the value of the benefits society obtains from free access to that type of information. BP#2 answers the question: “How many resources should be devoted to the production of information?” By contrast, the challenge for intellectual property scholars is figuring out how to establish rights that guide a market to produce that optimal amount.

¶56 BP#2 provides only some of the information relevant to determining the optimal scope of intellectual property protection. The marginal rate of substitution reflects the rate at which all consumers benefit from the information. The “price” term in BP#1 reflects the willingness and ability of people to pay for goods, and hence the benefits they would obtain from access to the goods. A similar summation of the benefits that people would obtain from access to the information reflects a collective willingness and ability to pay for public goods. If that number were discoverable by private suppliers of information, we would have a beginning, at least, to the question: “How much information should be produced?”

¶57 The marginal rate of transformation does not, however, reflect the effect of exclusive rights on incentives, and it does not answer the question: “What is the value of information that will result from broader exclusive rights?” To answer that question, policy makers would need to know more than the value of the resources consumed during the creative process. Among other things, policy makers need to know what means exist, other than granting exclusive rights, to encourage creative activity, and how creators

⁷⁹ CORNES & SANDLER, *supra* note 26, at 23. The benefits a person derives from production of another unit is measured by the additional resources he or she would be willing to give up to consume the good. In economics, this is the marginal rate of substitution, MRS, between the resources the person would give up and the good in question. Because of non-rivalry, the total benefit from an additional unit of a public good is the sum of everyone's MRS, that is, $\sum MRS_i$ for all i consumers. The optimum is reached where $\sum MRS_i = MC$, the marginal cost of production. Thus, the demand for a public good is determined by summing the benefits each person derives from the provision of a single unit of the good.

For private goods, the optimum is reached where MRS_i , the marginal rate of substitution for a single individual, equals the marginal cost, $MRS_i = MC$. Thus, the demand for a private good is determined by summing the number of units demanded by consumers at a particular price.

respond to these alternative incentives. It is futile to attempt to answer these questions by reference to either of the first two principles.

¶58 In addition to its general irrelevance to the questions intellectual property policy makers need answered, achieving the optimum dictated by BP#2 requires a critical bit of information: How much benefit does each consumer get from the provision of a public good? Initially, this was not a problem for public finance economists because voting and the political process revealed consumer demand for collectively provided goods and services.⁸⁰ Economists eventually began to doubt the accuracy of those revelations and explore more efficient voting mechanisms.⁸¹ However, the problem for intellectual property is not voting but how to get markets to reveal the demand for public goods. Achieving the optimum dictated by BP#2 also requires a precise institutional structure—a legal framework that creates a market that will reveal people’s demand for a non-excludable good that people have no interest in revealing. BP#2 helps with neither of these issues. While of critical importance to the centralized provision of public goods, it is of no direct assistance when designing decentralized, market supply of public goods.

3. Efficient Markets for Excludable Public Goods

¶59 As fortune would have it, a principle from exchange theory steps up to address this dilemma:

BP #3: From exchange theory:

If public goods were excludable, private markets could efficiently allocate resources to their production.

Intellectual property economists agree that BP#3 is theoretically correct.⁸² This principle holds true if creators are able successfully to engage in perfect price discrimination. This

⁸⁰ See *supra* note 55.

⁸¹ Public choice economics is the field devoted to the political economics and institutional dynamics. See, e.g., OLSON, *supra* note 47. Professor Kang explains:

[P]ublic choice theory suggests little hope that direct democracy, however configured, can identify and fulfill the public’s most preferred policies. Voting paradoxes render elusive the identification of the mass public’s most preferred policy even within a single policy domain, let alone identification of priorities across policy domains. Preference cycles, strategic voting, and the bias of agenda setting plague these determinations though the procedures of voting. As a consequence, voting in direct democracy may embody, at best, a “negative ideal” without any assurance, perhaps without much possibility, of producing “a clear, consistent, meaningful statement of the popular will.”

Michael S. Kang, *Voting as Veto*, 108 MICH. L. REV. 1221, 1277 (2010) (citations omitted).

⁸² Professor Lunney explains:

The literature also establishes that we can achieve a Pareto efficient outcome in the production of the public good by enabling perfect price discrimination with respect to the public good. In this context, perfect price discrimination creates personalized markets for the public good, where each consumer’s consumption of the public good becomes a distinct commodity with its own market and its own price. If it could be achieved, the resulting equilibrium, known as a Lindahl equilibrium, would essentially convert the public good into a private good and ensure a Pareto efficient outcome.

Glynn S. Lunney, Jr., *Copyright’s Price Discrimination Panacea*, 21 HARV. J.L. & TECH. 387, 451–52 (2008).

means that creators are able to charge each buyer the maximum that each buyer is willing and able to pay for the goods provided and exclude those who do not.⁸³

¶60 The requirement of excludability is met by making intellectual property rights robust and strong. Taken to an extreme, no one would have the right to derive any benefit from anyone else's creative work without permission from the creator. While the first principle (price equals marginal cost) would mean that everything was fair use if the marginal cost were zero, the third principle means that no beneficial use would be fair.

