

Patent Law's Latent Schism

Matthew G. Sipe*

Abstract: Utilitarian theory has largely come to dominate intellectual property discourse and scholarship, nowhere more strongly than in the field of patent law. That is, patents are the incentive we offer for innovation, from which all of society ultimately benefits, despite short-term monopoly costs. On the other side, a minority of embattled jurists and scholars defend the relevance of freestanding moral principles, such as desert, autonomy, or justice, and argue for a re-incorporation thereof into patent doctrine and policy. This Article offers a unique and unifying reframing of this longstanding debate: the moral principles never left patent law, if you only know where to look. On the contrary, they have come to entirely dominate and control their own half of the field; on examination, the typical utilitarian theories do an excellent job of explaining modern patent *validity* law, but patent *infringement* law is unmistakably animated by broader moral principles—even at times outright hostile to a traditional economic approach.

This article examines in detail the most significant doctrines governing patent validity—novelty, non-obviousness, subject-matter eligibility, utility, written description, enablement, and inventorship—and demonstrates the strength of their relationship to utilitarian frameworks at the (often explicit) expense of others. In turn, the article explores the most significant doctrines with respect to patent infringement—relief (whether injunctive or damages), scope (*vis-à-vis* the doctrine of equivalents), and defenses (inequitable conduct and prior use)—and builds the case that moral frameworks alone are capable of explaining their contours. Finally, the article offers an overarching theory as to the interrelated causes of this framework schism: the adjudicatory split between the USPTO and district courts, the influence of traditional property law, and the mix of private-law and public-law features that patents exhibit.

* Frank H. Marks Visiting Associate Professor, George Washington University Law School; J.D., Yale Law School; B.A., University of Virginia.

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INTRODUCTION

By almost any metric, utilitarianism has conquered the field of American intellectual property scholarship¹—and nowhere more absolutely than patent law.² Whether measured by citations and readers³ or direct influence on federal policy,⁴ the unambiguously dominant lens

¹ See, e.g., PETER S. MENELL, MARK A. LEMLEY, & ROBERT P. MERGES, *INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE: 2017* at 16 (“Utilitarian theory and the economic framework built upon it have long provided the dominant paradigm for analyzing and justifying the various forms of intellectual property.”); WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY* at 4 (2003) (“Today it is acknowledged that analysis and evaluation of intellectual property law are appropriately conducted within an economic framework that seeks to align that law with the dictates of economic efficiency.”); Edwin C. Hettinger, *Justifying Intellectual Property*, 18 PHIL. & PUB. AFFAIRS 31, 47 (1989) (“[T]he strongest and most widely appealed to justification for intellectual property is a utilitarian argument based on providing incentives.”); *Mazer v. Stein*, 347 U.S. 201, 219 (1954) (“The economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare . . .”).

² See, e.g., MENELL, LEMLEY, & MERGES, *supra* note 1 at 36 (“Patent law is the classic example of an intellectual property regime modeled on the utilitarian framework.”); MARTIN J. ADELMAN, RANDALL R. RADER, & JOHN R. THOMAS, *CASES AND MATERIALS ON PATENT LAW* 33-46 (4th ed. 2015) (describing “[t]he literature relating the patent system to economic theory” as “enormous,” and giving primacy to those justifications); CRAIG A. NARD, *THE LAW OF PATENTS* 2 (2002) (“Our patent laws operate as part of an interdependent mix of incentives and restraints . . . , offering a potential financial reward as an inducement to invent, to disclose technical information, to invest capital in the innovation process, and to facilitate efficient use and manufacturing of invention through licensing.”).

³ For example, in Professors Fred Shapiro and Michelle Pearse’s most recent comprehensive survey of law review citations, articles in the utilitarian tradition are the sole representatives for the field of patent law. See Fred R. Shapiro & Michelle Pearse, *The Most-Cited Law Articles of All Time*, 110 MICH. L. REV. 1483, 1500 (2012). A review of the most cited articles regarding “patents” on SSRN yields similarly homogeneous results—thanks in part to the (telling) preeminence of the National Bureau of Economic Research. SSRN, *Top 10,000 Papers*, https://hq.ssrn.com/rankings/Ranking_display.cfm?TRN_gID=10.

⁴ Fittingly enough, the U.S. Patent and Trademark Office is subordinated within the Department of Commerce—the agency responsible for “promot[ing] job creation and economic growth.” DEP’T OF COMM., *About Commerce*, <https://www.commerce.gov/about>; see 35 U.S.C. § 2 (“The [USPTO], subject to the policy direction of the Secretary of Commerce . . .”). Likewise, perhaps the most significant study of the patent system ever undertaken by the federal government was itself wholly economic in nature. Senate Subcomm. on Patents, Trademarks, and Copyright, Comm. on the Judiciary, 85th Cong., 2d Sess., *An Economic Review of the Patent System* (Comm. Print 1958).

with which to analyze, adjudge, and justify our patent system is economics, in the ultimate service of efficiency and growth.⁵ Alternative theories of natural law, personhood, or social justice are of a certain secondary status in the patent field, particularly when compared to other fields such as copyright law,⁶ or foreign systems such as the European Union.⁷ U.S. patent scholars that do work in these moralistic traditions, however excellent, tend to acknowledge their relatively embattled and minority position.⁸ Their work, moreover, tends to focus on particular issues or *deviations* from moral theory that patent law presents,⁹ rather

⁵ See, e.g., A. Samuel Oddi, *Un-Unified Economic Theories of Patents—The Not-Quite Holy Grail*, 71 NOTRE DAME L. REV. 267, 269 (1996) (describing “natural law/justice based theories” of the patent system as “classical theories,” no longer represented in the “modern era”); Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J. L. & ECON 265, 266 (1977) (describing “[t]he conventional view of the patent system” as “a device that enables an inventor to capture the returns from his investment in the invention”).

⁶ See, e.g., Wendy J. Gordon, *Moral Philosophy, Information Technology, and Copyright*, in INFORMATION TECHNOLOGY AND MORAL PHILOSOPHY 270 (2008); Wendy Lim, *Towards Developing a Natural Law Jurisprudence in the U.S. Patent System*, 19 SANTA CLARA HIGH L.J. 561, 562 (2002) (“Perhaps due to the fact that copyrights are more readily linked to First Amendment rights of speech, copyright law has generated some discussion on natural rights and natural law-type theories.”).

⁷ See, e.g., MENELL, LEMLEY, & MERGES, *supra* note 1 at 5-6 (“Natural rights are strongly emphasized in the continental European justifications for intellectual property. . . . Continental scholars emphasize the importance of reputation and noneconomic aspects of intellectual property”); ROBERT P. MERGES, JUSTIFYING INTELLECTUAL PROPERTY 94 (2011) (“[I]n everyday IP scholarship the labels have largely stuck: the United States is the home of a utilitarian brand of IP law; in Europe a rights-based, natural law vision predominates.”).

⁸ See, e.g., MERGES, *supra* note 7; Emily Michiko Morris, *Intuitive Patenting*, 66 S.C. L. REV. 61, 106 (2014) (“[M]orality and ethics based objections are more the exception to the rule than the rule . . . as the U.S. patent system has remained mostly agnostic about morality and ethics.”); Lim, *supra* note 6, at 562 (“[P]atent law seems to be a poorer cousin as far as any discussion on natural rights or natural law jurisprudence is concerned.”); Adam Mossoff, *Rethinking the Development of Patents: An Intellectual History, 1550-1800*, 52 HASTINGS L.J. 1255, 1257 (2001) (“It is my intention, nonetheless, to offer a modest challenge to the prevailing view”).

⁹ See, e.g., Wendy J. Gordon, *A Property Right in Self-Expression: Equality and Individualism in the Natural Law of Intellectual Property*, 102 YALE L.J. 1533, 1608 (1993) (“Current intellectual property systems give rights in excess of what a Lockean model would justify.”); Jay Erstling, *Using Patents to Protect Traditional Knowledge*, 15 TEX. WES. L. REV. 295 (2009) (describing problems—and solutions—with leveraging the patent system to protect the moral interests in traditional cultural knowledge); MERGES, *supra* note 7, at 271-87 (addressing moral problems with the patent system vis-à-vis lifesaving drug

than proposals for unifying positivistic theories of patent law as economists have.¹⁰

The dominance of utilitarianism in American patent law is, to a point, justified by the long arc of patent history¹¹ and constitutional text alike: “The Congress shall have Power . . . *To promote the Progress of Science and useful Arts*, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”¹² Or, per *Federalist No. 43*: “The *utility* of this power will scarcely be questioned. . . . The *public good* fully coincides . . . with the claims of individuals.”¹³ Little wonder then that, when signing the most comprehensive patent reform legislation in years, President Barack Obama couched the action entirely as a matter of sound utilitarian policy: “This much-needed reform will speed up the patent process so that innovators and entrepreneurs can turn a new invention into a business as quickly as possible. . . . Here in America, our creativity has always set us apart, and in order to continue to grow our economy, we need to encourage

access in the developing world, and pointing primarily to voluntary, extra-legal solutions such as NGO efforts).

¹⁰ See, e.g., sources cited *supra* note 5. Professor Merges’s book, for example, is a singularly compelling (and, in the author’s view, highly persuasive) attempt to map broad moral principles onto a justification for intellectual property writ large, but it does not make the claim that those principles necessarily explain the specificities and realities of current *doctrine*—let alone patent law doctrine in particular. See MERGES, *supra* note 7.

¹¹ Edward C. Walterscheid, *The Early Evolution of the United States Patent Law: Antecedents* (Part 1), 76 J. Pat. & Trademark Off. Society 697, 699 (1994) (“Patent law systems and patent systems developed out of a realization that there was indeed a societal need to recognize and protect a property right in invention... although for reasons having very little to do with any perceived ‘natural law’ right.”); Hebert Hovenkamp, *The Emergence of Classical American Patent Law*, 58 ARIZONA L. REV. 263, 266-67 (2016) (“Historically, Supreme Court decisions interpreting both the Contract Clause and Patent Clause considered whether government-created exclusive rights could be used to encourage development. . . . The states issued exclusive rights in corporate charters and for patented inventions more of less interchangeably. . . . American legislatures and courts conceived of the patent as an active tool of economic development.”). Or, to go beyond the United States’ own history, the predecessors in Venetian and, later, English law were clearly predicated on economic interests. See generally JOHN F. DUFFY & ROBERT P. MERGES, *PATENT LAW AND POLICY: CASES AND MATERIALS* 3-8 (6th ed. 2013).

¹² U.S. CONST. art. I, § , cl. 8 (emphasis added).

¹³ THE FEDERALIST NO. 43 (James Madison) (emphases added).

that spirit . . .”¹⁴ But, as the moral critics are quick to point out, this line of reasoning has critical limits, and unexplained gaps.¹⁵

This Article offers a novel and dissenting, but unifying, account of the clashing utilitarian and moral frameworks on patents: in reality, each framework has fully conquered its own half of the doctrinal territory. Put differently, a grand internal separation has occurred in patent law—like oil and water. That is, the typical utilitarian theories do an excellent (and exclusive) job of explaining modern patent *validity* doctrine, but the rules governing patent *infringement* are unmistakably animated by broader moral principles, and even at times outright hostile to a traditional economic approach. The utilitarians thus overstate their assets, whereas the moralists underestimate their own considerable holdings—one only needs to look in the right places.

The Article proceeds in four parts. Part I begins with a taxonomy of philosophical perspectives on property and, in turn, intellectual property. Unifying principles are examined among moralistic theories of natural law, personhood, and distributive justice, and contrasted against the core principles of economic utilitarianism. Parts II and III then apply this taxonomy to the two halves of patent law. Part II examines the most significant doctrines governing patent validity—subject-matter eligibility, utility, novelty, nonobviousness, written description, enablement, and inventorship—and demonstrates the strength of their relationship to utilitarian principles at the expense of others. Part III, in turn, examines the most significant rules with respect to patent infringement—relief (whether damages or injunctive), scope (*vis-à-vis* the doctrine of equivalents), and defenses (inequitable conduct and prior use)—and builds the case that moral principles alone are capable of explaining their contours. Finally, Part IV offers a modest theory as to the interrelated causes of this schism: the adjudicatory split between district courts and the

¹⁴ See WHITE HOUSE OFFICE OF THE PRESS SECRETARY, *President Obama Signs America Invents Act, Overhauling the Patent System to Stimulate Economic Growth, and Announces New Steps to Help Entrepreneurs Create Jobs* (Sept. 16, 2011) (quoting President Obama’s statements at the signing).

¹⁵ See, e.g., Lim, *supra* note 6, at 562 (“I . . . argue that a utilitarian justification of the patent system is not a viable explanation.”); Mossoff, *supra* note 8 (arguing that the conceptual shift from patents as royally sanctioned industrial monopolies to protection for inventions was precipitated by the influence of natural law theorists—John Locke in particular—rather than utilitarian thinkers).

PTO; the influence of traditional property law; and patent law’s private-public mix.

I. PHILOSOPHICAL TAXONOMY

A. Natural Law and Labor Theory

A perfectly complete account of the natural law theories of ownership is, for the sake of brevity and readability, beyond the scope of this article.¹⁶ But even a brief introduction to John Locke and labor theory will suffice. For Locke, property begins with self-ownership as an axiom, as contrasted with what God conveyed to all humankind in common: “Though the earth and all inferior creatures be common to all men, yet every man has a Property in his own Person. This nobody has any right to but himself.”¹⁷ From there, Locke reasons, one must also necessarily own their own labor, it being a part or product of their owned self.¹⁸ Accordingly, one then owns the products *of those* labors—“the apples . . . gathered” off the ground or the “land . . . till[ed]” and planted—because they have been irrevocably “mixed” with the labor (and hence, the self).¹⁹

Locke further justifies this theory by *reductio ad absurdum*; if the would-be apple owner was instead required to obtain the affirmative consent of all other potential owners—all humankind—before taking and consuming, she would starve.²⁰ Such an outcome, Locke reasoned, would contradict the Judeo-Christian imperative to prosper, the entire purpose of God’s conveyance of the earth in the first place: “for the Support and Comfort of [humankind’s] being.”²¹ Accordingly, it is labor, rather than mutual consent, that forms the foundation of ownership.

¹⁶ For a full account, the author recommends STEPHEN BUCKLE, *NATURAL LAW AND THE THEORY OF PROPERTY: GROTIUS TO HUME* (1991).

¹⁷ JOHN LOCKE, *TWO TREATISES ON GOVERNMENT* (3d Ed. 1698).

¹⁸ *Id.* (“The Labour of his body and the Work of his hands, we may say, are properly his.”); *id.* (“For this Labour [is] the unquestionable property of the labourer . . .”).

¹⁹ *Id.*

²⁰ *Id.* (“And will anyone say he had no right to those acorns or apples he thus appropriated because he had not the consent of all mankind to make them his? . . . If such consent was necessary, man had starved, notwithstanding the plenty God had given him.”).

²¹ *Id.*

But this same imperative to prosper places outer limits on labor theory. Locke establishes two bounds—provisos—on ownership by labor. First, the act of taking must leave “enough, and as good, left in common for others.”²² This is often referred to as the sufficiency proviso, ensuring that ownership by one does not leave others bereft of opportunity or sustenance²³: “[I]n effect, there was never the less left for others because . . . he that leaves as much as another can make use of, does as good as take nothing at all.”²⁴ Second, the act of taking must be limited to what the individual can actually utilize: “As much as anyone can make use of . . . before it spoils. . . . Nothing was made by God for Man to spoil or destroy.”²⁵ This is often referred to as the waste proviso,²⁶ ensuring that ownership contributes to some end use or purpose, rather than ownership for its own hoarding sake.

As with physical property, labor theory thus offers an intuitive potential justification for intellectual property, including patents. In short: “What a person produces with her own intelligence, effort, and perseverance ought to belong to her and no one else.”²⁷ Just as one might gather unclaimed apples to bake into a pie, one might gather disparate pieces of information and knowledge in the public domain, infuse them with effort and creativity, and thereby develop a new invention.²⁸ Though the provisos may set upper limits on the details of implementation, Locke’s framework thus compels at least some measure of ownership for these diligent inventors, if only because of their hours spent toiling in the lab or field.

B. Autonomy and Personhood

Locke’s labor-based framework may be contrasted to some degree against those based on expression or will. In brief, these theories recognize that our relationships to external objects both inform and

²² *Id.*

²³ *Id.*

²⁴ *Id.*

²⁵ *Id.*

²⁶ XXX [unify across translations].

²⁷ Edwin C. Hettinger, *Justifying Intellectual Property*, 1 PHIL. & PUBLIC AFFAIRS 31, 36 (1989) (examining, among others, the relationship between labor theory and intellectual property).

²⁸ See, e.g., MERGES, *supra* note 7 at 31-48 (supporting the fit between labor theory and establishing a system for protecting intellectual property).

support our personalities—our *selves*—in ways that may be orthogonal to labor or objective market value. A wedding ring, for example, has a particular significance for and relationship to its owner as compared to all other persons, entirely separate from its cost or the craftsman who created it.²⁹ Persons are bound up, in other words, by everything from homes to clothing. True self-actualization thus requires the freedom to imbue external objects with this kind of meaning, which in turn requires some mechanism of ownership. Enter: property.

Immanuel Kant provides such an articulation of property, grounded fundamentally in service of maximizing individual autonomy.³⁰ As Professor Merges explains:

People have a desire to carry out projects in the world. Sometimes, those projects require access to and control over external objects. . . . For Kant, this desire must be given its broadest scope, to promote the widest range of human choice, and therefore human projects. . . . Consider Michelangelo, approaching a large block of marble. He may have a plan, a mental picture of what he wants to do, what design he wants to impose on that chunk of rock. . . . To fully realize this vision, to work out his plan for the marble, he needs to know that he can count on two things: continued access to it, and noninterference by others.³¹

For Kant, free will is a defining characteristic of persons as compared to objects; “[w]e can dispose of things which have no freedom, but not of a being which has free will.”³² That internal free will is only reified, however, by forming intentions and acting on objects in the external world.³³ By so doing, the individual becomes connected to the object,

²⁹ See Margaret Jane Radin, *Property and Personhood*, 34 *STANFORD L. REV.* 957, 959 (1982).

³⁰ See, e.g., Allen Wood, *The Final Form of Kant’s Practical Philosophy*, in *KANT’S METAPHYSICS OF MORALS: INTERPRETIVE ESSAYS* (Mark Timmons, ed. 2002) (“Kantian morality . . . is never about the social regulation of individual conduct. It is entirely about autonomous individuals directing their own lives.”).

³¹ MERGES, *supra* note 7, at 72-73.

³² Kant, *Lectures on Ethics (1755-1780)* (trans. L. Infield) (1963), at 124.

³³ See, e.g., Lewis White Beck, *A Commentary on Kant’s Critique of Practical Reason* at 180 (1960) (“[Free will] has, therefore, an incentive for action . . .”); Frederick Rauscher, *Kant’s Social and Political Philosophy*, *THE STANFORD*

which gives rise to what Kant defines as property: that “with which I am so connected that another’s use of it without my consent would wrong me.”³⁴

Kant is not alone in grounding property in a theory of personhood by free will. Georg W. F. Hegel, for example, offers a similar view: “The person has for its substantive end the right of placing its will in any and every thing, which thing is thereby mine; . . . [this constitutes] mankind’s absolute right of appropriation over all things.”³⁵ In particular, Hegelian theory clarifies that will-based ownership is not necessarily durable or permanent once established; “continuous occupation is necessary to maintain a property relationship . . . because ‘the will to possess something must express itself.’”³⁶ Moreover, critically, an occupation by will need not include any kind of externally visible *use*.³⁷

Just as with labor theory, then, personhood suggests at least some degree of ownership for intellectual property. The creator of a distinctly original work or invention has, after all, a particularly strong claim that their will is uniquely embodied by it. Indeed, it seems difficult to imagine a more direct affront to one’s projected personhood than for a plagiarist to steal credit for authorship, or a counterfeiter to distribute altered or imperfect recreations. Naturally, there is some degree of tension with respect to autonomy; propertization restricts the would-be infringer’s freedom to act. But without any measure of protection, there could be no creation at all.

ENCYCLOPEDIA OF PHILOSOPHY at § 5 (2017) (Edward N. Zalta, ed.) (“[Ownership], then, is required by right in order for free beings to be able to realize their freedom by using objects for their freely chosen purposes.”).

³⁴ 6:245 Doctrine of Right.

³⁵ G. Hegel, *Philosophy of Right* (T.M. Knox Trans. 1967) (1821) S 44.

³⁶ Radin, 974 (quoting PR S. 64R); Hughes, 334 (“Abandonment occurs easily in the Hegelian system because the relationship between person and object is fluid. Being first in possession of an object is not sufficient to maintain title to it; the property relationship continues only so long as the will manifests itself in the object.”).

³⁷ Hegel, *Philosophy of right* (T.M. Knox trans. 1967) (1821) P 55-59; Hughes 334-35 (“There is a rock on my shelf from the coast of Corsica that reminds me of days spent there. My will occupies that rock without wishing to change it and without having labored upon it.”).

Kant and Hegel were, like Locke, also informed by the need for there to be enough to go around. For Kant, distributive implications arose from mutual obligation, and could at least justify the taxation of property as a functional limitation on ownership.³⁸ Hegel likewise acknowledged that a sufficiently lopsided distribution of property necessarily undermines autonomy: “When the standard of living of a large mass of people falls below a certain subsistence level . . . there is a consequent loss of the sense of right and wrong, of honesty and the self-respect which makes a man insist on maintaining himself by his own work and effort”³⁹ His proposed solutions were largely external—trade, colonization, and emigration.⁴⁰ Turning instead to John Rawls, one sees a more robust framework for relating distributive justice to property directly.

C. Distributive and Social Justice

Rawls attempted to reconcile earlier philosophers’ focus on freedom with principles of fairness and equality. For Rawls, thinking properly about justice required first stepping back to a conceptual, pre-society “original position”:

[N]o one knows his place in society, his class position or social status, nor does anyone know his fortune in the distribution of natural assets and abilities, his intelligence, strength, and the like. I shall even assume that the parties do not know their conceptions of the good or their special psychological propensities. The principles of justice are chosen behind a veil of ignorance.⁴¹

Just principles for society, Rawls argued, are those that rational individuals in the original position—behind this veil of ignorance—would collectively agree upon; they are what “rational and free persons concerned to further

³⁸ Kant, *Metaphysical First Principles of the Doctrine of Right* 6; see also SAMUEL FLEISCHACKER, A SHORT HISTORY OF DISTRIBUTIVE JUSTICE at 68 (2009) (describing Kant as “the first major thinker to argue explicitly that care for the poor ought to be a matter for the state”).