¶61 An efficient market for excludable public goods would not look familiar from the theoretical perspective. There would be no matching of the cost of production with the price, as the price equals marginal cost principle suggests. Instead, prices are matched with people's willingness and ability to pay.⁸⁴

¶62 It is evident that creators of all forms of intellectual property are sometimes able to price discriminate in their licensing practices. Copyright owners can negotiate different fees from different advertisers, for instance, who will obtain different amounts of benefit from their use of copyrighted music in their marketing. Patent holders can negotiate different royalty arrangements from different manufacturers, for instance, who wish to produce their novel and original inventions or employ them in their production processes. Trademark owners can charge licensees different fees according to the sales revenues that the licensees can expect to earn. BP#3 recommends these practices as a way of ensuring efficient allocation of resources to creative activity.

¶63 Normally, however, information is not sold on a discriminatory basis. In printed form, information is customarily provided at a fixed price to all newspaper, periodical, and book readers; radio and TV listeners; and Internet surfers. Buyers of information embodied in physical products also usually pay the same price. The buyer of a trademarked good may pay a higher price that covers the marketing and promotion of the source and product information contained in a trademark, but all buyers generally pay the same price for each unit. Some who benefit from the trademark information—such as, consumers who make a point not to buy a particular brand—do not pay at all. Everyone pays the same price for downloading a particular piece of copyrighted music from a particular web site, but some who benefit from the music or art or literature by listening to it, viewing it, or reading it do not pay at all. Even commercial users often have blanket

⁸³ See, e.g., Yoo, *supra* note 19, at 656–57; Lunney, *supra* note 82, at 396, 451; F. Scott Kieff, *Coordination, Property, and Intellectual Property: An Unconventional Approach to Anticompetitive Effects and Downstream Access*, 56 EMORY L.J. 327, 422–23 (2006) [hereinafter Kieff, *Coordination*]; F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697, 727 (2001) [hereinafter Kieff, *Property Rights*].

⁸⁴ Scholars have considered the efficiency effects of various several price discrimination rules. The oldest price discrimination scheme applicable to public goods is Lindahl pricing, under which each consumer is charged a price tailored to match the marginal benefit they get from using the final unit of the good purchased. See Lindahl, *supra* note 21, at 168–76. No one is excluded simply by virtue of the fact that they are willing and able to pay very little, so there is as much access as under the free access norm. And, the seller would adjust to the total of these prices to produce a matching level of output, thereby ensuring a profit. An alternative is Ramsey pricing, in which consumers who are very sensitive to price (in that they will adjust the quantity of the good they demand in response to price changes more dramatically, highly elastic demand) pay a higher portion of fixed costs and consumers who are less sensitive (those with inelastic demand) pay lower prices. Ramsey, *supra* note 21, at 58–59. The difficulty with pricing according to marginal cost when goods are non-rivalrous is that fixed costs of production are never covered by a zero price, but pricing above zero potentially excludes some consumers who would benefit from access to the good. Allocating fixed costs according to the elasticity of consumer demand minimizes the losses associated with charging a positive price and ensures a profit. *Id.*

licenses that give them unlimited rights to use an entire collection of copyrighted works. Everyone who buys an iPad containing the latest patented digital technology pays the same price. When embodied in goods, whether patented, copyrighted, or trademarked, the price obtained from each user is generally the same—or at least not generally dependent on the buyer’s marginal valuation.

¶64 The excludability requirement presents problems as well. Even robust intellectual property rights fail to make creative works excludable. The problems in enforcing exclusive rights to copyrighted works have given rise to the agencies that sell the blanket rights. There is no way to collect from people, who use trademarks to refer to and reject goods of a particular brand. Discussing copyright and patent law, Professors Lemley and Frischmann⁸⁵ point out that the number of people benefitting from one person’s creative work extends far beyond those in a position to negotiate with the creator.⁸⁶ Neither of the negotiating parties, such as an inventor and seller or the author and publisher, may be in a position to foresee the benefits that will flow from their arrangements to the ultimate users of the patented or copyrighted work.⁸⁷ Nor could a creator internalize the benefits of creative works inspired by his or her work.⁸⁸ Even if intellectual property rights were absolute—permitting no free access or fair use—the market could not efficiently allocate resources, because perfect excludability of information is impossible. Even if it were possible, perfect excludability without price discrimination would not lead to an efficient solution.⁸⁹

¶65 There are political and practical problems with the price discrimination solutions. The political problem is that the norm in markets for private goods is for everyone to pay the same price—namely, the one that reflects the costs of production. Price discrimination would mean that you might have to pay more for your iPod, music downloads, and video games than your friends, even at the same store and even if the

⁸⁵ Brett M. Frischmann & Mark A. Lemley, *Spillovers*, 107 COLUM. L. REV. 257 (2007).

⁸⁶ Frischmann and Lemley offer the example of the inventor of the computer spreadsheet who obtains his compensation from the buyers of the software. *Id.* at 258. Those buyers obtain benefits by using the software, only some of which they pass on to the inventor. Consumers benefit from using the software when they pay less for the goods and services produced by people who save money by using computer spreadsheets, but these savings are only indirectly and partially internalized to the inventor, if at all.

⁸⁷ Frischmann and Lemley offer the example of Alexander Graham Bell, *id.* at 260, who could not have foreseen and internalized the benefits from expanded modern communications systems inspired by the invention of the telephone.

⁸⁸ *Id.* at 261 (observing that an inventor in one field may have no awareness of the benefits from his or her work in other fields).

⁸⁹ Professor Lunney has emphasized that it is the non-rivalrous character of public goods that creates the market failure, as follows:

In terms of economic analysis, . . . [the] suggestion that addressing the issue of excludability is alone sufficient to ensure an efficient market for copyrighted works is simply wrong. Even if copyright law enabled a copyright owner to exclude non-payers perfectly, the ability to exclude would not establish the efficiency of the resulting markets. So long as consumption of works of authorship remains non-rivalrous—that is, so long as “one man’s consumption does not reduce some other man’s consumption,” the first fundamental theorem of welfare economics does not apply. As a result, even if the assumptions necessary for the theorem’s application are otherwise satisfied, a competitive equilibrium through private markets will not generally achieve a Pareto optimal allocation of copyrighted works or the resources necessary to create them.

Glynn S. Lunney, Jr., *Fair Use and Market Failure: Sony Revisited*, 82 B.U. L. REV. 975, 994 (2002) (quoting Samuelson, *Pure Theory*, *supra* note 31, at 387).

sales were online.⁹⁰ Consumers are becoming more accustomed to paying a different price from another person when purchasing a car, flying in an airplane, or staying in a hotel; however, many think there is something unsavory about that fact. It would also mean that sellers would need to know each consumer's willingness and ability to pay for the marginal item, which means they would have to know each consumer's preferences and budget. Aside from buyers' natural incentive to strategically conceal this information,⁹¹ people might consider this a bit invasive of their privacy.⁹² The efficiency and other normative bases for and against price discrimination have been examined in detail in the scholarly literature.⁹³

¶66

These price discrimination proposals are useful, because they indicate benefits flowing from the law's facilitation of price discrimination,⁹⁴ but they are ultimately unhelpful because of their practical difficulties. Price discrimination schemes require private suppliers of goods to acquire a great deal of information about individual consumers—such as, the marginal benefits they derive from the last unit of a good provided to them or their demand sensitivity. Professor Yoo concludes that “there is no practical, real-world, incentive-compatible way to induce consumers to use prices to signal the intensity of their preferences.”⁹⁵ In addition, sellers would have to be able to prevent resales among consumers.⁹⁶ Apple, Inc. would have to be able to prevent your

⁹⁰ Vartan J. Saravia, *Shades of Gray: The Internet Market of Copyrighted Goods and a Call for the Expansion of the First-Sale Doctrine*, 15 SW. J. INT'L L. 383, 398 (2009) (“Today’s online commerce, with reduced worldwide shipping charges and transaction costs, is the perfect breeding ground for some consumers and distributors to disrupt the price discrimination practices of manufacturers and distributors across international markets.”).

⁹¹ Paul Samuelson explains:

One could imagine every person in the community being indoctrinated to behave like a “parametric decentralized bureaucrat” who reveals his preferences by signaling in response to price parameters or Lagrangean multipliers, to questionnaires, or to other devices. But . . . by departing from his indoctrinated rules, any one person can hope to snatch some selfish benefit in a way not possible under the self-policing competitive pricing of private goods . . .

Samuelson, *Pure Theory*, *supra* note 31, at 389. The term “Lagrangean multiplier” refers to a mathematical optimization technique which in this context could give information about true preferences.

⁹² Mathew A. Edwards, *Price and Prejudice: The Case Against Consumer Equality in the Information Age*, 10 LEWIS & CLARK L. REV. 559, 593–94 (2006) (suggesting that price discrimination violates our right to privacy by exploiting our personal information).

⁹³ See, e.g., Lunney, *Price Discrimination*, *supra* note 82 (critiquing the partial equilibrium approach reflected in the price discrimination analysis); David Gilo & Ariel Porat, *The Hidden Roles of Boilerplate and Standard-Form Contracts: Strategic Imposition of Transaction Costs, Segmentation of Consumers, and Anticompetitive Effects*, 104 MICH. L. REV. 983 (2006) (identifying inefficiencies resulting from price discrimination in boiler plate contracts); Mark Klock, *Unconscionability and Price Discrimination*, 69 TENN. L. REV. 317 (2002) (concluding that price discrimination is unconscionable); Michael J. Meurer, *Copyright Law and Price Discrimination*, 23 CARDOZO L. REV. 55 (2001) (concluding that price discrimination has negative and positive effects).

⁹⁴ See, e.g., Kieff, *Coordination*, *supra* note 83, at 422–23 (2006) (stating that IP rights facilitate price discrimination because of the doctrine of indirect infringement).

⁹⁵ Conley & Yoo, *Nonrivalry*, *supra* note 7, at 1810. See also Samuelson, *Pure Theory* in Cowen, *supra* note 53, at 32 (“However, no decentralized pricing system can serve to determine optimally these levels of collective consumption . . . [I]t is in the selfish interest of each person to give false signals, to pretend to have less interest in a collective consumption activity than he really has.”).