³⁹ Hegel, *Philosophy of Right* (T.M. Knox 1942), P244.

⁴⁰ *Id.* at P248; see generally J.E. Penner, *Property, Community, and the Problem of Distributive Justice*, 10 THEORETICAL INQUIRIES IN LAW 193, 207-10 (2009).

⁴¹ JOHN RAWLS, A THEORY OF JUSTICE 118 (1971).

their own interests would accept in an initial position of equality as defining the fundamentals of the terms of their association.”⁴²

Rawls claimed that two clear principles would emerge under such circumstances. First, basic guarantees of liberty would be universal.⁴³ For example, in the original position, nobody can be sure what race, gender, or social class they will come to inhabit. Rational policymakers in such a position would not, therefore, deny basic liberties to particular subgroups.⁴⁴ Second, where “[s]ocial and economic inequalities” do exist, it must ultimately be for “the greatest benefit of the least advantaged” and “attached to offices and positions open to all under conditions of fair equality of opportunity.”⁴⁵ Again, in the original position, nobody can be sure how wealthy—or endowed with marketable talents—they will be, so rational policymakers would tend to “regard the distribution of natural talents as a common asset,” and “to share in the benefits of this distribution whatever it turns out to be.”⁴⁶

On this basis, Rawls developed a relatively cabined view of just property. In particular, he distinguished between personal property, which falls under the first principle of universal basic liberty, and productive property, which does not. In Rawls’ view, personal property is “those belongings that are essential for an effective private, personal sphere”—things for personal use, from toothbrushes to cookware.⁴⁷ Productive property, broadly speaking, is capital—the means of production, from arable land to textile mills.⁴⁸ Whereas personal property is a fundamental requirement of basic liberty,⁴⁹ “the means of production may or may not

⁴² *Id.* at 11.

⁴³ *Id.* at 302 (“[E]ach person is to have an equal right to the most extensive liberty compatible with a similar liberty for others.”).

⁴⁴ Leif Wenar, *John Rawls*, THE STANFORD ENCYCLOPEDIA OF PHILOSOPHY at § 4.7 (2017) (“A party in the original position will find the possibility that their citizen might be denied political and religious liberties intolerable . . . , when they could [instead] safeguard the standing and commitments of their citizen even if their citizen turns out to be in a weak minority.”).

⁴⁵ RAWLS, *JUSTICE* at 302.

⁴⁶ *Id.* at 101-02.

⁴⁷ MERGES, *supra* note 7, at 105.

⁴⁸ *Id.*

⁴⁹ *Id.* (“Among the basic liberties of the person is the right to hold and to have the exclusive use of personal property . . . [so as] to allow . . . personal independence and self-respect . . .”).

be privately owned” in a just society, so long as its distribution satisfies the second principle of benefiting the least well-off.⁵⁰

Subsequent thinkers have taken Rawls’s suggestion and used socioeconomic inequality as a framework to analyze property law and advocate for change, weighing the distributive implications of everything from the Takings Clause⁵¹ to local zoning regulations.⁵² Questions about intellectual property, in turn, likewise become questions about whether such a system benefits the least advantaged—a system with which all would agree in the hypothetical original position.⁵³ This approach may be contrasted most sharply with utilitarianism, the fourth and final framework discussed in this Article.

D. Utilitarianism and Efficiency

Jeremy Bentham offered the first and most succinct expression of utilitarianism: “[I]t is the greatest happiness of the greatest number that is the measure of right and wrong.”⁵⁴ That is, Bentham “equates goodness with the sum total of pleasure (minus the pain) that people (*all* people) experience as a result of making one decision over the possible alternatives.”⁵⁵ Utilitarianism is, accordingly, both rigidly consequentialist and intentionally blind to broader sociocultural meaning—except insofar as it informs such “pleasure.”⁵⁶

⁵⁰ JOHN RAWLS, *A THEORY OF JUSTICE* at 66 (1971); *see also* JOHN RAWLS, *JUSTICE AS FAIRNESS: A RESTATEMENT* at 138 (2001) (contrasting “private personal property” and the “right of private property in productive assets”); *see generally* D. Benjamin Barros, *Property and Freedom*, 4 N.Y.U. J. L. & LIBERTY 36, 57-59 (2009).

⁵¹ *See, e.g.*, Thomas W. Merrill, *The Landscape of Constitutional Property*, 86 VA. L. REV. 885, 905-07 (2000) (observing that “[i]ssues of distributive justice have dominated academic discussions about the Takings Clause in recent decades,” and collecting sources); Leigh Raymond, *The Ethics of Compensation: Takings, Utility, and Justice*, 23 ECOLOGY L. Q. 577 (1996).

⁵² *See, e.g.*, Alice Kaswan, *Distributive Justice and the Environment*, 81 N.C. L. REV. 1031 (2003); Paul H. Brietzke, *Urban Development and Human Development*, 25 IND. L. REV. 741 (1991).

⁵³ *See, e.g.*, MERGES, *supra* note 7, at 109-21.

⁵⁴ Jeremy Bentham, *A Comment on the Commentaries and A Fragment on Government*, in *THE COLLECTED WORKS OF JEREMY BENTHAM* at 393 (1977).

⁵⁵ GREGORY S. ALEXANDER & EDUARDO M. PEÑALVER, *AN INTRODUCTION TO PROPERTY THEORY* at 12 (2012).

⁵⁶ JEREMY BENTHAM, *THE RATIONALE OF REWARD*, Bk. 3 Ch. 1 (1825) (“Prejudice apart, the game of push-pin is of equal value with the arts and

From this goal of maximizing utility, applied as an imperative to proper governance, Bentham derives the institution of property:

The sole object of the government ought to be the greatest happiness of the greatest possible number of the community. The happiness of an individual is greater, in proportion as his sufferings are lighter and fewer in number, and as his enjoyments are greater and larger in number. The care of providing for his enjoyments ought to be left almost entirely to each individual; the principal function of government being to protect him from sufferings. It fulfils this office by creating rights which it confers upon individuals: rights of personal security; rights of protection for honour; rights of property; rights of receiving assistance in case of need.⁵⁷

Bentham concedes that “there have always been circumstances in which a man could secure [ownership] by his own means,” such as secrecy or brute strength; but, absent government enforcement, “[h]ow miserable and precarious is this method of possession!”⁵⁸ Agreement, instead, “reciprocally to respect each other’s booty” is “essential to the happiness of society.”⁵⁹

Bentham’s basic framework has been refined, critiqued, and expanded upon by a number of other philosophers. John Stuart Mill suggested that qualitative distinctions could, in fact, be drawn between “higher” and “lower” pleasures, with intellectual and creative pursuits counted more heavily in the utilitarian calculus.⁶⁰ Henry Sidgwick argued that one logical corollary of utilitarianism is that population growth is a moral imperative (to a point), since there will be more total pleasure being experienced: “Assuming, then, that the average happiness of human beings is a positive quantity . . . Utilitarianism directs us to make the

sciences of music and poetry. If the game of push-pin furnish more pleasure, it is more valuable than either.”)

⁵⁷ JEREMY BENTHAM, *PRINCIPLES OF THE CIVIL CODE* Pt. 1 Ch. 1 (Browning ed. 1843).

⁵⁸ *Id.* at Pt. 1 Ch. 8.

⁵⁹ *Id.*

⁶⁰ JOHN STUART MILL, *UTILITARIANISM* at 14 (1863).

number enjoying it as great as possible.”⁶¹ Still others, such as G. E. Moore, attempted to hybridize utilitarianism with freestanding conceptions of, for example, the intrinsic good of “beauty”—a value wholly independent of utility generation.⁶²

But it is Bentham’s core argument that dominates the normative side of law-and-economics. Laws are justified based on the sum of their effects: minimizing inefficiencies, maximizing overall economic growth.⁶³ Utilitarian thinking, for example, posits that tort law should not have as its goal the prevention and punishment of *all* accidents—even some fatal ones—because beyond a certain level, care and prevention are simply more costly to society than the loss of life and limb.⁶⁴ Likewise, it is utilitarianism that justifies non-punitive breach of contract; if it is more efficient on net to break the promise rather than carry it out, reliance damages and the narrow availability of specific performance will so allow in practice.⁶⁵ The broken promise itself—however intuitively immoral—carries no valence.

In terms of intellectual property, the calculus is likewise fairly cut and dried: having a system of intellectual property is, at least in theory, better for the economy than *not* having one. Absent intellectual property rights, it would be particularly challenging for creators to seek market rewards; information is both non-rivalrous and intrinsically difficult to restrict access to.⁶⁶ The creation of new and useful things is, however, particularly beneficial for society, in the sense of positive externalities

⁶¹ HENRY SIDGWICK, *METHODS OF ETHICS*, Bk. 4 Ch. 1 § 2 (1874); *see generally* Julia Driver, *The History of Utilitarianism* at § 3, *THE STANFORD ENCYCLOPEDIA OF PHILOSOPHY* (2014).

⁶² G. E. Moore, *PRINCIPIA ETHICA* at 132-47 (T. Baldwin, ed. 1993); *see generally* Anthony Skelton, *Ideal Utilitarianism: Rashdall and Moore*, in *BRITISH MORAL PHILOSOPHERS FROM SIDGWICK TO EWING* (2011).

⁶³ *See, e.g.*, ROBERT COOTER & THOMAS ULEN, *LAW AND ECONOMICS* at 4 (6th ed., 2016) (“While almost all economists favor changes that increase efficiency, some economists take sides in disputes about distribution and others do not take sides.”).

⁶⁴ *See* GUIDO CALABRESI, *THE COSTS OF ACCIDENTS* (1970).

⁶⁵ *See, e.g.*, JEFF FERRIELL, *UNDERSTANDING CONTRACTS* 715-17 (2009); ROBERT A. HILLMAN, *PRINCIPLES OF CONTRACT LAW* 140-41 (2009).

⁶⁶ *See* MENELL, LEMLEY, & MERGES, *supra* note 1, at 16-23; *see generally* ROBERT COOTER & THOMAS ULEN, *LAW AND ECONOMICS* 40-41 (6th ed.) (discussing public goods); *id.* at 112-18 (discussing the economics of information markets in particular).

with respect to further development, growth, and innovation. A system of patent law thus offers a mechanism by which to incentivize innovation and capitalize on the overall benefits to the economy as a whole.⁶⁷ Additional influential utilitarian theories further posit that the patent system assists in, for example, coordinating optimal investment among technological prospects⁶⁸ or preventing excessive rent dissipation.⁶⁹

It is this utilitarian justification for intellectual property, therefore, that stands in greatest contrast to the three moral frameworks⁷⁰ outlined earlier: natural law and labor theory, autonomy and personhood, and distributive and social justice. First and foremost, observe that the moral frameworks offer a far greater focus on individuals—whether the inventor-at-issue or the hypothetical least-well-off person—rather than society or the economy as a whole. Second, when they do shift their focus onto society writ large, it is principally to examine questions of distribution, whether as a core feature of the theory (per Rawls), a formal proviso (per Locke), or a generalized outer limit (per Kant and Hegel). Third, the moral frameworks more clearly recognize non-economic values, such as justice,

⁶⁷ See, e.g., Peter S. Menell, *Intellectual Property: General Theories*, in ENCYCLOPEDIA OF LAW AND ECONOMICS 129, 129 (Boudewijn Bouckaert & Gerrit de Geest eds., 2000) (“Utilitarian theorists generally endorsed the creation of intellectual property rights as an appropriate means to foster innovation, subject to the caveat that such rights are limited in duration so as to balance the social welfare loss of monopoly exploitation.”); Fritz Machlup, *An Economic Review of the Patent System*, Study No 15, Subcommittee on Patents, Trademarks, and Copyrights of the Senate Committee on the Judiciary, 85th Cong, 2d Sess. 1, 33 (1958) (“The thesis that the patent system may produce effective profit incentives for inventive activity and thereby promote progress in the technical arts is widely accepted.”).

⁶⁸ See Edmund W. Kitch, *The Nature and Function of the Patent System*, 20 J.L. & ECON. 265 (1977).

⁶⁹ See Mark F. Grady & Jay I. Alexander, *Patent Law and Rent Dissipation*, 78 VA. L. REV. 305 (1992).

⁷⁰ Utilitarianism is, in a certain sense, a moral framework insofar as it offers a system by which to guide conduct and judge actions as right or wrong. Nevertheless, for purposes of this Article and argument, the Author implicitly labels utilitarianism as amoral—a distinction that he is not alone in drawing. See, e.g., Smart & Williams, UTILITARIANISM: FOR AND AGAINST at 135 (“The fathers of utilitarianism thought of it principally as a system of social and political decision . . . , [not] a system of personal morality.”); Thomas W. Merrill & Henry E. Smith, *The Morality of Property*, 48 WM. & MARY L. REV. 1849, 1849 (2007) (“Utilitarianism is, of course, a moral theory. But in its modern applications, based on price theory and cost-benefit analysis, it adopts a framework largely indifferent to questions of individual rights and distributive justice, which many consider the hallmarks of a moral perspective.”).

freedom, and equality. Fourth, and related, the utilitarian framework is most explicitly consequentialist: actions are adjudged by the state of the world that they bring about. The moral frameworks, in contrast, act deontologically, in the sense that certain actions are deemed intrinsically wrong, regardless of offsetting positive consequences—whether it’s taking from the poor, or confiscating the fruit of honest labor.

The descriptions presented for each of these different philosophical frameworks are, concededly, simplified and overlook deep variation and nuance within each area. But these four broad differences ought to demonstrate that the distinction drawn herein between utilitarianism and other moral paradigms is not a matter of artifice or convenience; the two groups are speaking a different language than each other. Reifying this distinction, moreover, is the schism presented over the course of the next two Parts. That is, the law governing patent validity is best expressed and explained through utilitarianism alone, whereas the law governing patent infringement necessitates resort to moral theory.

II. PATENT VALIDITY – AN EXERCISE IN EFFICIENCY

A. Novelty

The “fundamental requirement”⁷¹ for patentability is that the invention actually be new. That is, it cannot have already been “patented, described in a printed publication, or in public use, on sale, or otherwise available to the public.”⁷² The precise contours of this doctrine have at times generated considerable debate—most recently, as to the proper interpretation of “on sale”⁷³—but for the purposes of this Article, two broad and central principles of novelty are more than sufficient.

⁷¹ Mark A. Lemley, *Point of Novelty*, 105 NW. U. L. REV. 1253, 1254 (2011); see, e.g., Sean B. Seymore, *Rethinking Novelty in Patent Law*, 60 DUKE L.J. 919, 930 (2011) (“A bedrock principle of patent law is that a patent cannot issue if it would remove technology that is already in the public domain.”).

⁷² 35 U.S.C. § 102.

⁷³ *Helsinn Healthcare S.A. v. Teva Pharmaceuticals USA, Inc.*, 855 F.3d 1356 (Fed. Cir. 2017), cert. granted, 138 S. Ct. 2678 (June 25, 2018). See generally Daniel J. Kim, *The Untimely Death of the On-Sale Bar to Patentability*, 47 U. BALT. L. REV. 439 (2018).

First, observe that the novelty requirement does not permit mutual patentability for simultaneous inventions. That is, even if multiple inventors independently make the same discovery at around the same time, only one will receive a patent—winner takes all.⁷⁴ This is not merely an academic hypothetical; empirical estimates suggest that more than 90% of infringement suits are filed against other, independent inventors rather than out-and-out copiers.⁷⁵ Even older studies, predating the hyper-connected nature of contemporary research, likewise show the astounding prevalence of inventive simultaneity.⁷⁶ For every Alexander Graham Bell, there was an Elisha Gray,⁷⁷ for every Thomas Edison, a William Sawyer.⁷⁸ But it was only the Bells and Edisons that came away with patents.

From the perspective of labor or personhood theory, some form of shared patentability in these scenarios would seem to be clearly justified. The good-faith second inventor toiled no less than the first, and has no weaker claim with respect to her personal will or relationship to the subject matter; she only has the poor fortune of discovering—after the fact—that she was second in line.⁷⁹ From an efficiency standpoint, on the other hand,

⁷⁴ See generally John S. Leibovitz, *Inventing a Nonexclusive Patent System*, 111 YALE L.J. 2251 (2006).

⁷⁵ Christopher A. Cotropia & Mark A. Lemley, *Copying in Patent Law*, 87 N.C. L. REV. 1421, 1424 (2009).

⁷⁶ See, e.g., WILLIAM FIELDING OGBURN, SOCIAL CHANGE WITH RESPECT TO CULTURE AND ORIGINAL NATURE 90-122 (1922); William F. Ogburn & Dorothy Thomas, *Are Inventions Inevitable? A Note on Social Evolution*, 37 POL. SCI. Q. 83 (1922).

⁷⁷ See generally David A. Hounshell, *Two Paths to the Telephone*, SCI. AM. (Jan. 1981) at 157-63 (describing their competing claims to the development of the telephone); MICHAEL E. GORMAN, TRANSFORMING NATURE: ETHICS, INVENTION AND DISCOVERY §§ 3.2.1-3.5 (1998) (same). To wit, Bell and Gray made their filings at the patent office on the very same day—Valentine’s Day, 1876—ultimately leading to a Supreme Court dispute in which Bell emerged victorious. See *Dolbear v. American Bell Tel. Co.*, 126 U.S. 1, 567 (1888).

⁷⁸ See generally Kevin T. Richards, *Experimentation and Patent Validity: Restoring the Supreme Court’s “Incandescent Lamp Patent” Precedent*, 101 VA. L. REV. 1545, 1549-52 (2015) (describing Edison and Sawyer’s inventorship dispute with respect to an incandescent electric lamp filament); Lea Shaver, *Illuminating Innovation: From Patent Racing to Patent War*, 69 WASH. & LEE L. REV. 1891, 1915-21 (2012) (same); GRAHAM MOORE, THE LAST DAYS OF NIGHT (2016).

⁷⁹ See MENELL, LEMLEY, & MERGES, *supra* note 1, at 5 (“We might distinguish between a Lockean theory of copyright, which prevents copying, and an effort to justify patent law, which precludes even independent invention and therefore restricts the labor of others.”).

the winner-take-all rule makes perfect sense. Most importantly, it dissuades duplicative or redundant research efforts, which would be a complete deadweight loss.⁸⁰ Moreover, it drastically simplifies and consolidates the marketplace for patent sales and licensing; a would-be practitioner of the patented invention only needs to bargain with one patentee, descended from one inventor (or team)—they do not need the blessing of every independent, simultaneous discoverer.⁸¹

Second, the United States patent system has deemphasized the inventor in determining who is “first” for purposes of the conflicts described above. That is, prior to 2011, novelty was predicated on a “first-to-invent” rule.⁸² As the patent statute then stated: “A person shall be entitled to a patent unless . . . another inventor . . . establishes . . . that before such person’s invention thereof the invention was made by such other inventor”⁸³ This would, at times, lead to incredibly complex interference proceedings before the PTO—attempts to demonstrate the particular extent of progress and efforts that one inventor (or team) had made by a specific date, through research assistant testimony,⁸⁴ lab notes,⁸⁵ and even physical prototype media.⁸⁶ In 2011, however, the America Invents Act⁸⁷ shifted the patent system towards a “first-inventor-to-file”

⁸⁰ See Mark F. Grady & Jay I. Alexander, *Patent Law and Rent Dissipation*, 78 VA. L. REV. 312, 313 (1992).

⁸¹ This likewise helps to avert potential “anticommons” issues, such as holdout through veto power. See generally Michael A. Heller, *The Tragedy of the Anticommons: Property in the Transition from Marx to Markets*, 111 HARV. L. REV. 621 (1998) (“When too many owners hold . . . rights of exclusion, the resource is prone to underuse—a tragedy of the anticommons.”).

⁸² See generally MENELL, LEMLEY, & MERGES, *supra* note 1, at 194-95, 200-01; Margo A. Bagley, *The Need for Speed (and Grace): Issues in a First-Inventor-to-File World*, 23 BERKELEY TECH. L.J. 1035 (2008).

⁸³ 35 U.S.C. § 102(g) (pre-2011); see also 35 U.S.C. § 135 (pre-2011) (establishing the procedures for interference proceedings before the PTO).

⁸⁴ See, e.g., *Breen v. Miller*, 347 F.2d 623, 624 (C.C.P.A. 1965) (“The witnesses were Breen himself, a research assistant, O’Brien, a research operator working under Breen’s supervision, Hebel, a research engineer, and Rivers, a research supervisor . . .”).

⁸⁵ See, e.g., *Kridl v. McCormick*, 105 F.3d 1446, 1448 (Fed. Cir. 1997) (“Chief among these exhibits were pages from the laboratory notebook of Marcia Vincent, who worked under Swain’s supervision. On notebook pages dated January 18, 1984 . . . , Vincent described an experiment in which a gene fragment was inserted into a cloning vector . . .”).

⁸⁶ See, e.g., *Knorr v. Pearson*, 671 F.2d 1368, 1373 (C.C.P.A. 1982) (noting one “exhibit 24, a stud section which ha[d] visibly been subjected to a fire test”).

⁸⁷ Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011).

rule.⁸⁸ Put simply, “priority contests between rival claimants to an invention [are now] determined almost exclusively by looking to when each of the rivals filed their patent application.”⁸⁹ The “race to the Patent Office” is on.⁹⁰

Note that this change shifts the focus from the inventor’s relationship to the patentable *invention* at a certain point in time to the inventor’s relationship to the patent *application* at a certain point in time. The factors that would chiefly concern labor and personhood theories are, therefore, deemphasized. Old sub-rules that evoked moral desert (was the first-but-tardy inventor nevertheless “diligent” in his efforts?⁹¹) or ongoing relationship of will (did the first-but-tardy inventor “abandon” his pursuit?⁹²) are out. A clean, bright-line rule that encourages efficiency—across multiple axes—is in. Most straightforwardly, the first-to-file rule encourages efficiency in the sense of timeliness; all else being equal, inventors are encouraged to disclose their findings to the patent office more quickly. This informs the public in general (including innovators that might build on the invention), and in particular those already engaged in similar research, again acting to minimize wasteful reduplication. As a second-order matter, the near-exclusive emphasis on filing date renders the process of validity adjudication far simpler, and less costly—no more

⁸⁸ See 35 U.S.C. § 102 (2012) (eliminating subsection (g)); 35 U.S.C. § 135 (2012) (addressing derivation proceedings, with interference proceedings having been eliminated).