⁹⁶ In *ProCD*, the Seventh Circuit explained:

To make price discrimination work, however, the seller must be able to control arbitrage. An air carrier sells tickets for less to vacationers than to business travelers, using advance purchase and Saturday-night-stay requirements to distinguish the categories. A producer of

friend, who had no desire for an iPad or who was poorer than you, from buying an iPad at a lower price for you. This arbitrage breaks down the efficiency of the price discrimination system.⁹⁷

IV. THE AVERAGE COST AND NET BENEFIT APPROACHES

¶167 According to economic theory, the well-being of society's members is increased by increasing the production of any good as long as the additional benefits from production exceed the additional costs.⁹⁸ For private goods, the price equals marginal cost principle provides guidance on how to achieve this optimum using competitive markets. For pure public goods, none of the basic principles provide similar guidance. The difficulty in balancing incentives and access has led some intellectual property scholars to suggest that incentives provided by intellectual property law should be sufficient to cover creators' average costs⁹⁹ (including a normal economic profit). Other scholars, who prefer a cost-benefit approach to defining intellectual property rights, ignore creators' average costs. The following section considers that debate and opts for a net benefit rule—one that compares the benefits that would result from increased incentives to the benefits that would result from increased access to information.

A. Average Costs versus Cost-Benefit

¶168 The logic of covering creators' costs in order to encourage investment in creative activity motivates some scholars to advocate exclusive rights designed to ensure that investment in creative activity is just profitable enough. Professor Jeffrey Harrison offers

movies segments the market by time, releasing first to theaters, then to pay-per-view services, next to the videotape and laserdisc market, and finally to cable and commercial tv [sic]. Vendors of computer software have a harder task. Anyone can walk into a retail store and buy a box. Customers do not wear tags saying "commercial user" or "consumer user." Anyway, even a commercial-user-detector at the door would not work, because a consumer could buy the software and resell to a commercial user.

ProCD, Inc. v. Zeidenberg, 86 F.3d 1447, 1450 (7th Cir. 1996).

⁹⁷ *Id.* See also, e.g., Tomas J. Philipson & Richard A. Posner, *Antitrust in the Not-For-Profit Sector*, 52 J.L. & ECON. 1, 11 (2009) ("[T]he feasibility of price discrimination depends on the cost of preventing arbitrage."). Cf. Saravia, *supra* note 90, at 397 ("Price discrimination is especially feasible in the case of intellectual property because individual works, given their originality, are not perfect substitutes for each other, and because either by law or by contract, the copyright owners may prevent or limit the arbitrage opportunities for resellers."). Mr. Saravia notes, however, that there is ample opportunity for competitors, distributors, or consumers to interfere with price discrimination schemes:

For example, competing producers can disrupt price discrimination by luring away customers who otherwise would have paid a higher price to the copyright holder. Likewise, distributors can interfere with price discrimination by performing intermediary functions in the arbitrage process. Finally, users are able to disrupt price discrimination by hiding their preferences or seeking opportunities for arbitrage.

Id.

⁹⁸ See RAGAN & THOMAS, *supra* note 61, at 522 (discussing the optimal amount of regulation being reflected in marginal cost equaling marginal benefit); JOHN B. TAYLOR, *PRINCIPLES OF MICROECONOMICS* 514 (1st ed. 1995) ("To determine the quantity of a government provided service, the marginal cost and marginal benefit of the service should be considered.").

⁹⁹ See Kieff, *Property Rights*, *supra* note 83, at 727 (analyzing the particular utility of intellectual property law for creative work where there is a big difference between average cost and marginal cost); sources cited *infra* notes 101–105.

an analysis of incentives from the creator's perspective stating that "as long as the creative effort is put forward, there is no need to incur costs to protect benefits beyond this minimum [necessary to cover costs]." ¹⁰⁰ The costs are those associated with the denial of access to some users. The extra benefits—the extra earnings by the creator above average cost—do not inspire extra effort so they "are irrelevant to the author's decision-making." ¹⁰¹ If extra benefits produce no additional creative work but restrict access to the work, they are merely a burden to society. ¹⁰²

¶169 Some scholars interpret this conclusion about incentives as implying that intellectual property rights should be defined so that creators will be able to cover their average costs. Professor Lemley stated that the "minimum reward" appropriate to reward creators is the amount necessary for creators to recover their average total costs of producing the information. ¹⁰³ The basis for this amount is the market advantage a copier has over the creator. ¹⁰⁴ Because the copier does not have to incur the costs of producing the information, ensuring that the creator has sufficient exclusive rights to recover those costs creates a level playing field. This level of return would presumably include both the revenue earned without formal legal protection and the additional revenue obtained through the legal monopoly resulting from exclusive rights. A greater level of return would permit creators of intellectual property public goods to earn a greater return on investment than producers of private goods in a competitive market. ¹⁰⁵

¶170 Alternatively, a cost-benefit analysis could be employed. Court decisions and congressional amendments to intellectual property law are balancing incentives and access "at the margin." In doing so, they are evaluating whether the additional social benefits from increased incentives outweigh the increased social value of increased access. Paraphrasing and generalizing from Professor Landes and Judge Posner's ¹⁰⁶ description of the optimal term of copyright protection, the rule for balancing incentives and access would be as follows: [*T*]he optimal level of intellectual property protection is determined by balancing at the margin the incentive effects of broader rights against the administrative and access costs arising from the public goods aspect of intellectual property. ¹⁰⁷ Landes and Posner were focusing on the incremental advantages of increasing incentives. The benefits arose from increased creative activity while the costs

¹⁰⁰ Jeffrey L. Harrison, *A Positive Externalities Approach to Copyright Law: Theory and Application*, 13 J. INTELL. PROP. L. 1, 14 (2005).

¹⁰¹ *Id.*

¹⁰² *Id.* ("Any protection beyond the minimum necessary does not increase the social benefit of the work and is burdensome in terms of administrative, transaction, and exclusivity costs.")

¹⁰³ Professor Lemley explains:

[I]ntellectual property law is justified only in ensuring that creators are able to charge a sufficiently high price to ensure a profit sufficient to recoup their fixed and marginal expenses. . . . Economic theory offers no justification for awarding creators anything beyond what is necessary to recover their average total costs.

Lemley, *Free Riding*, *supra* note 2, at 1057.

¹⁰⁴ *Id.* at 1054–55.

¹⁰⁵ *Id.* at 1032 ("Competitive markets work not because producers capture the full social value of their output—they do not, except at the margin—but because they permit producers to make enough money to cover their costs, including a reasonable return on fixed-cost investment.")

¹⁰⁶ William M. Landes & Richard A. Posner, *Indefinitely Renewable Copyright*, 70 U. CHI. L. REV. 471 (2003).

¹⁰⁷ *Id.* at 476.

resulted from decreased access.¹⁰⁸ One could equally balance at the margin the benefits from increased access against the costs of broader rights.

¶71 Comparing the two approaches, the cost-benefit approach is preferable for several reasons. First, the cost-benefit approach includes more relevant considerations. The average cost approach does not consider either the social value of the creative work encouraged by incentives or the social benefits that would result from increased access. The optimal level of rights is appropriately determined by the social value rather than the magnitude of those investments.

¶72 Second, a fundamental premise of a regime for market supply of intellectual property information is that no creator is assured that his or her costs are covered. The creator is provided with the opportunity to make a profit if his or her information has sufficient social value. Thus, the average cost approach is not descriptive of the structure of an intellectual property regime based on markets.

¶73 Third, aside from those revenues available independent of exclusive rights, the costs an investor is willing to incur depends on the level of rights and will change depending on the protection granted.¹⁰⁹ “Average cost” is a moving target. If a pharmaceutical manufacturer can earn returns on its new drugs for only five years rather than twenty, it is likely to incur lower average costs in research and development. If intellectual property rights are broad enough that a creator can charge everyone who receives any benefit from his or her work, he or she will invest more. If there are no rights, creators will presumably invest less.¹¹⁰

¶74 Because costs incurred depend on rights granted, the average cost approach does not identify what level of protection is desirable. Balancing incentives and access on the margin gives a more refined analysis of both benefits and costs.

B. *The Net Benefits Approach*

¶75 A “net benefit” approach recognizes that incentives and access both have the potential to produce benefits and both can be viewed as costs. Increased incentives may create more beneficial information, while increased access allows more people to benefit from it. Increasing incentives makes access more costly and increasing access may decrease the amount of information produced. While the “propertization” movement in intellectual property scholarship focuses on the exclusive rights associated with private property and highlights exclusion as a benefit, the opposing view focuses on the benefits of free access.¹¹¹ A net benefit rule avoids characterizing one option as a cost and the

¹⁰⁸ Associated with the increased obstacles to obtaining access are the losses associated with denying people the benefits they would obtain from using the public good and the transaction costs of obtaining licenses to use the intellectual property. *Id.* In addition, there is the cost associated with the decreased creative activity from those people who would build on the creator’s work to produce additional intellectual property information.

¹⁰⁹ See Duffy, *Isolationism*, *supra* note 22, at 1077 (arguing that Lemley’s approach fails to provide any general basis for determining the appropriate level of intellectual property rights to grant).

¹¹⁰ Lemley, *Free Riding*, *supra* note 2, at 1054 (“In a private market economy, individuals will not generally invest in invention or creation unless the expected return from doing so exceeds the cost of doing so—that is, unless they can reasonably expect to make a profit from the endeavor.”).

¹¹¹ For a few of the many scholars discussing this debate, see Olufunmilayo B. Arewa, *The Freedom to Copy: Copyright, Creation, and Context*, 41 U.C. DAVIS L. REV. 477, 498–503 (2007); Richard A. Epstein, *Liberty Versus Property? Cracks in the Foundation of Copyright Law*, 42 SAN DIEGO L. REV. 1 (2005); Lemley, *Free Riding*, *supra* note 2; Adam Mossoff, *Is Copyright Property?* 42 SAN DIEGO L. REV. 29

other as a benefit, but instead mediates between these extremes and is analytically identical to the cost-benefit approach.¹¹²

¶76 Ultimately, both exclusive rights and free access have the potential to produce benefits. Public goods theory and economic theory generally recommend allocating resources so as to maximize the net benefit of that allocation—choosing the option that produces the greater net benefit.¹¹³ As applied to intellectual property law, this means deciding whether the additional benefits resulting from extending creators' exclusive control over some use of information are greater or less than the additional benefits from allowing greater access to users of that information.

The Net Benefit Principle

An increase in exclusive rights to intellectual property is justified only when the value of increased creative activity resulting from increased incentives is greater than the value of the benefits lost from reduced access.

An increase in access to intellectual property is justified only when the value of the benefits resulting from increased access is greater than the value of decreased creative activity resulting from decreased incentives.

This net benefit approach applies to judges deciding which party should prevail in an infringement action, legislators deciding to amend the law, and scholars deciding what legal policy is preferable from a public goods perspective.

¶77 Following this approach, the analysis of any change in rights requires comparison of the incremental effect on incentives and the incremental benefits from expanded

(2005).