⁸⁹ MENELL, LEMLEY, & MERGES, *supra* note 1, at 201; see also David S. Abrams & R. Polk Wagner, *Poisoning the Next Apple? The America Invents Act and Individual Inventors*, 65 STAN. L. REV. 517, 523-24 (2013) (“[In] the first-to-file system, . . . the first inventor to file his application in the relevant jurisdiction is awarded the patent. As compared to the first-to-invent approach, the evidentiary inquiry required . . . is substantially reduced—indeed, almost nonexistent.”).

⁹⁰ Michael A. Glenn & Peter J. Nagle, *Article I and the First Inventor to File: Patent Reform or Doublespeak?*, 50 IDEA 441, 459 (2010).

⁹¹ See *Cooper v. Goldfarb*, 154 F.3d 1321, 1327 (Fed. Cir. 1998) (“Accordingly, priority of invention goes to the first party to reduce an invention to practice *unless* the other party can show that it was the first to conceive of the invention and that it exercised reasonable diligence in later reducing that invention to practice.”) (citing *Price v. Symsek*, 988 F.2d 1187, 1190 (Fed. Cir. 1993)).

⁹² See *Tyco Healthcare Group LP v. Ethicon Endo-Surgery, Inc.*, 774 F.3d 968, 975 (Fed. Cir. 2014) (“[T]he inventor must not abandon, suppress, or conceal the invention after he or she reduces it to practice.”) (citing *Dow Chem. Co. v. Astro-Valcour, Inc.*, 267 F.3d 1334, 1342 (Fed. Cir. 2001)).

poring over dated lab notes and R.A. testimony.⁹³ And finally, a third-order boon to efficiency is that the shift harmonizes the U.S. patent system with the vast majority of foreign patent systems, reducing transaction costs and misunderstandings in international trade.⁹⁴ The consequentialist concerns of utilitarianism, in other words, have gained ground at the direct expense of moral theory.

B. Nonobviousness

Even when an invention has not been “identically disclosed” in the prior art per novelty doctrine under § 102, it may still be unpatentably “obvious” under § 103 if the differences between it and the prior art are sufficiently small.⁹⁵ For example, the invention at issue may simply be a modification of an existing reference that would be trivial to one of ordinary skill in the art,⁹⁶ or some basic combination of known elements from multiple pieces of separate prior art.⁹⁷ Naturally, the specific level of difference needed to clear § 103’s bar and render an invention nonobvious is not necessarily clear from the text itself, and tends to defy quantifiable precision. Justice Story’s description of patent law as “metaphysics”⁹⁸ is particularly apt here: exactly how *inventive* must an inventor be to obtain a patent?

⁹³ See Rep. Lamar Smith & Sen. Patrick Leahy, *The Importance of Patent Reform*, POLITICO (June 15, 2011), <https://www.politico.com/story/2011/06/the-importance-of-patent-reform-057029> (“Our current system is riddled with patent uncertainty, inviting years of costly litigation over ownership It costs anywhere from \$400,000 to \$500,000, according to the patent office, to pursue an interference proceeding . . .”).

⁹⁴ See Lisa Vertinsky, *Comparing Alternative Institutional Paths to Patent Reform*, 61 ALA. L. REV. 501, 540 (2010) (“The interest in harmonization has been driven by concerns about the complexity and cost of doing business in a global marketplace, as well as questions about the relative effectiveness and efficiency of certain U.S. rules (such as the first-to-invent approach) as compared to international norms.”).

⁹⁵ 35 U.S.C. § 103.

⁹⁶ See, e.g., *SIBIA Neurosciences, Inc. v. Cadus Pharmaceutical Corp.*, 225 F.3d 1349, 1358 (Fed. Cir. 2000) (“Thus, while [the prior art reference] does not expressly suggest that the cells described therein could be used in drug screening methods, the knowledge of those skilled in the art, suggests this modification.”).

⁹⁷ See, e.g., *Intercontinental Great Brands LLC v. Kellogg North America Company*, 869 F.3d 1336, 1348 (Fed. Cir. 2017) (“[C]ombining the Re-Seal It packaging with familiar cookie-package frames (as in Graham) was a predictable technological solution to the relevant known market problem”).

⁹⁸ *Folsom v. Marsh*, 9 F. Cas. 342, 344 (C.C.D. Mass. 1841) (Joseph Story, J.) (“Patents . . . approach, nearer than any other class of cases . . . , to what may be

In *Graham v. John Deere Co.*, the Supreme Court simultaneously offered a lodestar on the murky matter of obviousness—and unanimously rejected non-economic considerations to boot:

The patent monopoly was not designed to secure to the inventor his natural right in his discoveries. Rather, it was a reward, an inducement, to bring forth new knowledge. The grant of an exclusive right to an invention was the creation of society—at odds with the inherent free nature of disclosure ideas—and was not to be freely given. Only inventions and discoveries which furthered human knowledge, and were new and useful, justified the special inducement of a limited private monopoly.

. . .

The difficulty of formulating conditions for patentability was heightened by the generality of the constitutional grant and the statutes implementing it, together with the underlying policy of the patent system that ‘the things which are worth to the public the embarrassment of an exclusive patent,’ as Jefferson put it, must outweigh the restrictive effect of the limited patent monopoly. *The inherent problem was to develop some means of weeding out those inventions which would not be disclosed or devised but for the inducement of a patent.*⁹⁹

In other words, the question of obviousness—the question of denying patentability for certain innovations that are still, strictly speaking, new—hinges on a single principle: “if the invention would be created and disclosed even without patent protection, denying a patent on the innovation costs society nothing . . . and saves society from needlessly suffering the . . . restriction on output caused by a patentee’s exclusive rights”¹⁰⁰ This inducement standard has since been frequently cited

called the metaphysics of law, where the distinctions are, or at least may be, very subtle and refined, and, sometimes, almost evanescent.”).

⁹⁹ *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 8-11 (1966) (emphases added).

¹⁰⁰ Michael Abramowicz & John F. Duffy, *The Inducement Standard of Patentability*, 120 YALE L.J. 1590, 1594 (2011).

by the Federal Circuit,¹⁰¹ litigators,¹⁰² amici,¹⁰³ and scholars¹⁰⁴ alike, but direct reliance on it has been limited.¹⁰⁵ As other scholars have observed, the inducement standard by itself can be challenging and costly to implement; judges are hard pressed to answer the empirical question of when “a patent becomes necessary to induce desirable invention” in a given context.¹⁰⁶ Nevertheless, the Supreme Court’s explicit, unanimous rejection of broader moral principles over utilitarian reasoning is another example of the dominance of utilitarian thinking—even in the abstract—on the patent validity side.

Moreover, *Graham* also set forth so-called “secondary considerations” of nonobviousness¹⁰⁷: concrete, practical guideposts in adjudicating specific obviousness cases, which judges *have* relied upon heavily.¹⁰⁸ Secondary considerations include evidence of “commercial

¹⁰¹ See, e.g., *Intercontinental Great Brands LLC v. Kellogg North America Company*, 869 F.3d 1336, 1346-47 (Fed. Cir. 2017) (quoting *Graham*’s “but for the inducement of a patent” standard).

¹⁰² See, e.g., *Patent Owner’s Response, Comcast Cable Communications, LLC v. Promptu Systems Corporation* (IPR2018-00342), 2018 WL 4676332 (Sept. 27, 2018).

¹⁰³ See, e.g., *Brief of the Software & Information Industry Association and the Internet Association as Amici Curiae in Support of Petitioners, Samsung Electronics Co., Ltd. v. Apple Inc.* (16-1102), 2017 WL 1343037 at *20-21 (Apr. 10, 2017).

¹⁰⁴ See, e.g., FED. TRADE COMM’N, *TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY* Ch. 1, at 11 n.74 (2003) (citing testimony from eleven law professors in support of the proposition that “patents should be granted only if the invention would not have emerged ‘but for’ the patent system”).

¹⁰⁵ Abramowicz & Duffy, *supra* note 100, at 1594.

¹⁰⁶ Glynn S. Lunney, *E-Obviousness*, 7 MICH. TELECOMM. & TECH. L. REV. 363, 416 (2001); see also FED. TRADE COMM’N, *TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY* Ch. 1, at 11 (2003) (“From a theoretical perspective, the ‘but for’ approach represents the right way to assess whether to grant a patent. It is not usually possible, however, to use a ‘but for’ approach to analyze whether individual patents should be granted.”).

¹⁰⁷ *Graham*, 383 U.S. at 17.

¹⁰⁸ See Abramowicz & Duffy, *supra* note 100, at 1656, n. 201 (“The courts’ weight on secondary considerations is sufficiently great that the label ‘secondary’ can be misleading.”); Kevin Rhodes, Comment, *The Federal Circuit’s Patent Nonobviousness Standards: Theoretical Perspectives on Recent Doctrinal Changes*, 85 NW. U. L. REV. 1051, 1068-76 (1991) (“The Federal Circuit has . . . emphasiz[ed] that secondary considerations, if present, are always relevant under section 103, and must always be given evidentiary weight before reaching a decision on the obvious/nonobvious issue.”).

success, long-felt but unsolved need, . . . failure of others,”¹⁰⁹ “skepticism of experts, [and] copying [of] the invention.”¹¹⁰ If others tried and failed to reach the same solution, the logic goes, how could the solution have possibly been obvious? Likewise, if previously unmet demand led to significant commercial rewards once the invention hit the market, someone would surely have stepped in earlier to fill the demand and make a buck—if it were, in fact, obvious how to do so.

These secondary considerations thus hedge against the risk of “hindsight bias,” which can be quite severe in patent adjudication.¹¹¹ Even a brilliant solution can seem obvious in retrospect,¹¹² but secondary considerations help to ground the analysis in objectivity—specifically, a utilitarian-focused objectivity. Observe that the secondary considerations weigh more heavily towards patentability the more that an invention has been (or will be) put to widespread use, whether by large volumes of sales, industry adoption, or out-and-out copying. In contrast, obscure inventions with little use or relevance to society would be hard-pressed (at least as a practical matter) to demonstrate any of the secondary considerations, regardless of the inventive solution’s *complexity* per se. In other words, these indicia collectively protect and prioritize inventions where the economic benefits to society have been greater; Bentham himself would be proud. This is in addition to the secondary considerations’ tendency to map—albeit imperfectly—onto the utilitarian standard of inducement already described.¹¹³ Where inventions were clearly difficult to develop,

¹⁰⁹ *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1050 (Fed. Cir. 1988) (citing *Graham*, 383 U.S. at 17-18).

¹¹⁰ *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1569 (Fed. Cir. 1987).

¹¹¹ See *Polaris Industries, Inc. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1068 (Fed. Cir. 2018) (“We have observed that ‘the prejudice of hindsight bias’ often overlooks that the ‘genius of invention is often a combination of known elements which in hindsight seems preordained.’”) (quoting *Power Integrations, Inc. v. Fairchild Semiconductor Int’l, Inc.*, 711 F.3d 1348, 1368 (Fed. Cir. 2013)); *KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant on *ex post* reasoning.”).

¹¹² For an experimental demonstration of the risk of hindsight bias in obviousness analysis, see Gregory N. Mandel, *Patently Non-Obvious: Empirical Demonstration that the Hindsight Bias Renders Patent Decisions Irrational*, 67 OHIO ST. L.J. 1391 (2006).

¹¹³ See *Abramowicz & Duffy*, *supra* note 100, at 1655 (“The secondary considerations as understood by courts today make more sense in light of the inducement theory, and an appreciation of the role of commercialization can further clarify and improve how the courts apply [them].”).

for example, the importance of patent incentives *ex ante* is understandably greater, and the doctrine takes note.¹¹⁴ The secondary considerations thus serve as a thumb on the scale, making patentability comparatively more difficult for inventions that would have been readily made, even without a patent system and its accompanying costs. Utilitarian law-and-economics are at full force, in other words, while the Supreme Court utterly rejects the idea of any kind of “natural right”¹¹⁵ in one’s inventions.

C. Subject-Matter Eligibility

Section 101 of the patent statute governs what *types* of inventions are patentable—on its face, seemingly anything: “Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent”¹¹⁶ Indeed, as the Supreme Court has recognized, “Congress intended statutory subject matter to ‘include anything under the sun that is made by man.’”¹¹⁷ Over time, however, a series of carveouts and tests have come to cabin this textual breadth and now offer the central doctrine of subject-matter eligibility, often summarized as a rule that “laws of nature, natural phenomena, and abstract ideas”¹¹⁸ are unpatentable. Collectively, they represent a limit on patent-eligible subject matter informed principally by utilitarian reasoning, with moral considerations again given short shrift.

Consider first the “law of nature” exception: discoveries as to the rules and principles that govern our universe are unpatentable. As the Court has explained, “Einstein could not patent his celebrated law that $E=mc^2$ [,] nor could Newton have patented the law of gravity,” because “[s]uch discoveries are ‘manifestations of . . . nature, free to all men and

¹¹⁴ *Id.* at 1671-72.

¹¹⁵ *See supra* note 99.

¹¹⁶ 35 U.S.C. § 101.

¹¹⁷ *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting S. Rep. No. 82-1979 (1952); H.R. Rep. No. 82-1923 (1952), *reprinted in* 1952 U.S.C.C.A.N. 2394, 2399).

¹¹⁸ *Alice Corp. Pty. Ltd. v. CLS Bank Intern.*, 134 S. Ct. 2347, 2354 (2014) (quoting *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 133 S. Ct. 2107, 2116 (2013)); *see also* *Bilski v. Kappos*, 561 U.S. 593, 601 (2010) (“The Court’s precedents provide three specific exceptions to § 101’s broad patent-eligibility principles: laws of nature, physical phenomena, and abstract ideas.”).

reserved exclusively to none.”¹¹⁹ In *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*, for example, the Court invalidated a patent covering a method of using thiopurine drugs in treating autoimmune gastrointestinal diseases, such as Crohn’s.¹²⁰ As the Court explained: “Prometheus’[s] patents set forth laws of nature—namely, relationships between concentrations of certain metabolites in the blood and the likelihood that a dosage of a thiopurine drug will prove ineffective or cause harm.”¹²¹ Following the Court’s standard, the Federal Circuit has recently denied patentability for a method of assessing a patient’s risk of future cardiovascular disease by measuring tissue levels of myeloperoxidase,¹²² and a method for diagnosing fetal characteristics and abnormalities using cell-free fetal DNA found in the mother’s blood.¹²³

Related, though somewhat broader, is the “abstract ideas” exception. In brief: “A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right.”¹²⁴ In practice, it is formulae and algorithms—computer-implemented or otherwise—that tend to trigger this exception. For example, the Court has rejected patentability for: an algorithm to convert binary-coded decimal numbers into pure binary code;¹²⁵ a mathematically defined process for hedging against the risk of price fluctuations in commodities markets;¹²⁶ and a method for using a third-party intermediary and shadow ledger entries to ensure both sides of a financial transaction will be able to immediately and simultaneously execute their mutual obligations.¹²⁷ The Federal Circuit has followed suit, invalidating many software patents in particular as unpatentably abstract.¹²⁸

¹¹⁹ Chakrabarty, at 309 (quoting *Funk Bros.*, 333 U.S. at 130).

¹²⁰ 566 U.S. 66 (2012).

¹²¹ *Id.* at 77.

¹²² *Cleveland Clinic Foundation v. True Health Diagnostics LLC*, 859 F.3d 1352 (Fed. Cir. 2017).

¹²³ *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371 (Fed. Cir. 2015).

¹²⁴ *Bilski v. Kappos*, 561 U.S. 593, 609-10 (2010) (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

¹²⁵ *Gottschalk*, 409 U.S. at 64-67.

¹²⁶ *Bilski*, 561 U.S. at 599.

¹²⁷ *Alice Corp. Pty. Ltd. v. CLS Bank Intern.*, 573 U.S. 208, 210-12 (2014).

¹²⁸ *See, e.g.*, *OIP Techs. V. Amazon.com*, 788 F.3d 1359 (Fed. Cir. 2015); *see generally* Jasper L. Tran, *Two Years After Alice v. CLS Bank*, J. PAT. & TRADEMARK OFF. SOC’Y 354, 363-65 (2016) (finding that, in the two years after *Alice Corp.*, “the Federal Circuit . . . only issued two opinions that upheld the

Finally, the “natural phenomena” exception precludes patentability for things that already exist—somewhere, out there—in nature. Put simply, “a new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter.”¹²⁹ In *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, for example, the Supreme Court rejected patentability for a plant inoculant, composed of certain “mutually non-inhibitive strains of . . . species of bacteria of the genus *Rhizobium*.”¹³⁰ More recently, the Court invalidated Myriad Genetics’s patent claims covering the isolated “BRCA” genes—powerful predictors of breast and ovarian cancer risk—finding that “a naturally occurring DNA segment is a product of nature and not patent eligible.”¹³¹ Under this exception, the Federal Circuit has likewise rejected attempts to claim inventions ranging from lab-cloned sheep¹³² to a blend of fatty acids that occurs naturally in olives.¹³³

This bundle of exceptions to subject-matter eligibility is a relatively poor fit for the moral perspectives outlined supra. Begin with labor theory, observing that the doctrine is decidedly *not* an inquiry into whether the inventor had to put work into their discovery. Whether a “product of nature,” for example, was discovered by accident on one’s own lawn or after a dangerous and costly expedition into the remote wilds is irrelevant to the analysis; it’s simply unpatentable either way. Likewise, it may be safely assumed that the inventors who discovered the

patent-eligibility of a software invention”); Lucas S. Osborn, *Intellectual Property Channeling for Digital Works*, 39 CARDOZO L. REV. 1303, 1330 (2018) (“After *Alice*, the landscape for software-related patents is at best uncertain and at worst bleak.”).

¹²⁹ Chakrabarty, at 309.

¹³⁰ 333 U.S. at 128.

¹³¹ *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 580 (2013). In contrast, the Court upheld the patentability of Myriad’s claims covering synthetic, exon-only “complementary DNA” molecules. *Id.* at 595-96 (“[T]he lab technician unquestionably creates something new when cDNA is made.”).

¹³² *In re Roslin Institute (Edinburgh)*, 750 F.3d 1333, 1339 (Fed. Cir. 2014) (“There is nothing in the claims . . . that suggests that the clones are distinct in any relevant way from the donor animals of which they are copies.”).

¹³³ *In re Bhagat*, 726 F. App’x 772 (Fed. Cir. 2018) (“The Board concluded that the claims are directed to the omega-6 and omega-3 fatty acids that occur in nature We have considered all of the Applicant’s arguments, and conclude that substantial evidence supports . . . the rulings of unpatentability.”).

relationship between certain genes and cancer, between binary and decimal code, or between a medicine's dosage and toxicity invested considerable time, effort, and money into those endeavors, with no effect on legal outcome. Taking the converse of this principle, moreover, demonstrates the mis-fit of personhood theory. That is, someone who *serendipitously creates* something new—say, an artificial sweetener¹³⁴ or Silly Putty¹³⁵—can receive a patent,¹³⁶ regardless of the lack of any directed intent or meaningful will with respect to its creation. But the discoverer of a rare, perhaps even singular plant with apparent curative properties will not receive protection against interference as she attempts to—like Michelangelo with his block of marble—realize her vision of drawing a practicable medicine from it. The protection can only come afterward, if ever. Distributive concerns scarcely even merit mentioning; the doctrine is flatly agnostic on the issue. The Court may have rejected subject-matter eligibility for certain cancer-detecting genes, but patentees remain free to seek monopolies on lifesaving pharmaceutical compositions or famine-ending GMO crops.

Instead, the courts' principal concern in policing subject-matter eligibility is classic law and economics: the appropriate balance between incentives to innovate and open competition and access. Start with the Supreme Court's own characterization of the "laws of nature, natural phenomena, and abstract ideas" triumvirate, from the most recent landmark cases. From *Mayo*: "[M]onopolization of those tools through the grant of a patent might tend to impede innovation more than would tend to promote it. . . . [T]he underlying functional concern here is a *relative* one: how much future innovation is foreclosed relative to the contribution of the inventor. . . ."¹³⁷ Likewise, from *Myriad Genetics*:

¹³⁴ See NATIONAL SCIENCE FOUNDATION, *Chemistry Now: Chance Discoveries: Artificial Sweeteners*,

https://www.nsf.gov/news/special_reports/chemistrynow/chem_sweeteners.jsp.

¹³⁵ See NATIONAL MUSEUM OF PLAY, *Silly Putty*,

<http://www.toyhalloffame.org/toys/silly-putty>.

¹³⁶ See U.S. Patent No. 319,082 (Aug. 7, 1884) ("Manufacture of saccharine compounds"); U.S. Patent No. 2,541,851 (Dec. 23, 1944) ("Process for making puttylike elastic plastic, siloxane derivative composition containing zinc hydroxide").

¹³⁷ *Mayo*, 566 U.S. at 71, 88 (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

As we have recognized before, patent protection strikes a delicate balance between creating ‘incentives that lead to creation, invention, and discovery’ and ‘imped[ing] the flow of information that might permit, indeed spur, invention.’ . . . We must apply this well-established standard to determine whether Myriad’s patents claim any ‘new and useful . . . composition of matter,’ § 101, or instead claim naturally occurring phenomena.¹³⁸

Or, finally, *Alice*: “[P]atents that claim the ‘building blocks’ of human ingenuity . . . ‘would risk disproportionately tying up the use of the underlying’ ideas, and are therefore ineligible . . . for the monopoly granted under our patent laws.”¹³⁹ That is, in the Court’s eyes, the costs of granting individuals monopoly power over these types of inventions would almost never be outweighed by whatever additional innovation patentability would spur on the margins.¹⁴⁰

Indeed, a substantial body of scholarship supports this heuristic. For one, the basic research that tends to produce broad, fundamental-principle discoveries (as compared to more narrow, applied research) is less responsive to and reliant on external financial incentives in the first place.¹⁴¹ For another, the inherent breadth of these types of discoveries engenders “unclear boundaries,” and hence disproportionately costly litigation rates.¹⁴² Moreover, modeling some of the specific areas heavily

¹³⁸ Myriad, 569 U.S. at 590.