¹¹² Although an explicit “net benefit” approach is not well-established in the intellectual property field, it is well recognized in other fields, such as environmental law, where policy makers are similarly concerned with a benefit cost analysis. See David M. Driesen, *Is Cost-Benefit Analysis Neutral?*, 77 U. COLO. L. REV. 335, 393–94 (2006) (stating that his proposed rule maximizes net benefits in the following sense: “[W]hen an agency writes regulations that generate costs exceeding benefits . . . it makes the net benefits of regulation negative. Setting costs equal to benefits addresses this problem.”). Professor Driesen cites:

HORST SIEBERT, *ECONOMICS OF THE ENVIRONMENT: THEORY AND POLICY* 65 (5th rev. ed. 1998) (maximum net benefit is reached when marginal abatement costs are set equal to benefits defined as marginal avoided damages); SUSAN ROSE-ACKERMAN, *RETHINKING THE PROGRESSIVE AGENDA: THE REFORM OF THE AMERICAN REGULATORY STATE* 18 (1993) (stating that “net benefits are maximized . . . where marginal costs equal marginal benefits.”); THOMAS O. MCGARITY, *REINVENTING RATIONALITY: THE ROLE OF REGULATORY ANALYSIS IN THE FEDERAL BUREAUCRACY* 149–50 (1991), at 50, 61 (suggesting an optimality concept of net benefits by equating looking at more stringent options where costs would begin to outweigh benefits with maximizing net benefits).

Id. at 393 n.313.

¹¹³ The cost-benefit approach is analogous to the optimal level of output by a firm in a competitive market. In microeconomic theory, a profit-maximizing producer of goods will expand production until the increases in revenue (marginal revenue) are outweighed by increases in cost (marginal cost). This “marginal revenue equal marginal cost” approach does not yield the greatest possible revenue nor, by analogy, would a cost-benefit approach result in the greatest amount of intellectual property. Revenue could be increased by producing more, but profits would be reduced because the revenue increases would be outweighed by greater cost increases. The output of intellectual property information could be increased by another rule, but the associated costs would make it inefficient to do so. See HIRSCHLEIFER, *supra* note 60, at 180–87.

access. The link between expanded exclusive rights and increased creative activity is not a direct connection. The marginal benefit from expanded rights depends on the revenue response to changes in rights and the creativity response to changes in revenues.

¶178 Extensions of exclusive rights do not always generate incentives resulting in increased creativity. Advocates of the proposed Performance Rights Act,¹¹⁴ for instance, believe that the proposed legislation will generate new revenues for performers, who would be able to charge royalties for use of their covers of others' music.¹¹⁵ However, the arguments in support of performance rights do not generally argue that the result will be more original performances, rather that it is equitable for composers to share their revenues with those who popularized their songs.¹¹⁶ Increased revenues for some may lead to a redistribution of wealth, rather than an increase in creativity. Reserving to Major League Baseball the exclusive right to market baseball caps with trademark-protected team logos¹¹⁷ is likely to increase its revenue, because there will be no competing sellers, but it may not lead to more investment in trademarking activity. If optimizing the incentives/access tradeoff is the policy goal, there must be both a link between increased rights and increased revenues and a link between increased revenues and increased creative output to support expansion of intellectual property rights.

¶179 Nor do exclusive rights always imply no access. The marginal benefit from reduced rights depends on the benefits obtained by those who would not otherwise have been able to obtain access by compensating the rights holder. Some grants of exclusive rights exclude only those who do not pay, while others exclude all users of a particular type. An owner of patent rights excludes those who do not pay for the machine embodying the innovation or royalties for its use. The loss from denied access is only the deadweight loss associated with those who are willing and able to pay the marginal cost of having the good provided to them but are not willing and able to pay the price charged by the rights holder.¹¹⁸ On the other hand, if a copyright holder has the exclusive right to prevent critical parodies of the copyrighted work, he or she is unlikely to license any such

¹¹⁴ Performance Rights Act, H.R. 848, 111th Cong. (2009).

¹¹⁵ Copyright law currently creates rights for composers of music and lyrics, who earn royalties from public performances of their works, 17 U.S.C. § 106(4) (2006), but it does not create comparable rights for those who perform their music and lyrics.

¹¹⁶ See Press Release, U.S. Congressman Howard Berman, Leahy, Hatch, Berman, and Issa Introduce Bipartisan, Bicameral Legislation to Give Fair Compensation to Musical Artists (Dec. 18, 2007), available at http://house.gov/list/press/ca28_berman/perf_rts_intro.shtml (focusing on "procedural fairness" and parity in the treatment of musicians performing their own work, for which they receive royalties and those performing other's works, who currently do not). See John Frega, *Evaluating the Local Radio Freedom Act: How Will it Affect the Future of Radio in the United States, and Can It Harmonize American and European Copyright Protection?*, 20 SETON HALL J. SPORTS & ENT. L. (forthcoming 2010) (illustrating the equitable issues in the division among composers and performers who made the compositions famous).

¹¹⁷ *Boston Prof'l Hockey Ass'n v. Dallas Cap & Emblem Mfg.*, 510 F.2d 1004, 1012 (1975) (holding that a manufacturer's unauthorized sale of team emblems satisfied the elements for a cause of action for trademark infringement).

¹¹⁸ This statement defines the deadweight loss that is the well-recognized result of creating a legal monopoly in the market for a creative work. See Barnes, *New Economics*, *supra* note 15, at 39 ("Economists refer to the costs associated with excluding such people as deadweight loss, which is measured by the difference between what they would have been willing to pay and the cost of supplying the good to them.") (citations omitted); Christopher S. Yoo, *Rethinking the Commitment to Free, Local Television*, 52 EMORY L.J. 1579, 1598–99 (2003) ("Unfortunately, charging a positive price creates deadweight loss by denying some consumers access to the product even though the marginal benefits that they would derive from consuming it would exceed the marginal cost of allowing them to do so.").

use and everyone will be denied access. A trademark owner is unlikely to license any competitor wishing to use its mark in comparative advertising depicting the owner's product in a truthful but unfavorable light. The net benefit rule requires consideration of the value of the gained or lost creativity that flows from changes in rights as well as changes in benefits received from those who gain or are denied access.

C. *Net Benefit Approach in Contemporary Intellectual Property Law*

¶80 The net benefit approach is relevant to many fundamental intellectual property issues. For instance, the doctrine of equivalents in patent law¹¹⁹ is based in part on the increased incentives effects of allowing inventors exclusive rights beyond the apparent literal scope of their patent claims.¹²⁰ The Supreme Court concluded that the additional benefit associated with this expansion of rights outweighed the reduction in benefits associated with free access. The Court recognized that adopting the doctrine of equivalents might deter other inventors from legitimate activities that are beyond the scope of the claims or trap people who mistakenly buy products covered by the broadly interpreted claim.¹²¹ Yet, from the Court's perspective, the increase in valuable inventive activity from additional incentives created by broad interpretation outweighed the benefits from free access that would result from a narrower rule.¹²² Contemporary scholars similarly focus on the incremental incentive effects of patent rules.¹²³

¶81 Consideration of the incremental effects on access and incentives is not, however, widespread. Intellectual property doctrines frequently overlook the need to focus on incremental effects on modifying rights. The fair use doctrine in copyright, for instance, focuses on the total impact on the market for a copyrighted work rather than the marginal

¹¹⁹ Michael J. Meurer & Craig Allen Nard, *Invention, Refinement and Patent Claim Scope: A New Perspective on the Doctrine of Equivalents*, 93 GEO. L.J. 1947, 1948 (2005) [hereinafter Meurer & Nard] ("Perhaps no doctrine in patent law is as controversial as the Doctrine of Equivalents (DOE), a common law creation that allows a court to expand patent scope beyond the rights literally claimed in the patent.").

¹²⁰ *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 731–32 (2002) (applying the doctrine of equivalents and recognizing that "the language in the patent claims may not capture every nuance of the invention or describe with complete precision the range of its novelty.").

¹²¹ *Id.* at 732 ("If competitors cannot be certain about a patent's extent, they may be deterred from engaging in legitimate manufactures outside its limits, or they may invest by mistake in competing products that the patent secures. In addition the uncertainty may lead to wasteful litigation between competitors, suits that a rule of literalism might avoid.").

¹²² *Id.* at 732 ("Each time the Court has considered the doctrine [of equivalents], it has acknowledged this uncertainty as the price of ensuring the appropriate incentives for innovation, and it has affirmed the doctrine over dissents that urged a more certain rule."). The Supreme Court further explains:

If patents were always interpreted by their literal terms, their value would be greatly diminished. Unimportant and insubstantial substitutes for certain elements could defeat the patent, and its value to inventors could be destroyed by simple acts of copying. For this reason, the clearest rule of patent interpretation, literalism, may conserve judicial resources but is not necessarily the most efficient rule. The scope of a patent is not limited to its literal terms but instead embraces all equivalents to the claims described.

Id. at 731–32.

¹²³ Meurer and Nard offer a utilitarian analysis of the doctrine of equivalents based on the view that the doctrine of equivalents allows inventors to avoid the costs of refining and revising their patent claims during patent prosecution. Their theory leads to a conclusion that "a socially optimal patent policy should balance refinement cost savings and innovation incentives created by the DOE against the harm to competition and rent-seeking costs created by the doctrine." Meurer & Nard, *supra* note 119, at 1953.

impact on incentives. The fourth and most important¹²⁴ of the statutory factors relevant to whether an unauthorized use is fair is the extent to which the alleged infringer's use interferes with the market for the copyright owner's work.¹²⁵ The greater the prospect of diminishing the revenues earned by the copyright owner, the less likely a court will consider the allegedly infringing use to be fair. Fair use focuses on the marketability of the work.¹²⁶ Even if a court is considering the impact on the market for derivative works, the focus is on the revenue effects.¹²⁷ Copyright fair use is concerned with market substitution rather than incentives.¹²⁸ This does not follow the net benefit rule. From the net benefit perspective, the focus should not be on the extent of the effect on the market, but the extent of the effect on the copyright owner's incentives. The copyright fair use doctrine ignores the question of whether there is a link between enhanced revenues and enhanced creative output.