¹³⁹ *Alice*, 573 U.S. at 2354-55 (quoting *Mayo*, 566 U.S. at 1303) (internal citations omitted).

¹⁴⁰ Mark A. Lemley et al., 63 STAN. L. REV. 1315, 1328-29 (2011) (arguing that the § 101 exclusions collectively reflect a “concern about overbreadth” relative to the societal benefits).

¹⁴¹ See, e.g., LANDES & POSNER, *supra* note 1, at 306; Alan Devlin & Neel Sukhatme, *Self-Realizing Inventions and the Utilitarian Foundation of Patent Law*, 51 WM. & MARY L. REV. 897, 904-27 (2009).

¹⁴² JAMES BESSEN & MICHAEL MEURER, PATENT FAILURE: HOW JUDGES, BUREAUCRATS, AND LAWYERS PUT INNOVATORS AT RISK 150-55 (2008); Gerard N. Magliocca, *Patenting the Curve Ball: Business Methods and Industry Norms*, 2009 BYU L. REV. 875, 891 (2009); Gerard N. Magliocca, *Blackberries and Barnyards: Patent Trolls and the Perils of Innovation*, 82 NOTRE DAME L. REV. 1809, 1819-25 (2007).

affected by the § 101 exceptions in practice—genes,¹⁴³ software,¹⁴⁴ and business methods¹⁴⁵—suggests that the doctrine is, in fact, mapping onto the fields where broad patentability would be particularly costly, and with comparatively low returns.¹⁴⁶ Finally, adding a functionalist dimension of efficiency, analysts have suggested that courts use § 101 doctrine as a “quick way to screen out weak patents,” analogous to the “quick look” doctrine in antitrust law, to save the considerable expense of full discovery and trial where it is not worth the candle.¹⁴⁷

Finally, it is worth noting that, unlike the United States, other patent systems have codified ethical considerations into their subject-matter eligibility provisions outright. Though not dispositive, the contrast between these foreign statutes and § 101 is striking:

¹⁴³ See, e.g., Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, 280 *SCIENCE* 698-99 (1998); Laurie L. Hill, *The Race to Patent the Genome: Free Riders, Hold Ups, and the Future of Medical Breakthroughs*, 11 *TEX. INTELL. PROP. L.J.* 221, 241–46 (2003).

¹⁴⁴ See, e.g., Jason M. Schultz & Brian J. Love, *Brief of Amici Curiae Law, Business, and Economics Scholars in Support of Respondents in Alice Corp. Pty. Ltd. v. CLS Bank International, et al.*, 4 *NYU J. INTELL. PROP. & ENT. L.* 358, 361-374 (2015); James E. Bessen & Robert M. Hunt, *An Empirical Look at Software Patents*, 16 *J. ECON. MGMT. STRATEGY* 157 (2007); Pamela Samuelson, *Benson Revisited: The Case Against Patent Protection for Algorithms and Other Computer Program-Related Inventions*, 39 *EMORY L.J.* 1025 (1990).

¹⁴⁵ See, e.g., David S. Olson, *Taking the Utilitarian Basis for Patent Law Seriously: The Case for Restricting Patentable Subject Matter*, 82 *TEMPLE L. REV.* 181, *54 (2009) (“There is strong reason to believe that business methods lie on Figure 2 where patenting is never efficient. . . . [T]he level of incentive to invent new and useful business methods is quite high without any patent protection. . . . [I]n the short run . . . the inventing firm receives exclusive benefits of the new method, [which] will be enough to make the invention worthwhile . . .”).

¹⁴⁶ Yuqing Cui, *A Quantitative Approach to Determining Patentable Subject Matter*, 30 *HARV. J. L. & TECH.* 629 (2017) (modeling all three industries, and finding patentability thereof to be, at best, a break-even proposition).

¹⁴⁷ See, e.g., MENELL, LEMLEY, & MERGES, *supra* note 1, at 301-02.

European patents shall not be granted in respect of:

- (a) Inventions the commercial exploitation of which would be contrary to “ordre public” or morality
- (c) Methods for treatment of the human or animal body by surgery or therapy and diagnostic methods practiced on the human or animal body¹⁴⁸

Similar language even appears in TRIPS—an international treaty designed to *strengthen* international intellectual property protection overall¹⁴⁹—specifically allowing member states the option to “exclude [subject matter] from patentability . . . [where] necessary to protect ordre public or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment.”¹⁵⁰

The absence, in other words, of moral considerations in subject-matter eligibility doctrine runs from top to bottom. They are conspicuously absent from the statutory text, they do not provide the framework for discussion in judicial opinions, and they often cannot provide justification for the resulting outcomes of case law. It is utilitarianism instead that appears to dominate at all levels.

D. Utility

In addition to subject-matter eligibility, § 101 also sets forth a separate “utility” requirement. The reader will perhaps be unsurprised that the *utility* doctrine, of all things, proves to be utilitarian in nature as well. But even beyond its current form, the *evolution* of this doctrine provides a prime example of the dominance of utilitarian thought for determining patent validity, and the explicit retreat of morality-based considerations.

¹⁴⁸ European Patent Convention of 2000, Article 53.

¹⁴⁹ See Agreement on Trade-Related Aspects of Intellectual Property Rights (“TRIPS”), *Preamble* (“Desiring to reduce distortions and impediments to international trade, and taking into account the need to promote effective and adequate protection of intellectual property rights”); see generally Peter K. Yu, *The Objectives and Principles of the TRIPS Agreement*, 46 HOUSTON L. REV. 979, 982-92 (2009) (describing the negotiation process, including the eventual dominance of the stronger-protection coalition).

¹⁵⁰ TRIPS, Article 27.2, *Patentable Subject Matter*.

Starting with the statute’s language, recall that “[w]hoever invents or discovers any new *and useful* process, machine, manufacture, or composition of matter, or any new *and useful* improvement thereof, may obtain a patent”¹⁵¹ Today, courts interpret this term as setting forth essentially two prerequisites to patentability. First, the invention must actually be *usable*, in the sense that it must function in reality.¹⁵² This is, in most cases, a mere formality¹⁵³—but it has served to block attempted patents on perpetual motion machines,¹⁵⁴ cold fusion,¹⁵⁵ and snake-oil cures.¹⁵⁶ Second, the invention must *have a use*, in the sense that it has a known and disclosed application.¹⁵⁷ Again, this is a relatively low bar to clear in the vast majority of cases.¹⁵⁸ It operates primarily to prevent out-and-out speculation in patenting; in the Supreme Court’s words: “[A]

¹⁵¹ 35 U.S.C. § 101 (emphases added).

¹⁵² See, e.g., *Newman v. Quigg*, 877 F.2d 1575, 1581 (Fed. Cir. 1989) (“The district court, on trial of the merits, held Mr. Newman’s invention unpatentable under 35 U.S.C. § 101 because ‘Newman’s device lacks utility (in that it does not operate to produce what he claims it does).’”); see generally Michael Risch, *Reinventing Usefulness*, 2010 B.Y.U. L. REV. 1195, 1202 (2010) (noting that “a patented invention must actually achieve some intended result,” and that “utility requirements exclude . . . inoperable inventions”).

¹⁵³ See MENELL, LEMLEY, & MERGES, *supra* note 1, at 238 (“As a matter of PTO practice, a specification which contains a disclosure of utility . . . must be taken as sufficient . . . unless there is a reason for one skilled in the art to question the objective truth of the statement of utility or its scope.”); Nathan Machin, *Prospective Utility: A New Interpretation of the Utility Requirement of Section 101*, 87 CAL. L. REV. 421, 426-27 (1999) (“[P]atent examiners cannot question the . . . utility of an invention that obviously is in line with known scientific principles. This group contains the majority of claimed inventions.”).

¹⁵⁴ See, e.g., *id.*

¹⁵⁵ See, e.g., *In re Swartz*, 232 F.3d 862 (Fed. Cir. 2000).

¹⁵⁶ See, e.g., *In re Milligan*, No. 97-1093, 1997 WL 168316 (Fed. Cir. Apr. 10, 1997).

¹⁵⁷ See e.g., *Brenner v. Manson*, 383 U.S. 519, 535 (1966) (rejecting patentability for a process for making certain steroid compounds—compounds which, at the time, “ha[d] no known use or [were] useful only in the sense that [they] may be an object of scientific research”); see generally Risch, *supra* note 152, at 1203 (“[I]nventions must have some currently available specific and substantial use to satisfy § 101’s ‘useful’ requirement.”).

¹⁵⁸ See MENELL, LEMLEY, & MERGES, *supra* note 1, at 240 (“Most applications of the doctrine have been quite limited in the hurdles they place before inventors.”); Machin, *supra* note 152, at 433 (“[T]he principle that the invention must be designed to address a problem or meet a need . . . provides almost no barrier to the patenting of inventions.”). Even in pharmaceutical cases, for example, successful human clinical trials are not a prerequisite to show patent-worthy efficacy; basic lab trials on mice can be sufficient. See *In re Brana*, 51 F.3d 1560 (Fed. Cir. 1995).

patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion.”¹⁵⁹

The utilitarian valence of these two requirements is certainly clear enough—inventions that have no application or cannot actually function offer nothing to society at large, and so the patent quid pro quo is not fulfilled. But for most of the history of the U.S. patent system, there was a third requirement as well: “moral utility.”¹⁶⁰ As early as 1817, then-Judge Story noted in dictum: “[T]he law requires . . . that the invention should not be frivolous or injurious to the well-being, good policy, or sound morals of society. The word ‘useful,’ therefore, is incorporated into the [Patent Act] in contradistinction to mischievous or immoral.”¹⁶¹ For more than a hundred years after, this requirement regularly served to block, for example, attempted patents on gambling devices and improvements thereof.¹⁶² Likewise, courts would deny patents on “deceptive” inventions—finding that they lack appropriately moral uses—ranging from a method of artificially spotting tobacco leaves¹⁶³ to a seamless leg stocking with a sham seam along the back.¹⁶⁴

¹⁵⁹ Brenner at 536.

¹⁶⁰ See generally Robert P. Merges, *Intellectual Property in Higher Life Forms: The Patent System and Controversial Technologies*, 47 MD. L. REV. 1051, 1062-68 (1988) (collecting cases).

¹⁶¹ *Lowell v. Lewis*, 15 F. Cas. 1018, 1019 (No. 8568) (C.C.D. Mass. 1817).

¹⁶² See, e.g., *National Automatic Device Co. v. Lloyd*, 40 F. 89, 89 (N.D. Ill. 1889) (rejecting patentability for a toy horse-racing game, because “the only use to which . . . [the] machines have been so far applied, is to place them in saloons, bar-rooms, and other drinking places, where the frequenters of such places make wagers as to which of the toy horses will stop first”); *Schultze v. Holtz*, 82 F. 448, 448 (N.D. Cal. 1897) (rejecting patentability for a coin-return mechanism, because “the only use to which the complainant’s inventions have been put or applied is for gambling purposes in saloons and barrooms”); *Brewer v. Lichtenstein*, 278 F. 512, 513 (7th Cir. 1922) (rejecting patentability for a luck-based “vending device,” because “[n]o other utility than as a lottery device . . . is suggested in the patent”).

¹⁶³ *Rickard v. Du Bon*, 103 F. 868, 869 (2d Cir. 1900) (“[T]he only effect, if not the only object, of such treatment, is to spot the tobacco, and counterfeit the leaf spotted by natural causes.”). Spotted tobacco leaves were, at the time, considered to be a sign of higher quality cigars. *Id.* (“The notion has long prevailed with a numerous class of smokers that cigars having spotted wrappers are superior to those without them.”).

¹⁶⁴ *Scott & Williams v. Aristo Hosiery Co.*, 7 F.2d 1003, 1004 (2d Cir. 1925) (“At best, the seamless stocking has imitation marks for the purposes of deception, . . . [b]ut such accomplishment does not create a new useful discovery or invention . . .”). Seamless (or “circular knit”) stockings were generally considered to be of inferior quality at the time. *Id.* (“He says the

In the late twentieth century, however, the force of the moral utility requirement began to decline, with courts expressing serious skepticism as to their ability to meaningfully and properly distinguish between “good” and “bad” inventions.¹⁶⁵ By 1977, the PTO granted a slot machine patent outright, and explained its decision thusly:

It is perhaps true, for example, that the invention of Colt’s revolver was injurious to the morals, and injurious to the health, and injurious to the good order of society. . . . On the other hand, the revolver, by furnishing a ready means of self-defense, may sometimes have promoted morals and health and good order. By what test, therefore, is utility to be determined in such cases? Is it to be done by balancing the good functions with the evil functions? . . . [This] hypothesis cannot stand, because if it could, it would make the validity of the patent to depend on a question of fact to which it would often be impossible to give a reliable answer.¹⁶⁶

Instead, the PTO suggested, “everything [is] useful within the meaning of the law,” as long as it has some hypothetical adaptation or use “to accomplish a good result”—even if “in fact it is oftener used . . . to accomplish a bad one.”¹⁶⁷ Within a few decades, the Federal Circuit adopted this line of reasoning, and effectively erased the moral utility requirement entirely; even where an invention’s entire purpose is to aid in “dece[iving]” customers, that “is not by itself sufficient to render the invention unpatentable.”¹⁶⁸

purpose of his invention is to provide in such hosiery an imitation . . . , so that circular knit stockings . . . will not be unfairly associated in the minds of purchasers with a crude and inferior class of goods . . .”).

¹⁶⁵ *Merges, Higher Life Forms*, *supra* note 160, at 1063 (“[C]ourts had become more wary of denying patents on the basis of an indeterminate moral standard.”).

¹⁶⁶ *Ex Parte Murphy*, 200 U.S.P.Q. 801, 801 (1977) (quoting *Fuller v. Berger*, 120 F. 274, 275-76 (7th Cir. 1903)).

¹⁶⁷ *Id.*

¹⁶⁸ *Juicy Whip, Inc. v. Orange Bang, Inc.*, 185 F.3d 1364 (Fed. Cir. 1999) (regarding a “post-mix beverage dispenser”—one that mixes beverages from concentrate at the time of dispensing—designed to look like it provides not-from-concentrate beverages, by means of a clear top bowl filled with ersatz

The death of moral utility doctrine is perhaps the most straightforward example of the retreat of deontological validity considerations in favor of consequentialist utilitarianism. For the sake of innovation overall—as well as reducing the costs and errors of adjudication—inventions used to primarily work harm are nevertheless patentable. In particular, one would strongly suspect that the gambling devices, deceptive consumer machines, and firearms made possible by the elimination of this doctrine are likely to disproportionately impact those least well-off in society to the enrichment of a small few. To wit, the individual who will ultimately be affected by these inventions is now left out of the calculus entirely, making it challenging—if not impossible—to incorporate values such as justice or autonomy in a meaningful way. If Locke’s proverbial apples are gathered by parting them from gambling addicts, for example, desert would hardly seem to apply. And a deceptive consumer device cannot square with any reasonable conception of autonomy vis-à-vis informed decision making. Instead, it is utilitarianism that offers the strongest and simplest explanation for the elimination of a once-robust strand of utility doctrine.

E. Written Description and Enablement

Beyond the claims themselves, a patent must also “contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art . . . to make and use the same”¹⁶⁹ This statutory language has since been interpreted as two separate, but closely related requirements: written description and enablement.¹⁷⁰ When a patent’s specification fails to satisfy these requirements, the claims

fresh juice that the machine appears to be dispensing). *See generally* Risch, *supra* note 152, at 1205 (“[M]oral utility is essentially ignored today”); Machin, *supra* note 152, at 436 (observing same).

¹⁶⁹ 35 U.S.C. § 112.

¹⁷⁰ *See Ariad Pharmaceuticals, Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1344-45 (Fed. Cir. 2010) (en banc) (“[W]e . . . hold that § 112, first paragraph, contains two separate description requirements [A] written description requirement separate from an enablement requirement”).

covering that invention are invalid, even if the invention is otherwise subject-matter eligible, useful, novel, and so on.¹⁷¹

Written description is, in theory, focused primarily on ensuring that the “inventor actually invented the invention claimed,” in a possessive sense.¹⁷² That is, by forcing the inventor to describe their invention in specific and concrete terms, subject matter that the inventor did not actually understand or have under control at the time of patenting will naturally wind up being excluded. Enablement, on the other hand, is externally focused; the specification must include enough information and detail so that “one reasonably skilled in the art can make and use the invention without undue experimentation.”¹⁷³ Enablement is, in other words, about replicability¹⁷⁴ and the “dissemination of information”¹⁷⁵ to the public. The inventor’s relationship to the subject matter is functionally irrelevant.

In that sense, enablement is transactionally utilitarian to its core; it restricts the coverage of the patent grant, and hence the temporary costs of monopoly, to what is gained by the public in offsetting exchange in terms of knowledge and research. Put differently, the invention itself (in the sense of whatever it is that the inventor actually discovered, implemented, and claimed) is subordinate to the interests of growth via follow-on innovation—the latter unilaterally restricts the former. Locke’s mixing of labor or Kant’s infusion of will are, in other words, not a

¹⁷¹ See, e.g., *AbbVie Deutschland GmbH & Co., KG v. Janssen Biotech, Inc.*, 759 F.3d 1285 (Fed. Cir. 2014) (upholding the district court’s determination of invalidity on § 112 grounds alone).

¹⁷² *Ariad*, 598 F.3d at 1351; see also *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1158 (Fed. Cir. 1998) (“To meet this requirement, the disclosure . . . must reasonably convey to one of skill in the art that the inventor possessed the later-claimed subject matter at the time [of application].”); see generally Dennis Crouch, *An Empirical Study of the Role of the Written Description Requirement in Patent Examination*, 104 NW. L. REV. 382, 382 (2010) (stating that written description doctrine “focus[es] on proof that the patentee . . . has possession of the invention”).

¹⁷³ *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988).

¹⁷⁴ Cf. *Deposit of Biological Materials for Patent Purposes*, 54 FED. REG. 34,864 (Aug. 22, 1989) (“Where the invention involves a biological material and words alone cannot sufficiently describe how to make and use the invention in a reproducible or repeatable manner, access to the biological material is necessary for the satisfaction of . . . 35 U.S.C. § 112.”).

¹⁷⁵ Timothy R. Holbrook, *Possession in Patent Law*, SMU L. REV. 123, 133 & n.51 (2006).

sufficient basis to grant ownership of the invention. Rather, ownership must be purchased, by first making a deposit into the economy as a whole. To wit, the specification requirements are almost universally referred to as a “quid pro quo” arrangement by judges and scholars alike.¹⁷⁶

So what of written description? The idea of a robust possession requirement would appear to resonate well with Lockean or Kantian theories of ownership, the focus being entirely on the relationship of the inventor to the subject matter at issue. That is, the quid pro quo is set aside temporarily, in favor of an attempt to assign rights only to the particular innovations on which the inventor labored or stamped her will.

But in practice, the written description requirement has essentially become a nullity, subsumed by other validity requirements. Professor Dennis Crouch, for example, offers an empirical analysis of nearly three thousand PTO appeals—and found that “none of the outcomes . . . would have been impacted by a legal change that entirely eliminated the written description requirement”¹⁷⁷ In particular, it appears that enablement is doing the heavy lifting, a suggestion supported by empirical studies from other scholars,¹⁷⁸ practitioner media,¹⁷⁹ and comments from Federal

¹⁷⁶ See, e.g., *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Intern., Inc.*, 534 U.S. 124, 142 (2001) (“The disclosure required by the Patent Act is ‘the *quid pro quo* of the right to exclude.’”) (quoting *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 494 (1974)); *Ariad Pharmaceuticals, Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1345 (Fed. Cir. 2010) (en banc) (“[A] separate requirement to describe one’s invention is basic to patent law. . . . It is part of the *quid pro quo* of a patent; one describes an invention, and, if the law’s other requirements are met, one obtains a patent.”); Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*, 17 BERKELEY TECH. L.J. 1155, 1186 (2002) (“As the quid pro quo for her period of exclusive rights over an invention, the inventor must fully disclose the invention to the public.”); Jacob Adam Schroeder, *Written Description: Protecting the Quid Pro Quo Since 1793*, 21 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 63 (2010).

¹⁷⁷ Crouch, *supra* note 172, at 383.

¹⁷⁸ See, e.g., Christopher M. Holman, *Is Lilly Written Description a Paper Tiger?: A Comprehensive Assessment of the Impact of Eli Lilly and Its Progeny in the Courts and PTO*, 17 ALB. L.J. SCI. & TECH. 1, 78 (2007) (finding that, in the small number of cases where written description is used to reject claims in a patent application, they are also either “explicitly held invalid for violation of the enablement requirement” or “could have easily been found” to do so).

¹⁷⁹ See, e.g., Christopher M. Holman, *Enablement Invoked as a “Super-Written Description Requirement” to Overturn \$2.5 Billion Jury Verdict*, 37 BIOTECH. L. REP. 63, 63 (2018) (observing that the two doctrines are “essentially redundant”).

Circuit judges alike.¹⁸⁰ The logic is fairly straightforward: if one can explain an innovation so well that others can replicate and copy it, by what standard would that explanation possibly fail to demonstrate mastery on the part of the inventor? Reversed, if one doesn't understand the subject matter themselves, it seems unlikely that one could hope to adequately *teach* it. The specification requirements of enablement and written description thus offer another example of utilitarianism's greater pull over the rules governing validity. Though two separate requirements in name, the objective and transactional one has essentially eaten the subjective and desert-focused one.

F. Inventorship

Any patent application must include “the name of the inventor [or joint inventors] for any invention claimed in the application,”¹⁸¹ and those same names are printed at the top of the final patent document itself.¹⁸² They are the individuals who “conceived” the invention, who “form[ed] in the[ir] mind[s] . . . a definite and permanent idea of the complete and operative invention, as it is hereafter to be applied in practice.”¹⁸³ Accordingly, the named inventors must be actual “natural persons,” and “cannot be corporations or sovereigns.”¹⁸⁴ Failure to name the correct inventors (whether by omission or erroneous addition) can result in invalidation of the patent, even if all other requirements for patentability are met.¹⁸⁵ This is, to be clear, entirely separate and distinct from the

¹⁸⁰ See, e.g., Crouch, *supra* note 172, at 383 (quoting then-Chief Judge Michel) (“[It is] exceedingly rare that the patent office hangs its case on written description.”); see Oral Argument, *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336 (Fed. Cir. 2010) (argued Dec. 7, 2009), available at <http://oralarguments.cafc.uscourts.gov> (23:00–29:30).

¹⁸¹ 35 U.S.C. § 115.

¹⁸² See, e.g., Patent No. D724,031 (2012) (naming “Elon Reeve Musk” and four others as the inventors of a particular “Vehicle Charge Inlet”).

¹⁸³ *Burroughs Wellcome Co. v. Barr Labs., Inc.*, 40 F.3d 1223, 1227-28 (Fed. Cir. 1994).

¹⁸⁴ *University of Utah v. Max-Planck-Gesellschaft Zur Forderung Der Wissenschaften*, 734 F.3d 1315, 1323 (Fed. Cir. 2013).

¹⁸⁵ See 35 U.S.C. § 256(b) (“The error of omitting inventors or naming persons who are not inventors shall not invalidate the patent in which such error occurred *if it can be corrected as provided in this section . . .*”) (emphasis added); Chisum on Patents Volume 1, § 2.01 (2016) (“This . . . requirement bars issuance of a patent for a conception derived from any source or person other than the person or persons named as in the inventorship entity.”); *Pannu v. Iolab*

assignee of the patent—the patent’s owner.¹⁸⁶ The inventor may have signed over all ownership rights in the invention (for example, as terms of an employment contract) long before any patent is filed or issued, but they still must be named.¹⁸⁷

At first glance then, the inventorship requirement resonates remarkably well with the *non-economic* moral frameworks examined *supra*, and with personhood theories in particular. The requirement suggests a fundamental, dignitary relationship between inventor and invention—a relationship that is unique to human persons, and wholly independent of “ownership” in the remunerative, royalty-entitled sense. It is telling, then, that the inventorship requirement has been consistently reduced in practical severity over time, and is currently at its weakest force in history. The doctrinal arc of inventorship, like moral utility, thus provides another example in the law governing patent validity where previously strong moral considerations have since been marginalized and eliminated.

Prior to 1952, the stakes of the inventorship requirement were extraordinarily high; there was no way to correct inventorship errors post-issuance,¹⁸⁸ and only limited options during the application process itself.¹⁸⁹ If the applicant got the names wrong the first time, in other words, their patent could be dead on arrival. In an effort to reduce these dire consequences,¹⁹⁰ the Patent Act of 1952 created procedures for correction

Corp., 155 F.3d 1344, 1349 (Fed. Cir. 1998) (“[F]ailure to name [the inventors] renders a patent invalid.”).

¹⁸⁶ See 35 U.S.C. § 261, 262.

¹⁸⁷ See, e.g., *Shukh v. Seagate Technology, LLC*, 803 F.3d 659 (Fed. Cir. 2015).

¹⁸⁸ See *In re Hamilton*, 37 F.2d 758 (CCPA 1930) (finding the reissue statute to be inapplicable to inventorship errors); *MCV, Inc. v. King-Seeley Thermos Co.*, 870 F.2d 1568, 1570 (Fed. Cir. 1989) (“Before the enactment of section 256, patentees and their assignees committed inventorship errors at their peril; misjoinder or nonjoinder of an inventor rendered the patent invalid.”).

¹⁸⁹ See *generally* Chisum on Patents, § 2.04[1][a] (observing that, prior to 1952, inventors could be *removed* during the application process, but not *added* without filing a new application—and hence “los[ing] the filing date of the original application”).

¹⁹⁰ S. Rep. No. 1979, 82d Cong., 2d Sess. 7 (1952) (“If they make a mistake in determining who are the true inventors, they do so at their peril. This provision permits a bona fide mistake in joining a person as an inventor or in failing to join a person as an inventor to be corrected.”).

of inventorship, both during the application process¹⁹¹ and post-issuance.¹⁹² But, to be correctable, any such mistake needed to have been made in good faith¹⁹³ as well as incomplete in scope (i.e., at least one named inventor needed to be correct).¹⁹⁴ In a 1982 amendment, Congress relaxed the latter requirement, but continued to require good faith.¹⁹⁵ With the 2011 America Invents Act, the good faith requirement was eliminated as well.¹⁹⁶

So what remains? Essentially nothing; a processing fee of (at most) \$140 is all that stands between most applicants or patentees and curing their inventorship defects.¹⁹⁷ There is still a general duty of candor to the PTO and good faith during the application process, which could include false statements as to inventorship,¹⁹⁸ but violating that duty renders the patent *unenforceable*, not invalid.¹⁹⁹ That is, such violations now operate as a defense on the infringement side—not as a meaningful consideration on the validity side.²⁰⁰

The moral dimension of the inventor’s personhood, as independent from the patentee’s economic interests as owner, has thus

¹⁹¹ 35 U.S.C. § 116 (1952 version).

¹⁹² 35 U.S.C. § 256 (1952 version).

¹⁹³ See 35 U.S.C. § 116 (1952 version) (limiting correction to circumstances of “error . . . without any deceptive intention”); 35 U.S.C. § 256 (1952 version) (using the same language).

¹⁹⁴ See, e.g., *Rival Mfg. Co. v. Dazey Prod. Co.*, 206 U.S.P.Q. 432 (W.D. Mo. 1973); USPTO, *Manual of Patent Examining Procedure* § 201.03 (2d ed. rev. 1976) (“An application which was filed by A and amended to add B to form joint applicants AB, cannot be again amended to make B the sole applicant.”).

¹⁹⁵ P.L. 97-247, 97th Cong., 2d Sess., § 6.

¹⁹⁶ Leahy-Smith America Invents Act § 20(a), (f), Pub. L. No. 112-29, 125 Stat. 284 (2011) (deleting the phrase “without any deceptive intention” from 35 U.S.C. §§ 116, 256).

¹⁹⁷ 37 C.F.R. §§ 1.48(a)(2), 1.17(i); see generally *Manual of Patent Examining Procedure*, USPTO, § 1402 (“A certificate of correction will be issued if all parties are in agreement and the inventorship issue is not contested.”); *Manual of Patent Examining Procedure*, USPTO, § 2157 (“In the *rare situation* where it is clear that the application does not name the correct inventorship and the applicant has not filed a request to correct . . .”) (emphasis added); Mark A. Lemley, *Rethinking Assignor Estoppel*, 54 HOUS. L. REV. 513, 530 (2016) (arguing that “[i]nvalidity for incorrect inventorship . . . was abolished outright” by the America Invents Act).

¹⁹⁸ See Chisum on Patents, § 2.04[d].

¹⁹⁹ See, e.g., *Therasense, Inc. v. Becton, Dickinson and Co.*, 649 F.3d 1276, 1285.

²⁰⁰ See *infra* Section III.D.

been sharply minimized with respect to validity. This gives clear primacy to the utilitarian theories of patents as property: if, say, Microsoft is the entity actually funding and directing some kind of innovation through its internal research and development divisions, then utilitarians' primary concern should be ensuring *Microsoft* eventually receives appropriate ownership of the resulting inventions, not whether any particular employee receives purely nominal credit. Assuming the rest of patent law is functioning correctly, the appropriate financial incentives will thereby be in place for the actual decisionmakers to promote innovation on the margins. To the extent that nominal credit is seen as valuable by the employees themselves (by generating status and recognition among their colleagues, for example), contracting freely for those rights, independent of patent law, still maintains efficiency. Imposing an unavoidable naming requirement, on the other hand, does not—making the requirement's weakening and marginalization over time particularly telling.

In summary, between novelty, nonobviousness, subject-matter eligibility, utility, written description, enablement, and inventorship, there appears to be a strong gravitational pull towards utilitarian reasoning and justification with respect to patent validity doctrine. Freestanding moral frameworks have been sharply curtailed over time, where they have not been flatly and emphatically rejected outright. As explored next in Part III, this stands in puzzling contrast to a mirror-image phenomenon in patent infringement doctrine: moral reasoning and justification acts as the dominant force, whereas utilitarianism can scarcely be found.

III. PATENT INFRINGEMENT – AN EXERCISE IN MORALITY

A. Damage Enhancement and Attorney's Fees

Since the very beginning of U.S. patent law, the award of damages has been informed by non-economic moral considerations. The Patent Act of 1793 set damages at treble the actual injury in lost royalties—at minimum.²⁰¹ In the 1836 revision of the patent statute, Congress added language to make these enhanced damages merely discretionary: “[I]t shall be in the power of the court to render judgment for any sum above the

²⁰¹ Patent Act of 1793, § 5 (“[E]very person so offending, shall forfeit and pay to the patentee, a sum, that shall be at least equal to three times the price, for which the patentee has usually sold or licensed . . . the use of said invention.”).

amount found by [the] verdict . . . not exceeding three times the amount thereof, according to the circumstances of the case.”²⁰² Its reason for doing so, the Court held, was to grant courts the ability to distinguish between more and less morally culpable defendants—to avoid the “injustice” of treating a “defendant who acted in ignorance or good faith” as severely as the “wanton and malicious pirate[s]” of inventions.²⁰³

Later revisions of the patent statute kept this discretionary language.²⁰⁴ In parallel, the courts continued to view the enhancement of damages as a “vindictive or punitive” measure,²⁰⁵ justified by considerations orthogonal to economic harm. In rejecting one such claim for enhanced damages, for example, the Court noted: “There is no pretense of any wanton and willful [conduct] by the plaintiff; nothing that suggests punitive damages, or that shows wherein the defendant was damnified, other than by the loss of the profits which the plaintiff receive[d].”²⁰⁶ The most recent statutory language (coming originally from the 1952 Patent Act) continues the trend of broad discretion²⁰⁷ and, after its enactment, the Court has continued to describe such damages as “punitive,” and limited to “case[s] of willful or bad-faith infringement.”²⁰⁸

To say the least, then, the courts’ essential *description* of willfulness damages is moralizing rather than economic in nature. But, without more, a plausible argument could be made that the true effect of or justification for these supra-compensatory damages is nevertheless based on economic calculi used broadly in tort law. For example, since the probability of being caught infringing is not 100%, the amount of

²⁰² Patent Act of 1836, § 14, 5 Stat. 123.

²⁰³ *Seymour v. McCormick*, 16 How. 480, 488 (1854).

²⁰⁴ *See, e.g.*, Patent Act of 1870, § 59, 16 Stat. 207 (allowing the district court to award up to treble damages “according to the circumstances of the case”).

²⁰⁵ *Tilghman v. Proctor*, 125 U.S. 136, 143 (1888); *see also* *Power Specialty Co. v. Connecticut Light & Power Co. v. Drohen*, 80 F.2d 874, 878 (2d Cir. 1936) (describing the infringement as “wanton, deliberate, and willful”); *Brown Bag Filling Mach. Co. v. Drohen*, 175 F. 576, 577 (2d Cir. 1910) (describing the infringement as “a bald case of piracy”).

²⁰⁶ *Cincinnati Siemens-Lungren Gas Illuminating Co. v. Western Siemens-Lungren Co.*, 152 U.S. 200, 204 (1894) (emphasis added).

²⁰⁷ 35 U.S.C. § 284.

²⁰⁸ *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 508 (1964); *see also* *Dowling v. United States*, 437 U.S. 207, 227 (1985); *Florida Prepaid Postsecondary Ed. Expense Bd. v. College Savings Bank*, 527 U.S. 627, 648 n.11 (1999).

damages assessed against those who are caught is perhaps enhanced to generate the appropriate balance of incentives vis-à-vis voluntary compliance.²⁰⁹ Or, enhanced damages may reflect an understanding that the ordinary damages framework somehow fails to fully account for the actual loss suffered in a given case—such that the plaintiff would not actually be made whole otherwise.²¹⁰

The response is twofold. First, courts have no problem making economic justifications explicit elsewhere—in particular, as just explored, in adjudicating the validity of patents. If enhanced damages are truly grounded in utilitarian reasoning, it thus seems particularly unlikely that judges would go out of their way to hide the ball with moralizing language. And recall that the statutory language itself imposes no such moral limitation; the court “may increase the damages up to three times the amount found or assessed,” full stop.²¹¹ Put differently, it is not as though the courts are externally bound to pay lip service to moral considerations.

Second, the actual standard for proving willfulness clearly sets utilitarianism aside. In practice, securing enhanced damages requires that the plaintiff show the defendant had actual, subjective knowledge of the patent at issue.²¹² For a time, the Federal Circuit required *objective* recklessness,²¹³ but that test was abrogated by the Supreme Court,²¹⁴ precisely for failing to bear on the correct question of moral culpability:

²⁰⁹ See, e.g., A. Mitchell Polinsky & Steven Shavell, *Punitive Damages: An Economic Analysis*, 111 HARV. L. REV. 869, 887-96 (1998).

²¹⁰ See, e.g., Dorsey D. Ellis, *Fairness and Efficiency in the Law of Punitive Damages*, 56 S. CAL. L. REV. 1, 26-31 (1982).

²¹¹ 35 U.S.C. § 284.

²¹² See, e.g., *WBIP, LLC v. Kohler Co.*, 829 F.3d 1317, 1341 (Fed. Cir. 2016) (“Knowledge of the patent alleged to be willfully infringed continues to be a prerequisite to enhanced damages.”); see also Dmitry Karshedt, *Enhancing Patent Damages*, 51 U.C. DAVIS L. REV. 1427, 1438 (2018) (“Specifically, the Federal Circuit has adhered to its . . . rule that a victorious patent plaintiff cannot receive damages beyond the compensatory baseline unless it can prove, at a minimum, that the defendant had actual knowledge of the patent-in-suit.”).

²¹³ See *In re Seagate*, 479 F.3d 1360, 1371 (Fed. Cir. 2007) (“[A] patentee must show by clear and convincing evidence that the infringer acted despite an objectively high likelihood that its actions constituted infringement of a valid patent . . .”).

²¹⁴ *Halo Electronics, Inc. v. Pulse Electronics, Inc.*, 136 S. Ct. 1923, 1933 (2016) (“The subjective willfulness of a patent infringer, intentional or knowing, may warrant enhanced damages, without regard to whether his infringement was objectively reckless.”).

Such a threshold requirement excludes from discretionary punishment many of the most culpable offenders, such as the ‘wanton and malicious pirate’ who intentionally infringes another’s patent—with no doubts about its validity or any notion of a defense—for no purpose other than to steal the patentee’s business. . . In the context of such deliberate wrongdoing . . . it is not clear why an independent showing of objective recklessness . . . should be a prerequisite.²¹⁵

The lower courts thereafter returned to exclusively considering subjective intent.²¹⁶

As other scholars have noted, this creates the perverse incentive for businesses to simply avoid engaging in precautionary patent searches as they develop products²¹⁷ and dampens voluntary licensing compliance with patentees.²¹⁸ Likewise, it undercuts the utilitarian *raison d’être* for patent disclosures in the first place²¹⁹ by discouraging researchers from learning and building upon them in their work, thereby slowing down scientific and technological progress.²²⁰ The focus on subjective

²¹⁵ *Id.* at 1932.

²¹⁶ *See, e.g.*, Valinge Innovation AB v. Halstead New England Corp., 2018 WL 2411218 at *9 (D. Del. May 29, 2018); Puma SE v. Forever 21, Inc., 2017 WL 47771004 at *3 (C.D. Cal. June 28, 2017); Scripps Research Inst. v. Illumina, Inc., 2016 WL 6834024 at *7 (S.D. Cal. Nov. 21, 2016); Malibu Boats, LLC v. MasterCraft Boat Company, LLC, 2016 WL 8286158 at *3 (E.D. Tenn. Oct. 28, 2016); *see also* Karshtedt, *supra* note 212, at 1466-67.

²¹⁷ *See* Colleen V. Chien, *Opening the Patent System: Diffusionary Levers in Patent Law*, 89 S. CAL. L. REV. 793, 833-34 (2016); Jason A. Rantanen, *An Objective View of Fault in Patent Infringement*, 60 AM. U. L. REV. 1575, 1611-12 (2011); Jeanne C. Fromer, *Patent Disclosure*, 94 IOWA L. REV. 539, 588 (2009).

²¹⁸ *See* Colleen V. Chien, *Holding Up and Holding Out*, 21 MICH. TELECOMM. & TECH. L. REV. 1, 23-24 (2014) (“Companies are often counseled not to respond to or accept unsolicited offers to license or buy patents, knowing that engaging with the patentholder can often result in legal or settlement costs. Since only 1-2% of all enforceable patents are actually litigated, it may be better for a potential infringer to take his chances.”).

²¹⁹ *See supra* Section II.E.

²²⁰ *See* Karshtedt, *supra* note 212, at 1471-72 (“[D]uring my time as a scientist working in Silicon Valley, a supervisor once criticized me for finding, through a Google search, a patent that was arguably relevant to my project. . . . And other legal scholarship shows that my experience with patent searching was far from

knowledge is, moreover, a marked departure from the general embrace of objective standards—and explicit, concurrent economics reasoning—that is common across other torts ranging from products liability to copyright infringement.²²¹ In brief: “Patent law today deviates from modern tort law by requiring actual, subjective knowledge of the plaintiff’s patent and, in so doing, it in effect clings to the old interpersonal-animus and moral-opprobrium models of punitive damages.”²²² Utilitarianism thus takes a backseat while infringement doctrine attempts to bring pirates to justice.

B. Injunctive Relief

Turning from damages to equity, the nature of injunctive relief in patent infringement suits likewise suggests the relative strength of moral considerations over utilitarian ones. Under Federal Circuit case law before 2006, a successful patentee-plaintiff would be entitled to an injunction against the defendant to prevent future infringement—in addition to damages to remedy past infringement—by default.²²³ This use of a property rule over a liability rule is efficient in certain circumstances:

exceptional.”); FED. TRADE COMM’N, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY 16-17 (2003), <https://www.ftc.gov/sites/default/files/documents/reports/promote-innovation-proper-balance-competition-and-patent-law-and-policy/innovationrpt.pdf> (“Some Hearings participants explained that they do not read their competitors’ patents out of concern for such potential treble damage liability . . . [which can] encourage wasteful duplication of effort [and] delay follow-on innovation that could derive from patent disclosures”); Lisa Larrimore Ouellette, Halo v. Pulse and the Increased Risks of Reading Patents, STAN. L. SCH.: BLOGS (June 16, 2016), <https://law.stanford.edu/2016/06/16/halo-v-pulse-and-the-increased-risks-of-reading-patents> (flagging “the potential harm from firms deciding that the risks of enhanced liability from reading patents outweigh the teaching benefit those patents could otherwise provide”).

²²¹ Karshedt, *supra* note 212, at 1482-1508.

²²² *Id.* at 1443.

²²³ See, e.g., *Fuji Photo Film Co., Ltd. v. Jazz Photo Corp.*, 394 F.3d 1368, 1380 (Fed. Cir. 2005) (“Generally ‘an injunction will issue when infringement has been adjudged, absent a sound reason for denying it.’”) (quoting *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1246-47 (Fed. Cir. 1989)); *KSM Fastening Systems, Inc. v. H.A. Jones Co., Inc.*, 776 F.2d 1522, 1524 (Fed. Cir. 1985) (“[I]njunctive relief against an infringer is the norm.”); see generally Carl Shapiro, *Property Rules vs. Liability Rules for Patent Infringement* at 2 (working paper Jan. 10, 2017), <https://faculty.haas.berkeley.edu/shapiro/propvsliab.pdf>.

where transaction costs between the patentee and infringer are low,²²⁴ or where calculating a prospective royalty rate would be especially difficult.²²⁵ But utilitarianism generally tends to favor liability rules—particularly where the scope of a patent is unclear²²⁶ or where there are multiple infringers and patentees involved.²²⁷ In particular, liability rules are urgently needed (from a law-and-economics perspective) where patentees are able to engage in “holdup”: if “the defendant has already invested heavily to design, manufacture, market, and sell” the product at issue, the patentee can use an injunction as leverage to demand exorbitant royalties going forward.²²⁸ In this way, over-availability of injunctive relief “can deter innovation by increasing costs and uncertainty for manufacturers,” and “raise prices to consumer by depriving them of the benefit of competition among technologies.”²²⁹

In 2006, the Supreme Court pushed back against the Federal Circuit’s rigid presumption of injunctive relief, holding in *eBay Inc. v. MercExchange* that “the traditional four-factor test” applies instead.²³⁰ That is, a plaintiff must demonstrate: “(1) that it has suffered an irreparable

²²⁴ See Robert P. Merges, *Of Property Rules, Coase, and Intellectual Property*, 94 COLUM. L. REV. 2655, 2664-65 (1994).

²²⁵ See THOMAS F. COTTER, *COMPARATIVE PATENT REMEDIES: A LEGAL AND ECONOMIC ANALYSIS* 54 (2013) (“[T]he job of putting a value on patent rights is inherently difficult, particularly in industries in which the technology itself is rapidly evolving.”); John M. Golden, “Patent Trolls” and Patent Remedies, 85 TEX. L. REV. 2111, 2152 (2007) (“The difficulty of assessing [damages] has in fact been one of the principal rationales for granting permanent injunctions . . .”).

²²⁶ See generally Greg Reilly, *Completing the Picture of Uncertain Patent Scope*, 91 WASH. U. L. REV. 1353, 1353 (2014) (“Uncertain patent scope is perhaps the most significant problem facing the patent system.”).

²²⁷ See Mark A. Lemley & Philip J. Weiser, *Should Property or Liability Rules Govern Information?*, 85 TEX. L. REV. 783, 793 (2007) (“[A]s an example of transaction costs, . . . if a buyer must aggregate rights from a number of different parties in order to achieve a useful end result, it will have to deal with a number of sellers”).

²²⁸ Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 1995-2008 (2007); see also Mark A. Lemley, *Contracting Around Liability Rules*, 100 CALIF. L. REV. 463, 468 (2012) (“The biggest risk of applying property rules in IP cases is holdup.”); COTTER, *supra* note 225, at 59 (“[P]atent[ed] holdup involves the strategic use of a patent... to extract ex post rents that are disproportionate to the ex ante value of the invention in comparison with the next-best available alternative.”).

²²⁹ FED. TRADE COMM’N, *THE EVOLVING IP MARKETPLACE: ALIGNING PATENT NOTICE AND REMEDIES WITH COMPETITION* at 26 (2011).