¶82 Trademark law presents a slightly different tradeoff because strong exclusive rights benefit both the creator of a source-indicating symbol and, often, referential users of the symbol. Consumers want to be sure that the mark refers to the goods of a particular type from a single source. That does not mean that there is no tradeoff between incentives and access; the net benefit principle still applies. The issue of Internet initial interest confusion illustrates the balancing process. In these cases, search engines such as Google respond to a computer user's entry of a trademarked symbol as a search term by displaying advertisements or sponsored links paid for by the trademark owner's competitors.¹²⁹ If the law permits keyword use of trademarks, the owner's right to exclude is limited, and access without any compensation to the owner by competitors in these cases is expanded.

¶83 The net benefit approach to the Internet initial interest confusion problem compares the incremental benefits from recognizing exclusive rights and from allowing free access. The social value of recognizing exclusive rights and prohibiting keyword advertising would be reflected in the social value of any increased incentives for trademark owners to

¹²⁴ *Harper & Row, Publishers, Inc. v. Nation Enters.*, 471 U.S. 539, 566 (1985) ("Finally, the Act focuses on 'the effect of the use upon the potential market for or value of the copyrighted work.' This last factor is undoubtedly the single most important element of fair use.").

¹²⁵ 17 U.S.C. § 107 (2006) ("In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include . . . (4) the effect of the use upon the potential market for or value of the copyrighted work.").

¹²⁶ *Harper & Row*, 471 U.S. at 566–67.

¹²⁷ In *Campbell*, the Supreme Court explained:

Evidence of substantial harm to [the copyright holder's protectable markets for derivative works] would weigh against a finding of fair use, because the licensing of derivatives is an important economic incentive to the creation of originals Of course, the only harm to derivatives that need concern us, as discussed above, is the harm of market substitution. The fact that a parody may impair the market for derivative uses by the very effectiveness of its critical commentary is no more relevant under copyright than the like threat to the original market.

Campbell v. Acuff-Rose Music, Inc., 510 U.S. 569, 593 (1994) (citation omitted).

¹²⁸ *Id.*

¹²⁹ Some courts have held that this use of a competitor's trademark may give rise to a trademark infringement claim. *See, e.g.*, *Audi AG v. D'Amato*, 469 F.3d 534, 546 (6th Cir. 2006); *Australian Gold, Inc. v. Hatfield*, 436 F.3d 1228, 1238–39 (10th Cir. 2006); *Promatek Indus., Ltd. v. Equitrac Corp.*, 300 F.3d 808, 812–13 (7th Cir. 2002); *Savin Corp. v. Savin Group*, 391 F.3d 439, 462 n.13 (2d Cir. 2004); *Brookfield Comm'ns, Inc. v. W. Coast Entm't Corp.*, 174 F.3d 1036, 1062 (9th Cir. 1999). *See also* Eric Goldman, *Deregulating Relevancy in Internet Trademark Law*, 54 EMORY L.J. 507 (2005).

invest in source-indicating information and any increased ability for computer users to locate the website of a supplier of the *particular goods* sold under that mark. The social value of access to the mark would be measured by any increased competition for the *type of goods* and services offered by the trademark owner and the ease of searchers finding those competitive alternatives.

¶84 Recognizing the net benefits test creates a new agenda for research. Applying public goods theory to intellectual property policy often leads analysts to assume that more intellectual property information will be produced if intellectual property rights are expanded. But this depends on the rights/revenue and revenue/creativity links. Public goods theory also leads analysts to assume that more access results from weakening intellectual property rights. But this depends on how many people are excluded because they are unwilling to compensate the rights owner for the benefits they would obtain from access. These qualifications are inevitable and unavoidable when determining the optimal level of intellectual property protection.

V. CONCLUSION

¶85 Though it is the dominant economic approach to intellectual property law, the abstract principles from public goods theory are no more useful than principles from the theory of exchange of private goods. The public finance economics roots of public goods theory do not explain how to structure the private exchange of intellectual property rights. The theory of exchange does not provide a practical and normatively acceptable way to allocate resources to the creation of intellectual property. However, both theories inform the balance necessary to maximize the benefits to be obtained from defining legal rights to access and exclusion.

¶86 Intellectual property economics identifies ways in which the market fails without providing general principles for addressing the incentives/access tradeoff. Without some degree of exclusive rights, creators of intellectual property information have little opportunity to cover the costs of their investments beyond the benefits they obtain from personal use. If users cannot feasibly be excluded from using intellectual property information, markets are unable to determine the optimal amount of creative work to supply. Expansive exclusive rights are undesirable, however, because people who would obtain a benefit from the information that exceeds the cost of supplying the information to them might be denied that benefit. The public finance theory of public goods theory and the theory of private exchange in competitive marks unsuccessfully describe standards for optimizing the output of public and private goods. These standards are inapplicable to intellectual property, because they ignore the conflict inherent in the market supply of intellectual property information between short and long term goals, rest on the assumption that the government rather than a market will supply the information, or offer impractical and unappealing departures from normal market mechanisms for supply.

¶87 The net benefits approach addresses the balance between creating incentives and promoting access. Consistent with judicial and congressional emphasis on providing incentives to create with the ultimate objective of producing public benefits, the net benefits approach considers the incremental effect on incentives and on public benefits from expanding and contracting the extent, scope, and duration of rights. The incremental approach is only partially recognized and implemented in intellectual

property policy analysis. The Supreme Court's discussion of patent law's doctrine of equivalents reflects the net benefit approach, while a variety of doctrines in copyright law, such as fair use, and trademark law, such as initial interest confusion on the Internet, do not. This article offers a framework for such an incremental analysis.