²³⁰ *eBay Inc. v. MercExchange, LLC*, 547 U.S. 388, 393 (2006).

injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.”²³¹ Justice Kennedy, writing in concurrence, emphasized the fourth factor in particular—and highlighted the danger of holdup inefficiencies explicitly.²³² The Federal Circuit and district courts have since adopted the four-factor language in their opinions,²³³ with *eBay* quickly becoming one of the most widely cited Supreme Court patent decisions in recent history.²³⁴

At first glance, this doctrinal arc would seem to describe a triumph of utilitarianism over noneconomic moral considerations. The Federal Circuit’s old rule presupposed the patent owner’s entitlement to an absolute veto as a matter of moral desert, not a balancing of harms seen as economically reciprocal. There was not, in other words, the sort of dispassionate analysis imagined by Calabresi and Melamed that would equally consider granting a “right to pollute”—here, a “right to infringe”—if the utility calculator so indicated.²³⁵ Speaking in the context of traditional property, Professors Thomas Merrill and Henry Smith make a similar case; rather than “tailor[ing] liability costs to the amount of harm inflicted in a particular case,” property rules “deter completely”—“which is just what we would expect or rights recognized by traditional morality.”²³⁶ Hence, by moving toward the use of liability rules in infringement cases, the argument might go, patent law is stripping some of its moral vestiges.

²³¹ *Id.* at 391.

²³² *eBay*, 547 U.S. at 396-97 (Kennedy, J., concurring).

²³³ See, e.g., *Douglas Dynamics, LLC v. Buyers Products Co.*, 717 F.3d 1336, 1344 (Fed. Cir. 2013); see also *Citing References for eBay Inc. v. MercExchange LLC*, WESTLAWNEXT (yielding more than 3,000 cites by district courts).

²³⁴ Dennis Crouch, *Most Cited Supreme Court Patent Decisions (2005-2015)*, PATENTLY-O (Mar. 11, 2015), <http://patentlyo.com/patent/2015/03/supreme-court-cases.html> (placing *eBay* second, out of twenty-three cases).

²³⁵ Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1118-19 (1972).

²³⁶ 1890

But that’s not what has happened since *eBay*. In practice, patent owners are still able to obtain injunctive relief as a rule. Empirical analyses have shown that district courts continue to grant injunctions to the vast majority of patentee-plaintiffs,²³⁷ and that the Federal Circuit is significantly more likely to affirm injunction-granting decisions over injunction-denying ones.²³⁸ Property rules—and the associated asymmetrical moral assumptions—still reign supreme. To wit, when reviewing injunction decisions, the Federal Circuit has rejected outright the economics of holdup theory in favor of moral desert; district courts are told to “ignore[] the expenses . . . incurred in creating the infringing products,” and the “cost of redesigning the infringing products.”²³⁹ Or, more succinctly: “[A defendant] is not entitled to continue infringing simply because it successfully exploited its infringement.”²⁴⁰

What’s more, the ground that *has* been lost to liability rules is occupied almost entirely by a longstanding target of moral approbation anyway: patent trolls. Less pejoratively, trolls are also sometimes labeled non-practicing or patent-assertion entities—but the ubiquity of the former name speaks volumes for their perceived moral position. And indeed, empirical studies place the injunction success rate of these actors as low as 7%.²⁴¹ Although some scholars have defended this categorical distinction on independent economic grounds,²⁴² that defense has

²³⁷ Christopher B. Seaman, *Permanent Injunctions in Patent Litigation after eBay: An Empirical Study*, 101 IOWA L. REV. 1949, 1982-83 (2016) (finding an injunction grant rate of 72.5% across district courts in the first 8 years after the Court’s decision in *eBay*).

²³⁸ Ryan T. Holte & Christopher B. Seaman, *Patent Injunctions on Appeal: An Empirical Study of the Federal Circuit’s Application of eBay*, 92 WASH. L. REV. 145, 188-93 (2017) (using data from the same time period, finding an affirmance rate of 88% for injunction-granting decisions, an affirmance rate of 53% for injunction-denying decisions, and a statistically significant correlation between the district court’s injunction decision and the outcome on appeal after controlling for other variables).

²³⁹ *i4i Ltd. Partnership v. Microsoft Corp.*, 598 F.3d 831, 863 (Fed. Cir. 2010).

²⁴⁰ *Id.*

²⁴¹ Colleen V. Chien & Mark A. Lemley, *Patent Holdup, the ITC, and the Public Interest*, 98 CORNELL L. REV. 1, 10-11 (2012); *see also* Seaman, *supra* note 237, at 1988-89 (finding an injunction grant rate for trolls of 16% across district courts in the first 8 years after the Court’s decision in *eBay*).

²⁴² *See, e.g.*, Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 2008 (2007) (“The potential for an injunction against a whole product can and does permit so-called patent trolls to hold up

shortcomings on its own terms.²⁴³ And, crucially, this post-hoc economic rationalization does not appear to be actually motivating district courts' injunction decisions. In practice, district courts *reject* a truly categorical approach and instead take pains to distinguish between “good”²⁴⁴ non-practicing entities (like universities or individual inventors) and “bad”²⁴⁵ non-practicing entities (i.e., trolls). In summation, despite nominal pushback, the moral dimensions of injunctive relief—from how often it is granted and to whom—glaringly persist.

C. Doctrine of Equivalents

Taking a step back from the forms of relief, it is worth separately examining the scope of what constitutes patent infringement in the first place. In a standard, “literal infringement” suit, the plaintiff-patentee must show that the defendant’s product or method shares—identically and exactly—every single element of one of the patent claims.²⁴⁶ Where the plaintiff cannot show literal infringement, however, the defendant may still be liable under the doctrine of equivalents.²⁴⁷ Infringement under the doctrine of equivalents requires only that each element of the claim at issue

defendants by threatening to enjoin products that are predominantly noninfringing.”).

²⁴³ See, e.g., John M. Golden, “*Patent Trolls*” and *Patent Remedies*, 85 TEX. L. REV. 2111, 2116 (2007) (critiquing Lemley and Shapiro’s model).

²⁴⁴ See, e.g., *Commonwealth Scientific and Industrial Research Organization v. Buffalo Technology, Inc.*, 492 F. Supp. 2d 600, 607 (E.D. Tex. 2007) (“Research institutions, such as [plaintiff], make substantial scientific advances. The work of research institutions is often at the forefront of scientific awareness. Although their work may not always have immediate applications, the work of research institutions has produced enormous benefits to society in the form of new products and processes. Because the work of research institutions such as [plaintiff] is often fundamental to scientific advancement, it merits strong patent protection.”).

²⁴⁵ See, e.g., *Ricoh Co., Ltd. v. Quanta Computer, Inc.*, 2010 WL 1607908 at *1-2 (W.D. Wis. Apr. 19, 2010) (“Plaintiff is correct that it is possible for a nonpracticing entity to satisfy the four-factor test. . . . Of course, plaintiff is not a researcher or a self-made inventor. Rather, plaintiff may be more akin to an entity that . . . ‘use[s] patents . . . as a bargaining tool to charge exorbitant fees’”) (quoting *eBay*, 547 U.S. at 396-97 (Kennedy, J., concurring)).

²⁴⁶ *Southwall Tech., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed. Cir. 1995) (“To establish literal infringement, every limitation set forth in a claim must be found in the accused product, exactly.”).

²⁴⁷ See, e.g., *Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.*, 520 U.S. 17 (1997).

have a “substantial equivalent” in the accused product or method.²⁴⁸ That is, for each element of the claim, if the accused product or method “perform[s] substantially the same function[,] . . . in substantially the same way, to produce substantially the same result,” the defendant will be found liable.²⁴⁹ The doctrine of equivalents, when it applies, thus relaxes the primacy of claim language itself in favor of broader, function-over-form considerations. But those considerations—as well as the overall force of this doctrine—have ebbed and flowed considerably over time, in ways that parallel the utilitarian-moral dichotomy explored thus far.

The first significant application of the doctrine of equivalents to modern patent claim language was in 1950, with Justice Jackson’s opinion in *Graver Tank & Manufacturing Co. v. Linde Air Products Co.*²⁵⁰ The patent at issue in that case covered a particular electric welding process, including which fluxes to use: “a combination of alkaline earth metal silicate and calcium fluoride.”²⁵¹ The accused process was identical, “except that it substitute[d] silicates of calcium and manganese—the latter not an alkaline earth metal” by any literal definition.²⁵² Substantial testimony from metallurgists and chemists in the field established, however, that “in the sense of the patent,” manganese could be used “as an alkaline earth metal”; their chemical reactions are sufficiently similar and they can generally “serve the same purpose” in fluxes.²⁵³ The Court thus found the accused process to infringe the patent, despite the textual gap in the claims, as a matter of moral desert and justice: “One who seeks to pirate an invention, like one who seeks to pirate a copyrighted book or play, may be expected to introduce minor variations to *conceal and shelter the piracy*. . . . To temper unsparing logic and prevent an infringer from *stealing the benefit* of the invention, a patentee may invoke this

²⁴⁸ See, e.g., *Vehicular Tech. Corp. v. Titan Wheel Intern., Inc.*, 141 F.3d 1084, 1089 (Fed. Cir. 1998).

²⁴⁹ *Id.* (citing *Warner-Jenkinson*, 520 U.S. at 40).

²⁵⁰ 339 U.S. 605 (1950). The Court’s opinion nearly a century earlier, in *Winans v. Denmead*, 56 U.S. 330 (1853), is largely credited with the true genesis of the doctrine of equivalents. See generally Donald S. Chisum, *Chisum on Patents* OV-7 (2003). That case, however, predates entirely the modern structure of patent claim language; a more detailed discussion is thus omitted for the sake of brevity. See generally Patent Act of 1870, Ch. 230, 16 Stat. 198, § 26 (replacing central claiming with contemporary “peripheral claim[ing]”).

²⁵¹ *Id.* at 610.

²⁵² *Id.*

²⁵³ *Id.* at 611.

doctrine.”²⁵⁴ The Court’s focus, in other words, was entirely on preventing bad actors from receiving ill-gotten gains at the expense of the (presumptively deserving) patentee. Economic or utilitarian considerations writ large, on the other hand, are nowhere to be found in the opinion.

The next time the Supreme Court addressed the doctrine of equivalents, some fifty years later in *Warner Jenkinson Co. v. Hilton Davis Chemical Co.*,²⁵⁵ it took a different approach. In the intervening years, the Federal Circuit had the opportunity to adjudicate numerous claims of infringement under the doctrine of equivalents—with mixed results for plaintiffs.²⁵⁶ Increasingly, the Federal Circuit expressed the notion that the doctrine of equivalents had become too broad in practice, at risk of swallowing infringement analysis entirely.²⁵⁷ Against that backdrop, the Supreme Court nevertheless affirmed the continued viability of the doctrine of equivalents, but predicated its analysis on the somewhat stricter approach taken by the Federal Circuit, and began to distance itself from its own prior, moralizing framework: “To be sure, *Graver Tank* refers to the prevention of copying and piracy when describing the benefits of the doctrine of equivalents. That the doctrine produces such benefits, however, does not mean that its application is limited only to cases where those particular benefits are obtained.”²⁵⁸

²⁵⁴ *Id.* at 607-08 (emphases added).

²⁵⁵ 520 U.S. 17 (1997).

²⁵⁶ *Compare* *Hughes Aircraft Co. v. United States*, 717 F.2d 1351 (Fed. Cir. 1983) (reversing the district court’s denial of infringement under the doctrine of equivalents for taking an overly narrow approach), *and* *Black & Decker, Inc. v. Hoover Service Center*, 886 F.2d 1285 (Fed. Cir. 1989) (same), *with* *Slimfold Manufacturing Co. v. Kinkead Industry*, 932 F.2d 1453 (Fed. Cir. 1991) (reversing the district court’s finding of infringement under the doctrine of equivalents as impermissibly broad).

²⁵⁷ *See, e.g.*, *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991) (“[I]f the public comes to believe . . . that the language of patent claims can never be relied on, and that the doctrine of equivalents is simply the second prong of every infringement charge . . . , then claims will cease to serve their intended purpose.”); *Texas Instruments, Inc. v. United States International Trade Commission*, 805 F.2d 1558, 1572 (Fed. Cir. 1986) (“[The doctrine of equivalents] constitutes a deviation from the need of the public to know the precise legal limits of patent protection without recourse to judicial ruling”).

²⁵⁸ *Warner Jenkinson*, 520 U.S. at 34-35.

Only five years later, the Supreme Court would again address the doctrine of equivalents in *Festo Corp. v. Shoketsu Kinzoku Kogyu Kibushiki Co., Ltd.*²⁵⁹ And again, the Court distanced itself from an approach based on moral desert, now justifying the doctrine and its bounds by an explicit focus on utilitarian reasoning:

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 investors 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. . . . It is true that the doctrine of equivalents renders the scope of patents less certain. . . . *[T]his uncertainty [is] the price of ensuring the appropriate incentives for innovation . . .*²⁶⁰

This strictly economic focus was, in turn, embraced by the Federal Circuit in its own jurisprudence.²⁶¹

If the doctrine of equivalents's arc had ended here, it would perhaps serve as a counterexample to the utilitarian-moral dichotomy presented thus far: an infringement rule based on morality, replaced by one based on economic efficiency. But since that replacement, the doctrine of equivalents has instead quietly fizzled out into near extinction.²⁶² Empirical scholarship in particular confirms a significant decline over recent decades in successful doctrine of equivalents infringement

²⁵⁹ 535 U.S. 722 (2002).

²⁶⁰ *Festo Corp.*, 535 U.S. 731-32 (emphases added).

²⁶¹ See, e.g., *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1016-17 (Fed. Cir. 2006); *Freedman Seating Co. v. American Seating Co.*, 420 F.3d 1350, 1357-58 (Fed. Cir. 2005).

²⁶² See, e.g., John R. Allison & Mark A. Lemley, *The (Unnoticed) Demise of the Doctrine of Equivalents*, 59 STAN. L. REV. 955, 958 (2007) (“[T]he doctrine of equivalents was already near death by the late 1990s. . . . That became even more true after 2000 In fact, district courts are more likely to reject doctrine of equivalents claims today than ever before.”).

claims.²⁶³ Practitioner media, meanwhile, goes so far as to suggest the “impossibility”²⁶⁴ of making a winning claim under the “dead”²⁶⁵ doctrine.

This decline suggests two possibilities. First, rather than saving the doctrine of equivalents, the transition to a utilitarian framework acted as a further hastening factor in its demise. Like transferring a plant to the wrong type of soil, an infringement doctrine based on broad economic principles only finds more difficulty and tension if surrounded entirely by moralizing rules. On the other hand, the transition to a utilitarian framework may have been a *symptom* of the doctrine of equivalents’ declining relevance. Only after seeing pushback and problems with the doctrine did the Court try a contrasting, Hail-Mary approach. And, of course, a misfit or thematic exception with minimal footprint is more likely to be tolerated (or overlooked) than made to fit the pattern. Either way, it is worth emphasizing that the doctrine of equivalents—perhaps the strongest plausible counterexample to the pattern of morality-based infringement rules—has, *coincidentally*, been minimized to the point of extinction, leaving the pattern essentially unbroken in practice.

D. Inequitable Conduct

Turning to defenses against infringement, when a defendant can show that the plaintiff-patentee failed to prosecute its patent-in-suit in good faith, they will not be found liable—instead, the entire patent becomes unenforceable.²⁶⁶ The inequitable conduct defense arose out of the familiar doctrine of unclean hands;²⁶⁷ if a patentee engaged in

²⁶³ See, e.g., *id.*; David L. Schwartz, *Explaining the Demise of the Doctrine of Equivalents*, 26 BERKELEY TECH. L.J. 1157 (2011); Lee Petherbridge, *On the Decline of the Doctrine of Equivalents*, 31 CARDOZO L. REV. 1371 (2010).

²⁶⁴ See, e.g., Dennis Crouch, *Impossibility of the Doctrine of Equivalents?*, PATENTLYO (Aug. 2, 2017), <https://patentlyo.com/patent/2017/08/impossibility-dctrine-equivalents.html>.

²⁶⁵ See, e.g., Davis Kuelthau, *Raising an Ensnarement Defense Defeats the Doctrine of Equivalents*, NATIONAL LAW REVIEW (Feb. 1, 2018), <https://www.natlawreview.com/article/raising-ensnarement-defense-defeats-dctrine-equivalents>.

²⁶⁶ MENELL, LEMLEY, & MERGES, *supra* note 1, at 415.

²⁶⁷ See *Therasense, Inc. v. Becton, Dickinson and Co.*, 649 F.3d 1276, 1285 (Fed. Cir. 2011) (en banc); Robert J. Goldman, *Evolution of the Inequitable Conduct Defense in Patent Litigation*, 7 HARV. J.L. & TECH. 37, 46-51 (1993).

egregious conduct such as perjury²⁶⁸ or suppression of evidence²⁶⁹ related to the patent's validity, the infringement suit would be dismissed outright as a matter of equity. The doctrine's roots are, in other words, unambiguously moral. In the Supreme Court's own telling in one of the earliest such cases, "if the conduct of the plaintiff be offensive to the dictates of natural justice," or if he "by deceit or any unfair means has gained an advantage," the patent laws will not aid him.²⁷⁰ Over time, the scope of inequitable conduct broadened, to include "not only affirmative acts of misconduct . . . [,] but also the mere nondisclosure of information to the PTO."²⁷¹ The remedy, meanwhile, became harsher—unenforceability of the patent-at-issue, not simply dismissal of the suit.²⁷² But, through it all, the doctrine has not broken from its moral foundation.

Today, at its most basic, the inequitable conduct defense requires two elements, each of which must be proven by the defendant with clear and convincing evidence: (1) intent to deceive; and (2) materiality.²⁷³ Regarding intent, "the accused infringer must prove that the patentee acted with the specific intent to deceive the PTO" through misrepresentation or omission in its application proceedings.²⁷⁴ For a time, the Federal Circuit used a more flexible, objective standard—essentially, "gross negligence" or a "should have known" standard.²⁷⁵ The Federal Circuit would eventually come to reject that approach in favor of a return to strictly subjective intent,²⁷⁶ recognizing in particular inequitable conduct's clear moral freight: "[I]nequitable conduct charges cast a dark cloud over the

²⁶⁸ See, e.g., *Precision Instrument Manufacturing Co. v. Automotive Maintenance Machinery Co.*, 324 U.S. 806, 816-20 (1945).

²⁶⁹ See, e.g., *Keystone Driller Co. v. General Excavator Co.*, 290 U.S. 240, 243 (1933).

²⁷⁰ *Id.* at 244-45.

²⁷¹ *Therasense*, at 1287; see, e.g., *Monsanto Co. v. Rohm & Haas Co.*, 456 F.2d 592, 599 (3d Cir. 1971) (quoting *Stewart v. Wyoming Cattle Ranch Co.*, 128 U.S. 383, 388-89 (1988)) ("Concealment and nondisclosure may be 'evidence of and equivalent to a false representation, because the concealment or suppression is, in effect, a representation that what is disclosed is the whole truth.'").

²⁷² See, e.g., *Kingsdown Medical Consultants, Ltd. v. Hollister Inc.*, 863 F.2d 867, 874-75 (Fed. Cir. 1988).

²⁷³ *Star Scientific Inc. v. R.J. Reynolds Tobacco Co.*, 537 F.3d 1357, 1365 (Fed. Cir. 2008).

²⁷⁴ *Therasense*, at 1290 (quoting *Kingsdown*, at 876).

²⁷⁵ *J.P. Stevens & Co., Inc. v. Lex Tex Ltd., Inc.*, 747 F.2d 1553, 1560 (Fed. Cir. 1984).

²⁷⁶ *Kingsdown*, 863 F.2d at 876-77.

patent’s validity and paint the patentee as a bad actor. Because the doctrine focuses on the moral turpitude of the patentee with ruinous consequences for the reputation of his patent attorney, it discourages settlement and deflects attention from the merits”²⁷⁷ Beyond the court’s own language, recall that this focus on subjective knowledge gives *functional* primacy to moral concerns over economic interests, as outlined in the discussion *supra* regarding enhanced damages.²⁷⁸ That is, the doctrine’s primary effect is to punish individual bad actors—with actual ill intent—rather than construct a landscape of incentives that, in the aggregate, minimize risk and harm to the public.

Regarding materiality, the accused infringer must show that “the PTO would not have allowed a claim” of the patent-at-issue but for the misrepresentation or omission.²⁷⁹ At first blush, this prong would seem to be balanced for efficiency: the doctrine only kicks in when the inequitable conduct actually provided a benefit to the patentee. Put differently, bad-faith conduct that was essentially irrelevant to the patent grant decision does not actually harm the public—so, from a strictly utilitarian standpoint, why bother punishing it? In comparison, a Kantian or Lockean approach would almost certainly punish an affirmative act of dishonesty—whether or not it necessarily led to ill-gotten gains. Lo and behold, however, one finds that just such a moral backdoor is built into the materiality prong: “Although but-for materiality generally must be proved to satisfy the materiality prong of inequitable conduct, this court recognizes an exception in cases of affirmative egregious misconduct, . . . [such as] the filing of . . . false affidavit[s].”²⁸⁰ In other words, for sufficiently bad actors, the courts are happy to set aside the otherwise dispassionate utilitarian reasoning of no-harm-no-foul. Observe, moreover, that this backdoor is a departure from efficiency on the procedural level, by replacing an otherwise (relatively) clear, bright-line rule with one that still spawns exceedingly costly line-drawing litigation.²⁸¹ Infringement doctrine thus affords primacy to moral considerations once again.

²⁷⁷ *Therasense*, at 1288.

²⁷⁸ *See supra* notes 217-222 and accompanying text.

²⁷⁹ *Therasense*, at 1291.

²⁸⁰ *Id.* at 1292-93.

²⁸¹ *See, e.g.*, *Outside the Box Innovations LLC v. Travel Caddy Inc.*, 695 F.3d 1285 (Fed. Cir. 2012).

E. Prior Use

If an accused infringer can show that they were already using the invention at issue *before* the patent was granted, they will not be found liable for subsequent infringement.²⁸² The precise boundaries of this prior use defense have shifted over time²⁸³—at one point, disappearing entirely.²⁸⁴ But it is currently at its broadest scope in more than a half-century, now applying against patents of any and all subject matter.²⁸⁵ The expansion of the prior use defense reflects yet another clear emphasis on moral, rather than economic, concerns when it comes to infringement.

To see why, consider the circumstances under which a prior use defense might arise. Prior *public* uses invalidate patents outright via the novelty requirement, rather than acting as a defendant-specific shield against infringement liability.²⁸⁶ So the real salience of the prior use defense is in protecting the interests of *secret* users specifically.²⁸⁷ But that renders the prior use defense a truly odd fit with the general utilitarian theory of patent law. On the margins, it disincentivizes public disclosure of inventions; a firm can quietly reap the profits of its discovery in perpetuity rather than the limited term of a patent, knowing that—even if

²⁸² 35 U.S.C. § 273.

²⁸³ *Compare* Patent Act of 1839 at § 7, 5 Stat. 353-55 (1839) (“[E]very person . . . who has . . . purchased or constructed any newly invented machine, manufacture, or composition of matter, prior to the application by the inventor or discoverer for a patent, shall be held to possess the right to use, and vend to others . . .”), *with* American Inventors Protection Act of 1999, H.R. 1907 106th Cong. (1999) Section 302(a) (limiting the prior use defense to patents covering “method[s] of doing or conducting business”). *See generally* Jeff Mikrut, *How the America Invents Act Revived the Prior-User Defense*, ABA SEC. INTELLECTUAL PROPERTY (Feb. 20, 2012), <http://apps.americanbar.org/litigation/committees/intellectual/articles/winter2012-prior-user-defense-america-invents-act.html>.

²⁸⁴ *See* Patent Act of 1952, § 282.

²⁸⁵ *See generally* Jacob Neu, *Patent User Prior Rights: What’s the Fuss?*, 66 VAND. L. REV. EN BANC 1, 1 (2013) (“Another change, however, . . . represents a historic shift: the expansion of prior user rights to all patents.”).

²⁸⁶ *See* 35 U.S.C. § 102(a)(1) (“A person shall be entitled to a patent unless . . . the claimed invention was patented, described in a printed publication, or in *public use*, on sale, or otherwise available to the public before the effective filing date of the claimed invention . . .”).

²⁸⁷ *See, e.g.*, Leslie M. Hill, *Prior Use Defense: The Road to Hell Is Paved with Good and Bad Intentions*, 10 FED. CIRCUIT B.J. 513, 519-20 (2001) (contrasting “public use or the placing on sale of an invention,” which “invalidates a patent,” with “secret use,” which “provide[s] a defense to infringement”).

another firm makes the same discovery—it will face no risk of losing the right to practice.²⁸⁸ In turn, one would tend to expect a greater degree of wastefully redundant research efforts (and an overall slowing of innovative progress), all in exchange for zero public disclosure benefit.

A plausible argument can be made that this defense merely enables firms the flexibility to efficiently opt out of patent protection for marginal inventions, such as minor internal process improvements, and leverage trade secret law instead.²⁸⁹ This rationalization was far more compelling when the prior use defense was subject-matter limited—covering only “method[s] of doing or conducting business.”²⁹⁰ But today, the defense covers any and all subject matter. Accordingly, even landmark discoveries can be opted out of the patent system for potentially superior returns; “[b]y maintaining the secrecy of the concept, the business hopes that the secrecy can be preserved beyond the life of, or provide greater protection than, any patent that can be obtained.”²⁹¹ This is on top of at least two second-order distortions: (1) smaller, non-integrated businesses tend to be particularly disadvantaged by prior user rights, due to their comparative inability to perform everything secretly in-house;²⁹² and (2)

²⁸⁸ See James R. Barney, *The Prior User Defense*, 82 J. PAT. & TRADEMARK OFF. SOC’Y 261, 265 (2000) (“The most glaring problem with section 273 is that it ignores the constitutional mandate to ‘promote the Progress of Sciences and the useful Arts’ because it encourages secreting, rather than disclosing, of new inventions.”).

²⁸⁹ See, e.g., *Prior User Rights (Relative to Patents): Hearings on S. 2272 Before the Subcomm. on Intellectual Prop. and Judicial Admin. of the House Comm. on the Judiciary*, 103rd Cong. 2 (1994) (statement of Bruce A. Lehman) (“[The] goal of realizing the benefits of innovation is best served by policies that provide American companies with maximum flexibility Prior user rights . . . will permit companies to choose with confidence . . . the most commercially sound approach to commercially exploiting the innovation.”); Gary L. Griswold et al., *Prior User Rights: Neither a Rose nor a Thorn*, 2 U. BALT. INTELL. PROP. L.J. 233, 234 (1994) (noting that “[t]he monetary costs of obtaining and maintaining a global portfolio of patents may be prohibitively high relative to the expected commercial return,” especially considering “[t]he costs of litigation to enforce”).

²⁹⁰ American Inventors Protection Act of 1999, *supra* note 283.

²⁹¹ Robert L. Rohrback, *Prior User Rights: Roses or Thorns?*, 2 U. BALT. INTELL. PROP. L.J. 1, 7 (1993).

²⁹² See David H. Hollander, *The First Inventor Defense: A Limited Prior User Right Finds Its Way Into US Patent Law*, 30 AIPLA Q.J. 37, 41-42 (2002); Rohrback, *supra* note 291, at 20 (“[T]he aforementioned consequences fall far more heavily on individual inventors, small businesses, and non-corporate users

it eliminates the incentive to challenge bad patents among those with the best informational advantage to do so—industry participants involved in the invention’s actual development and practice.²⁹³

Moral justifications, on the other hand, are a remarkably easy fit for the prior use defense. As Locke might describe it, the prior-using firm has a right to consume the apples it already harvested (with no help from or reliance on the second-inventor patentee). Or, per Kant and Hegel, the prior user has already reified its will through intention and action in the external world; to take the right to use away due to a second-inventor patentee would, in a concrete sense, harm the prior user. These frameworks furthermore help to explain two of the principal limitations on the prior use defense. First, the prior use must be continuous from before the patentee’s filing date through to the time of the activity being defended post-grant.²⁹⁴ Second, the prior use right is essentially non-transferrable.²⁹⁵ The prior use defense, in other words, is fundamentally centered on the *individual* and his *ongoing relationship* to the invention at issue—hallmarks of personhood theory in particular. It is decidedly not the sort of fungible entitlement, flexibly alienable in the marketplace to its most efficient holder, that one might otherwise expect from a typical law-and-economics approach. In that way, the prior use defense forms the mirror image of the simultaneous or independent invention problem explored in Section II.C. That is, on the validity side, patent law declines to recognize the labors and personhood of the inventor that happens to come in second place in the race to the patent office—at the end of the day, they receive no piece of the reward. But the infringement side deliberately and explicitly engages in precisely such recognition.

of the patent system, . . . [because they] are usually dependent upon sources of risk capital and/or licensing arrangements.”).

²⁹³ See, e.g., Rohrback, *supra* note 291, at 20 (“[A] possessor of prior user rights would have no incentive to prove invalidity based on facts known to it. It is not in the public interest to have invalid patents languishing in the art to deter others from competing.”); Barney, *supra* note 288, at 272-73 (“Indeed, a rational prior user might actually *want* a second inventor to obtain a patent on his invention because the trade secret can then be kept out of the public domain for up to twenty additional years, with the first inventor enjoying the enviable position of a royalty-free licensee. This perverse incentive may cause trade secret owners to essentially look the other way when confronted with a second inventor’s patent, even one that is clearly invalid.”).

²⁹⁴ 35 U.S.C. § 273(e)(4).

²⁹⁵ See 35 U.S.C. §§ 273(e)(1)(A)-(B).

In summary, the rules governing relief for, scope of, and defenses to patent infringement all seem to resonate most strongly with freestanding moral frameworks rather than utilitarian reasoning. Validity doctrine, as explored earlier, exhibits the inverse phenomenon with equal strength. Part IV takes up the natural next question: why has such a schism manifested? Three overlapping causes are suggested, and likely each play a role: the parallel schism in patent adjudicators, an inheritance from traditional property law, and the need for patents to function as both public and private law.

IV. CAUSES AND INFLUENCES

A. Dichotomous Adjudication

1. The PTO

The vast majority of patent validity decision making occurs at the Patent and Trademark Office. On top of reviewing a tremendous number of initial patent applications,²⁹⁶ the PTO is now responsible for adjudicating a variety of post-grant validity challenges.²⁹⁷ Combining these two categories offers a rough quantitative picture. In 2016, for example, the PTO received 605,571 initial patent applications,²⁹⁸ combined with more than 1,500 petitions for post-grant challenges.²⁹⁹ In comparison, using Lex Machina data, there were only 10,372 patent cases pending in district courts in 2016—with no guarantee that patent *validity* was necessarily challenged in any given one.³⁰⁰ When restricting the view to validity adjudication that actually reaches the final merits and is appealed, the extreme disparity shrinks somewhat, but PTO decision

²⁹⁶ 35 U.S.C. § 111.

²⁹⁷ See, e.g., 35 U.S.C. §§ 311 (inter partes review); 321(b) (post-grant review); 125 Stat. 329-31 (CBM review).

²⁹⁸ WORLD INTELLECTUAL PROPERTY ORGANIZATION, *World Intellectual Property Indicators 2017* at 29, https://www.wipo.int/edocs/pubdocs/en/wipo_pub_941_2017.pdf.

²⁹⁹ USPTO, *Patent Trial and Appeal Board Statistics* at 5 (Sept. 30, 2016), https://www.uspto.gov/sites/default/files/documents/aia_statistics_september2016A.pdf.

³⁰⁰ See LEXMACHINA (searching “patent” tagged cases between January 1, 2016 and December 31, 2016).

making still outnumbers district court decision making more than two-to-one.³⁰¹

Much scholarship has been (and will continue, no doubt) to be written on the many adjudicatory differences between the PTO and district courts. Of chief importance here is the PTO's fundamentally *technocratic* position. Administrative patent judges are required by statute to possess "competent . . . scientific ability,"³⁰² and in practice "[a]ll of [them] have specialized technical degrees . . . and experience"³⁰³ that are brought to bear on their specific case assignments.³⁰⁴ Federal district court judges, despite their innumerable virtues, generally do not have any background in the sciences at all,³⁰⁵ let alone a docket intentionally curated to reflect that background.

The PTO's position thus lends itself more naturally to answering the kinds of questions demanded by a utilitarian validity framework. Was the invention at issue particularly costly to develop, or otherwise considered unlikely to succeed *ex ante* by those with experience in the field? Is the invention in a research area that is less responsive to external financial incentives? Has the invention since become an industry standard? It seems difficult to dispute that relevant scientific training makes answering these questions far easier. In contrast, the PTO is somewhat ill-positioned to address the *moral* quandaries that inventions may present. Even setting aside the fact that administrative patent judges

³⁰¹ See Matthew Sipe, *Experts, Generalists, Laypeople—and the Federal Circuit*, HARV. J.L. & TECH. (2019) (forthcoming) (using FY2015 and FY2016 data).

³⁰² 35 U.S.C. § 6.

³⁰³ Gene Quinn, *PTAB Chief Judge Defends APJs*, IPWATCHDOG (Mar. 8, 2018), <http://www.ipwatchdog.com/2018/03/08/ptab-chief-judge-defends-apjs/id=94528/> (statement by PTAB Chief Judge David Ruschke).

³⁰⁴ See, e.g., Brief Amicus Curiae of the Patent Trial and Appeal Board Bar Association at 6, *Oil States v. Greene's*, 16-712 ("These judges have special technical and legal expertise, and at least one of them typically has a technical background and work experience related to the subject matter of the patent in question.").

³⁰⁵ Though a rough measure, the Federal Judicial Center's *Biographical Directory of Article III Federal Judges* includes information on undergraduate degrees. <https://www.fjc.gov/history/judges>. That database indicates that, of 1305 sitting federal judges, only 16% (209) possess a minimum of an undergraduate science degree (B.S., B.S.E., B.S.E.E., B.Sc., A.S., A.A.S.). See generally Peter Lee, *Patent Law and the Two Cultures*, 120 YALE L.J. 2, 4-6 (2010).

are scientists, not philosophers or ethicists, the timing alone of their input makes moral determinations more difficult; patent applications are, by necessity, filed well before the invention has been let loose into society and all potential uses or misuses (and good or bad effects) of the invention are known.

Little surprise then that the PTO itself has expressed a relative unwillingness to address moral issues in its adjudicatory processes. As early as 1977, the PTO stated: “[W]e think this Office should not be the agency which seeks to enforce a standard of morality”³⁰⁶ Likewise, when determining the patentability of a human-animal chimera in 1997, despite early suggestions that it would reject the application on freestanding moral grounds,³⁰⁷ the PTO ultimately relied on fairly standard § 101 reasoning.³⁰⁸ As former assistant commissioner for patents Lawrence Goffney stated at the time, the PTO’s role is limited to “tell[ing] us it can be done.”³⁰⁹ “Whether or not to do it is another matter altogether, and not the concern of the PTO.”³¹⁰ More recently, regarding the patentability of human DNA, the PTO flatly held: “Several comments state that patents should not issue for genes because the sequence of the human genome is at the core of what it means to be human and no person should be able to own/control something so basic. . . . The comments are not adopted.”³¹¹ Similar calls to block the patentability of mammalian cloning as offensive to “public morality”³¹² have been likewise summarily rejected.³¹³

³⁰⁶ Ex Parte Murphy, 200 U.S.P.Q. (BNA) 801, 803 (Bd. App. 1977).

³⁰⁷ BNA, *‘Morality’ Aspect of Utility Requirement Can Bar Patent for Part-Human Inventions*, PAT. TRADEMARK & COPYRIGHT J. NEWS 555 (Apr. 9, 1998) (quoting statement of then-Commissioner of Patents Bruce Lehman) (“We will grant no patents on monsters.”); see generally SHOBITA PARTHASARATHY, PATENT POLITICS: LIFE FORMS, MARKETS, AND THE PUBLIC INTEREST IN THE UNITED STATES AND EUROPE at 92-93 (2017).

³⁰⁸ Specifically, the PTO found that human beings did not constitute a “process, machine, manufacture, or composition of matter” within the meaning of § 101 as intended by Congress. See *Patent Application is Disallowed as ‘Embracing’ Human Being*, 58 PAT. TRADEMARK & COPYRIGHT J. 203 (1999).

³⁰⁹ PARTHASARATHY, *supra* note 307, at 93.

³¹⁰ *Id.*

³¹¹ Utility Examination Guidelines, 66 Fed. Reg. 1093, 1094 (PTO, Jan. 5, 2001).

³¹² *Group Faults PTO for Issuing Patent on ‘Method of Producing Cloned Mammal,’* 64 PAT. TRADEMARK & COPYRIGHT J. 81 (2002).

³¹³ U.S. Patent No. 6,211,429 (2001) (“Method for producing a cloned mammal”).

This tracks a mirror-image experience in the European patent system. As noted earlier, the European Patent Convention explicitly requires that the potential effects on “ordre public” and “morality” be considered as a condition for patentability.³¹⁴ And yet, the European Patent Office has repeatedly expressed a hesitance to actually *rely* on that provision, precisely “to avoid the difficult question of determining issues that it clearly feels ill-equipped to address.”³¹⁵ For example, in a highly contentious case involving patents on isolated human genes, the EPO ultimately allowed the patent, stating: “[W]hether or not human genes should be patented is a controversial issue on which many persons have strong opinions[, but] . . . the EPO is not the right institution to decide fundamental ethical questions.”³¹⁶ Likewise, when adjudicating one of the first disputes over the patentability of life forms—in this case, a plant—the EPO explained:

The Opponent argues that . . . it cannot be right for the EPO, a public body, to reward the Proprietor with a patent for immoral subject-matter such as that of the disputed patent. However, it must be emphasized that patent law was *never designed to be used as a moral instrument* with which to “reward” only inventions perceived as ethical and thus attempt to influence whether certain types of research are carried out or not. It is indeed singularly inappropriate for this purpose. . . . The technically trained patent examiner, who is *not* a specialist in ethical issues, will find it even more difficult to evaluate in any meaningful way the morality of an invention³¹⁷

Put simply, even when moral considerations are placed—unambiguously—within the purview of technocratic patent offices, they balk at the prospect of actually playing ethicist. Naturally then in the USPTO’s validity decision making, free from even a textual pretense, moral analyses are nowhere to be found.

³¹⁴ See *supra* notes 148-150 and accompanying text.

³¹⁵ Cynthia M. Ho, *Splicing Morality and Patent Law: Issues Arising from Mixing Mice and Men*, 2 WASH. U. J.L. & POLICY 247, 280 (2000).

³¹⁶ Relaxin, 1995 O.J. EPO 388, 402-03.

³¹⁷ Greenpeace UK v. Plant Genetic Systems N.V. (Opposition Div. EPO 1992), reported in 24 INT’L REV. INDUS. PROP. & COPYRIGHT L. 618, 620-21 (1993) (emphasis added).

2. Juries

Patent *infringement* disputes, on the other hand, are not adjudicated by the PTO—it is entirely a matter for federal district courts. And, in particular, it is juries, not the district court judges, that tend to have the final say in infringement suits that go to trial; juries are responsible for approximately 80% of patent infringement verdicts.³¹⁸ In practice, it is predominantly patentee-plaintiffs that are responsible for the surge in jury use,³¹⁹ and for good reason: jury use is consistently associated with higher damage awards and increased plaintiff win rates overall.³²⁰ Multiple scholars have explained this trend as a matter of social justice, driven by juror empathy towards an idealized solo inventor; the pro-patentee bias is at its strongest when the plaintiff is an individual suing a large corporation, and the bias all but disappears when the roles are reversed.³²¹ Jurors

³¹⁸ PRICEWATERHOUSECOOPERS, *2017 Patent Litigation Study: Change on the Horizon?* at 6 (2017), http://www.ipwatchdog.com/wp-content/uploads/2017/05/2017-Patent-Litigation-Study_PwC.pdf (excluding infringement suits relating to Abbreviated New Drug Applications for outlier reasons); Mark A. Lemley, *Why Do Juries Decide if Patents are Valid?*, 99 VA. L. REV. 1673, 1706 (2013)

³¹⁹ See, e.g., Kimberly A. Moore, *Jury Demands: Who's Asking?*, 17 BERKELEY TECH. L.J. 847, 855 (2002) (“[P]laintiffs demanded a jury significantly more often than did defendants; plaintiffs demanded a jury in 71% of all cases.”); Judge Richard A. Posner, *Why There Are Too Many Patents in America*, THE ATLANTIC (Jul. 12, 2012), <https://www.theatlantic.com/business/archive/2012/07/why-there-are-too-many-patents-in-america/259725/> (“[P]atent plaintiffs tend to request trial by jury because they believe that jurors tend to favor patentees . . .”).

³²⁰ See, e.g., PWC 2017 at 6; Mark A. Lemley, Jamie Kendall, & Clint Martin, *Rush to Judgment? Trial Length and Outcomes in Patent Cases*, 41 AIPLA Q.J. 169, 174-185 (2013); Andrei Iancu & Jay Chung, *Real Reasons the Eastern District of Texas Draws Patent Cases—Beyond Lore and Anecdote*, 14 SMU SCI. & TECH. L. REV. 299, 305 (2011) (finding a nationwide patentee win rate in jury trials of 68%).

³²¹ See Judge Kimberly A. Moore, *Populism and Patents*, 82 N.Y.U. L. REV. 69, 82-83 (2007); see also Colleen Chien, *Holding Up and Holding Out*, 21 MICH. TELECOMM. & TECH. L. REV. 1, 22-23 (2014) (“Among patentee groups, the fewer the inventors, the more likely a patentee is to win, suggesting that juries empathize most with the plight of the individual inventor.”). It’s worth emphasizing that this type of juror bias towards social justice is well-documented throughout the law, not exclusively in patent litigation. See, e.g., Clarence Morris, *Punitive Damages in Tort Cases*, 44 HARV. L. REV. 1173, 1191 (1931) (“[R]ich men do not fare well before juries, and the more emphasis placed on their riches, the less well they fare.”).

likewise tend to “punish” what they perceive to be reprehensible behavior from the defendant above and beyond where the law itself makes such distinctions, such as cases of patent hold-out.³²²

On the flip side, Professors Bernard Chao and Roderick O’Dorisio demonstrate an inverse phenomenon. Using mock juries in a controlled, experimental setting, they show that an accused infringer is more likely to escape liability if the patentee-plaintiff is a non-practicing entity (again, colloquially, “patent troll”).³²³ Jurors are, in other words, clearly importing heuristics of moral desert, however rough, into their adjudication. Inventors—those closest to the actual Lockean labor or Kantian will behind a patented invention—are disproportionately rewarded. Trolls—several steps removed therefrom, and often perceived as preying upon small businesses without the means to defend themselves³²⁴—are disproportionately shown the door. And large, deep-pocketed corporations are also at a disadvantage, whether they act as plaintiff or defendant; Rawls might quibble with the details of implementation on the margins, but would surely find allyship in the juries’ general Robin Hood spirit.

Neither the PTO nor juries have the power to make patent law, *per se*. But their influence on the doctrinal landscape should not be dismissed out of hand. First and foremost, the PTO does have a certain degree of

³²² See, e.g., Martha K. Gooding & William C. Rooklidge, *The Real Problem with Patent Infringement Damages*, 91 J. PAT. & TRADEMARK OFF. SOC’Y 484, 485 (2009) (“The patent law provides that damages are to be awarded in an amount ‘adequate to compensate for the infringement . . .’ But by the time a jury has concluded that the accused infringer has infringed . . . many jurors clearly are in a mood to punish.”); *id.* at 486 (quoting one mock juror as saying that “[the defendant] had the option to license the patent and didn’t, so now . . . they have to feel the wrath.”); see also Chien, *supra* note 321, at 23 (“[T]o the juror the consequences are clear: the manufacturer must now be punished for his refusal to license, or in other words, his ‘hold-out,’ during the negotiation phase.”).

³²³ Bernard Chao & Roderick O’Dorisio, *Testing the white Hat Effect in Patent Litigation*, 27 FED. CIR. B.J. 155, 171-72 (2017).

³²⁴ See, e.g., *Last Week Tonight with John Oliver: Patent Trolls*, YOUTUBE (Apr. 19, 2015), https://www.youtube.com/watch?v=3bxcc3SM_KA; *This American Life: When Patents Attack!*, CHICAGO PUBLIC RADIO (July 22, 2011), <http://www.thisamericanlife.org/radio-archives/episode/441/when-patents-attack>.

regulatory authority,³²⁵ and a platform from which to influence true congressional law-making through institutional reports and testimony. More fundamentally, law is ineluctably shaped in the shadow of its adjudicators. District court judges are keenly aware of the kinds of questions that layperson juries are more or less well-suited to answer.³²⁶ The legislative history of the AIA is likewise suffused with the notion of comparative adjudicatory competence.³²⁷ Unsurprisingly, then, one finds that the PTO opposed moral considerations in, for example, utility doctrine³²⁸—and supported the utilitarian switch to first-inventor-to-file novelty rules.³²⁹ Analogously, one finds that the rules governing

³²⁵ The PTO's entitlement to *Skidmore* deference for its interpretation of the Patent Act, for example, has been fully accepted. *See, e.g.,* Ass'n for Molecular Pathology v. U.S. Patent & Trademark Office, 689 F.3d 1303, 1357 (Fed. Cir. 2012) (“[W]e owe deference [to the PTO] . . . commensurate with the thoroughness of its consideration and the validity of its reasoning.”). Moreover, the AIA explicitly granted rulemaking power to the PTO over the “procedures” and “standards” applied in its new post-grant proceedings. *See, e.g.,* 35 U.S.C. §§ 135(b), 316(a)(2), 362(a)(2), 316(a)(5), & 316(a)(9).

³²⁶ *See, e.g.,* *Judicial Panel Discussions on Science and the Law*, 25 CONN. L. REV. 1127, 1145 (1993) (statement of Judge Covello, U.S. District Judge for the District of Connecticut) (“Honest to God, I don’t see how you could try a patent matter to a jury. . . . It’s factually so complicated.”); Warren E. Burger, *The Use of Lay Jurors in Complicated Cases*, Remarks to the Conference of State Chief Justices 3-5 (Aug. 7, 1979); *Parke-Davis & Co. v. H.K. Mulford Co.*, 189 F. 95, 115 (S.D.N.Y. 1911) (Judge Learned Hand) (“I cannot stop without calling attention to the extraordinary condition of the law which makes it possible for a man without any knowledge of even the rudiments of chemistry to pass upon such questions as these . . . for only a trained chemist is really capable of passing upon such facts.”).

³²⁷ *See, e.g.,* 157 Cong. Rec. S1352 (Mar. 8, 2011) (“These proceedings are intended to . . . provide additional access to the expertise of the Patent Office on questions of patentability. . . . [A] panel of [PTO] experts is more likely to reach the correct decision on a technical question compared to a jury composed of laypeople.”); Hearing Serial No. 112-8 at 45 (Feb. 11, 2011), https://www.uspto.gov/sites/default/files/aia_implementation/hearing-feb11.pdf (“The whole point is that frequently it is very difficult to argue to a jury why a patent is invalid. We think the Patent Office is the better place to deal with it.”); Cong. Rec. S5319 (Sept. 6, 2011), https://www.uspto.gov/sites/default/files/aia_implementation/20110906-kyl_rmrks_s5319.pdf (“[T]he bill creates an inexpensive substitute for district court litigation and allows key issues to be addressed by experts in the field.”).

³²⁸ *See supra* notes 165-167 and accompanying text.

³²⁹ *See, e.g.,* Letter, USPTO Director David S. Kappos to House Judiciary Committee Chairman Lamar Smith (June 1, 2011), https://www.uspto.gov/sites/default/files/aia_implementation/20110601-letter_smith.pdf (“The first-inventor-to-file provision simplifies the process of acquiring rights . . . , provides a more transparent and cost-effective process,

infringement damages are keyed to a level of moral discourse that jurors seem to readily understand and internalize.³³⁰ In brief, if the decision makers for validity and infringement are themselves so radically different—the doctrines for which they are responsible will, on balance, follow suit over time.

B. The Heritage of Property Law

Setting adjudicatory structure aside, patent law is also deeply influenced by analogy and reference to traditional, physical property law.³³¹ Litigants and jurists discuss the “metes and bounds” of patent claims as if they demarcated the boundaries of a plot of land;³³² the act of patent infringement has long been conceptualized as a form of “trespass”;³³³ and patent law scholars advocating for change often suggest importing tools from the property sphere, ranging from nuisance

[and] is consistent with the practices of our trading partners”); Letter, Secretary of Commerce Gary Locke to Senate Judiciary Committee Chairman Patrick Leahy and Ranking Member Jeff Sessions at 3 (Oct. 5, 2009), https://www.uspto.gov/sites/default/files/aia_implementation/locke-letter-oct-05-2009.pdf (“The transition would simplify the patent process, reduce legal costs, improve fairness, and make progress towards a more harmonized international patent system [.] lead[ing] not only to enhanced efficiency, but . . . provid[ing] greater predictability, reliability and competitiveness for American innovators.”); *see generally supra* notes 82-91 and accompanying text.

³³⁰ Compare *supra* Section III.A with notes 319-324 and accompanying text.

³³¹ See *generally* Sarah Rajec, *The Property Misfit in Patent Law* (MAPWIP Works-In-Progress); ROBERT P. MERGES, JUSTIFYING INTELLECTUAL PROPERTY, 33-41 (2011); Justin Hughes, *The Philosophy of Intellectual Property*, 77 GEO. L.J. 287, 296-330 (1988).

³³² See, e.g., *Thorner v. Sony Computer Entertainment America LLC*, 669 F.3d 1362, 1367 (Fed. Cir. 2012) (“It is the claims that define the metes and bounds of the patentee’s invention.”) (citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005)); USPTO, MANUAL OF PATENT EXAMINING PROCEDURE 2173.02 (2017), <https://www.uspto.gov/web/offices/pac/mpep/s2173.html> (“During prosecution, applicant has an opportunity and a duty to . . . clearly and precisely define the metes and bounds of the claimed invention.”).

³³³ See, e.g., *United States v. Societe Anonyme Des Anciens Etablissements Cail*, 224 U.S. 309, 311 (1912) (“[T]he question being only for the present whether such use was a trespass upon the rights of the claimant”). More contemporary case law has maintained the analogy as well. See, e.g., *Hoechst-Roussel Pharm., Inc. v. Lehman*, 109 F.3d 756, 759 (Fed. Cir. 1997) (“[T]he claims define the patent owner’s property rights whereas infringement is the act of trespassing upon those rights.”); *see generally* Adam Mossoff, *The Trespass Fallacy in Patent Law*, 65 FLORIDA L. REV. 1687 (2017).

doctrine³³⁴ to adverse possession³³⁵ or eminent domain.³³⁶ A full review of property law itself, commensurate in scope and scale with the preceding analysis of patent law, is beyond the limits of this Article. Nevertheless, a few key phenomena that are already recognized by traditional property scholars offer a degree of explanatory power to the framework split in patent law. The dichotomy between utilitarianism and morality, in other words, may in part be patent law's inheritance as intellectual *property*—a consequence of building patent law, like traditional property, as a right one holds in a thing against the rest of the world.

Consider in detail this “thingness” of property. Though not unchallenged theoretically,³³⁷ and with obvious limitations,³³⁸ defining any property right or obligation requires—at bottom—some degree of reference to the thing that is owned. And it is actions upon the thing, not upon the owner directly, that trigger liability. Property law, in other words, allows some nontrivial distance and disconnect between the rightholder-subject and referent-object. This distance, in turn, has three significant consequences. First, it enhances the possibility of mistaken property violations. A piece of chattel, for example, may bear no obvious sign of ownership—and the owner may be on the other side of the globe. Second, it weakens the intuitive comprehensibility of property rights. On one extreme, imagine an assailant who physically and immediately strikes his victim; on the other, imagine a trespasser that does no perceptible damage to the land itself—whose actions could easily have gone unnoticed entirely. The latter scenario, even the strongest property advocates would agree, requires a greater degree of intellectual legwork to explain its wrongness. Third, it creates practical challenges with respect to enforcement. It would be unthinkable for all property owners to maintain

³³⁴ See, e.g., Min-Chiuan Wang, *Nuisance Law and the Doctrine of Equivalents in Patent Law*, 34 SANTA CLARA HIGH TECH. L.J. 110 (2018).

³³⁵ See, e.g., Constance E. Bagley & Gavin Clarkson, *Adverse Possession for Intellectual Property*, 16 HARV. J.L. & TECH. 327 (2003).

³³⁶ See, e.g., Richard V. Adkisson, *Intellectual Property and Eminent Domain: If Ever the Twain Shall Meet*, 36 J. ECON. ISSUES 41 (2002).

³³⁷ See, e.g., Wesley N. Hohfeld, *Fundamental Legal Conceptions as Applied in Legal Reasoning*, 26 YALE L.J. 710, 720-21 (1917) (recharacterizing property law as defining relations between persons, as derived from an overarching theory of rights and duties as perfectly symmetrical).

³³⁸ See, e.g., OLE-ANDREAS ROGNSTAD, *PROPERTY ASPECTS OF INTELLECTUAL PROPERTY* 44 (2018) (“All private legal relations are between persons, as a claim may only be made against a (legal) person and not against a piece of land or a chattel.”).

perfect physical security over all that they own against the world; for the owners of particularly large parcels, or the owner of many scattered chattel, it would be outright impossible. Even assuming the existence of a robust and active police force, the need for a large measure of voluntary compliance is readily apparent, lest the costs of such force swamp any gains.

After this dim view, how is it then that property law functions at all? Professors Merrill and Smith offer a compelling view that the infusion of property ownership with a moral dimension is what offsets the distance problem—the *in rem* problem:

[P]roperty rights must be communicated to a wide and disparate group of potential violators . . . [T]hey must be easily comprehended and must resist possible misinterpretation. Law, including criminal prosecution and civil enforcement actions, is almost certainly inadequate to achieve this degree of coordination and compliance. . . . *Property can function as property only if the vast preponderance of persons recognize that property is a moral right* . . . [T]he morality upon which it rests must be simple and accessible to all members of the community. . . . [I]t seems highly unlikely that such a morality will be captured by many forms of utilitarianism. Pragmatism is too uncertain, and case-specific cost-benefit analysis too demanding and error-prone, to supply the kind of robust and widely accepted moral understanding needed to sustain a system of property.³³⁹

Put differently, it may simply be *impossible* to stamp out all vestiges of non-utilitarian morality in a property regime. Without a comprehensible moral hook, the violators—mistaken or intentional—would be far too numerous and widespread as to be checked by reasonable levels of enforcement.

Naturally, the question arises of how and where this morality actually manifests in property law. Keeping to broad strokes, consider

³³⁹ Thomas W. Merrill & Henry E. Smith, *The Morality of Property*, 48 WM. & MARY L. REV. 1849, 1850-51 (2007) (emphasis added).

first the “infringement” side: violations of property rights. Specifically, observe the general lack of what might be called “efficient trespass”,³⁴⁰ in contrast to, say, contract law, there is no full-throated tolerance of intentional property violations that, on balance, promote higher-valued use. Adverse possession doctrine arguably comes closest in bad-faith jurisdictions, and has no shortage of utilitarian defenders,³⁴¹ but it does not operate as a carveout from trespass liability per se—it transfers *ownership* outright.

Compared to the true defense (in the sense of excuse) of necessity, one quickly sees the importance of morality. Lodestar cases excusing trespass highlight the indignity and injustice that would come from preventing a homeless man seeking lifesaving shelter against the cold³⁴² or forcing the passengers on a boat to unmoor into a dangerous storm.³⁴³ But whereas utilitarianism would be equally concerned with missed *opportunities* (in the sense of misallocated resources and inefficiencies), averting tremendous *losses* is necessity’s sole purview. The ratchet only goes one way. Even beyond necessity, ad hoc carveouts from trespass are equally couched in moralizing terms. In another classic case, for example, the Supreme Court of New Jersey held that it was not a trespass for an NGO field agent to meet with and offer legal advice to migrant workers on farm property, even though it was against the explicit wishes of the property owner:

Property rights serve human values. They are recognized to that end, and are limited by it. Title to real property cannot include dominion over the destiny of persons the owner permits to come upon the premises. Indeed the needs of the occupants may be so imperative and their

³⁴⁰ See generally Lee Anne Fennell, *Efficient Trespass: The Case for “Bad Faith” Adverse Possession*, 100 NW. U. L. REV. 1037, 1038 (2006) (noting and criticizing the tendency of trespass doctrine in practice to prioritize moral considerations).

³⁴¹ See, e.g., ROBERT COOTER & THOMAS ULEN, *LAW & ECONOMICS* 154 (6th ed. 2012) (“The economic advantage of adverse possession is that it . . . allows property to move to higher-valuing users.”); 16 RICHARD R. POWELL & PATRICK J. ROHAN, *POWELL ON REAL PROPERTY* § 91.01[4] (Michael Allan Wolf ed. 2014) (suggesting that “efficient allocation of our limited land resources” is one of the policies served by adverse possession).

³⁴² See *Commonwealth v. Magadini*, 52 N.E.3d 1041 (Mass. 2016).

³⁴³ See *Ploof v. Putnam*, 71 A. 188 (Vt. 1908).

strength so weak, that the law will deny the occupants the power to contract away what is deemed essential to their health, welfare, or dignity. Here we are concerned with a highly disadvantaged segment of our society. . . . [M]igrant farmworkers . . . are unorganized and without economic or political power. It is their plight alone that summoned government to their aid.³⁴⁴

Locke, Kant, and Rawls would all find a great deal of common ground in the Court's analysis.

Indeed, in Professor Merrill and Smith's own writing, it is on the "infringement" side of property that they center their analysis.³⁴⁵ By way of contrast, consider a few data points from the "validity" side of traditional property: what things may be owned and how? A fundamental concept in modern property law is that of *numerus clausus*:

Every common-law lawyer is schooled in the understanding that property rights exist in a fixed number of forms. . . . [I]t appears to be a universal feature of all modern property systems. In the common law, the principle that property rights must conform to certain standardized forms has no name. In the civil law, which recognizes the doctrine explicitly, it is called the *numerus clausus*—the number is closed.³⁴⁶

This principle has a clear utilitarian valence, between promoting efficiency through standardization³⁴⁷ and dampening a tendency towards excessive anticommons.³⁴⁸ In exchange, however, the principle directly

³⁴⁴ See *State v. Shack*, 227 A.2d 369 (N.J. 1971).

³⁴⁵ See Merrill & Smith, *supra* note 339, at 1870 (outlining "[t]he features we identify with morality-based decision making" as the doctrine and discourse governing "certain kinds of violations of property rights" and the "scope of protection for property rights").

³⁴⁶ Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1, 4-5 (2000).

³⁴⁷ See, e.g., *id.* at 8, 61-66 ("The existence of unusual property rights increases the cost of processing information about all property rights. . . . Standardization of property rights reduces these measurement costs.").

³⁴⁸ See, e.g., Michael A. Heller, *The Boundaries of Private Property*, 108 YALE L.J. 1163, 1176-78 (1999).

shortchanges autonomy—in particular when (once again) compared to the enormous degree of freedom in contract law.

Consider, moreover, what might be the modern apogee of utilitarianism overriding moral intuitions of ownership, wherein eminent domain may be used to reassign land among private owners for the purposes of general economic development.³⁴⁹ Or, less dramatically, consider how the careful avoidance of efficiency losses—not moral intuitions about ownership—dictates the proper disposition of partition disputes among co-tenants; partition in kind is the default (affording each tenant an actual piece of the parcel), unless doing so would negatively impact the total value, at which point the court will instead force a sale and split the revenue.³⁵⁰ As noted earlier, adverse possession’s similarly strong eye towards efficiency works—at least in theory—to transfer ownership to higher-valued uses. Even looking at some of the earliest American case law available on ownership is an exercise in utilitarianism; why does Pierson get the fox and not Post?³⁵¹ It is not the labor or will from Post’s *pursuit* that the court found compelling, but—for the sake “of certainty” and to avoid “quarrels and litigation” in future cases—only Pierson’s actual conquest and kill of the fox that mattered, “[h]owever uncourteous or unkind . . . towards Post.”³⁵²

This is not to suggest that a perfectly identical, or even equally strong framework split necessarily exists in property law overall. Instead, it is argued that the broad and readily understood principles of property law appear to roughly break along lines parallel to those explored earlier in patent law. Patent law’s *in rem* problem is, of course, only more severe. One can hypothetically infringe a patent without ever leaving the house, with the (unknown) patent owner half a world away, and with possibly no one to ever discover the transgression. Even *known* patents are notoriously challenging to ascertain the proper bounds of—far more so than the

³⁴⁹ See *Kelo v. City of New London*, 545 U.S. 469 (2005).

³⁵⁰ See, e.g., *Butte Creek Island Ranch v. Crim*, 136 Cal. App. 3d 360, 367 (1982) (“[E]vidence which supports a partition sale rather than physical division is economic evidence to the effect that, due to the particular situation of the land, the division of the land would substantially diminish the value of each party’s interest.”); *Cecola v. Ruley*, 12 S.W. 3d 848, 85 (Tex. App. 2000) (“If the property can be divided in kind without materially impairing its value, a sale will not be ordered, [unless] dividing the land into parcels causes its value to be substantially less than its value when whole . . .”).

³⁵¹ See *Pierson v. Post*, 3 Cai. R. 175 (1805).

³⁵² *Id.* at 179.

bounds of a modern, well-surveyed land parcel. If property law carried the genes of an enforcement regime animated by moral opprobrium, then little wonder that patent law expressed it fully. With the added forces of a stark divide in adjudication as examined above, and the need to act as a private-public law mix as examined below, patent law’s framework split is naturally more severe and complete.

C. A Private-Public Law Mix

Finally, it is worth noting that patents must straddle two somewhat disparate spheres—private law and public law. Patent infringement litigation is classically private, in the sense that it is a dispute between private parties about property rights.³⁵³ But disputes over patent *validity* are more naturally classified as public, in the sense that it concerns government conduct and affects (potentially numerous) persons not before the court.³⁵⁴ Government conduct is necessarily the focus of validity disputes, whether validity is challenged in the first instance by direct appeal from the PTO or after the fact (in post-grant PTO procedures or in district court litigation) as a claim that the PTO granted in error. And whether the patent stands or falls affects, at minimum, the landscape for competitors and downstream consumers alike.

The Supreme Court appears to embrace this private-public mix, as emphasized most recently in *Oil States Energy Services, LLC v. Greene’s Energy Group, LLC*.³⁵⁵ Petitioner Oil States—who lost its patent in an inter partes review proceeding before the PTO—argued that patents, as “private property rights,” can only be extinguished by an Article III court, not an Article I administrative tribunal such as the PTAB.³⁵⁶ Respondent Greene’s Energy—who had challenged Oil States’s patent in the first place—argued that patents are “mere public rights,” such that PTAB

³⁵³ See, e.g., Adam Chayes, *The Role of the Judge in Public Law Litigation*, 89 HARV. L. REV. 1281, 1284 (1976) (discussing the features of private versus public law generally); Megan M. La Belle, *Patent Law as Public Law*, 20 GEO. MASON L. REV. 41, 41-42 (2012) (describing patent litigation over infringement claims as “historically” and properly “regarded as private law litigation”); Ted Sichelman, *Purging Patent Law of ‘Private Law’ Remedies*, 92 TEX. L. REV. 516 (2014) (labeling the current infringement and remedy structure for patents as “private law” in nature).

³⁵⁴ See Chayes, *supra* note 353, at 1284; La Belle, *supra* note 353, at 50-55.

³⁵⁵ 16-712 (2017).

³⁵⁶ Petition for a Writ of Certiorari at 2-4, *Oil States*, 16-712 (2017).

review and revocation presents no constitutional problem.³⁵⁷ Ultimately, the Court held that post-grant invalidation by the PTO is not unconstitutional, justifying its decision as in line with the mixed private-public nature of patents:

This Court has recognized, and the parties do not dispute, that the decision to *grant* a patent is a matter involving public rights Inter partes review is simply a reconsideration of that grant, and Congress has permissibly reserved the PTO’s authority to conduct that reconsideration. Thus, the PTO can do so without violating Article III.

. . .

We emphasize the narrowness of our holding. . . . We do not address whether other patent matters, *such as infringement actions*, can be heard in a non-Article III forum. . . . Finally, our decision should not be misconstrued as suggesting that patents are not property for purposes of the Due Process Clause or the Takings Clause.³⁵⁸

Unpacking this last sentence, recall that the Takings Clause only protects “private property”³⁵⁹—and that the Court has long held (and recently reaffirmed) its application to patents.³⁶⁰

Even in the Court’s view, then, patent law is fundamentally divided. Validity is a public matter, separate and apart from private concerns with respect to infringement (including government infringement vis-à-vis takings). In *Oil States*, this allowed the Court to uphold the bifurcated adjudicatory structure already explored earlier. But the private-public division carries its own freight as well. As other scholars have observed, private law tends to reflect “moral rights that

³⁵⁷ Brief in Opposition of Certiorari at 1-3, *Oil States*, 16-712 (2017).

³⁵⁸ *Oil States Energy Services, LLC v. Greene’s Energy Group, LLC*, 138 S. Ct. 1365, 1373-79 (2018) (second emphasis added).

³⁵⁹ U.S. CONST. amend. V.

³⁶⁰ *See, e.g., Horne v. Department of Agriculture*, 135 S. Ct. 2419, 2427 (2015) (citing *James v. Campbell*, 104 U.S. 356, 358 (1882)).

private parties are justified in enforcing in a state of nature.”³⁶¹ Because private law is not “governance” in the strict sense, but rather “the empowerment of certain individuals to do things”—e.g., demand redress—it inevitably resonates with the moral intuitions of those individuals through the landscape of their own enforcement decisions.³⁶² In contrast, public law more readily carries out macro-level projects of complex social planning (including careful utilitarianism), as exemplified by the byzantine nature of tax codes or trade regulations.

Moreover, in the patent space in particular, it is worth emphasizing the differing *voluntariness* of engagement. On the public-validity side, a patent applicant affirmatively chooses to engage with the PTO; on the private-infringement side, a defendant is brought into court by force. The less intuitive, utilitarian framework may thus be reserved for those who are willing to subject themselves to it from the bureaucracy, and who are hence more likely to understand the system (or afford the assistance of those who can). The more generally understood moral frameworks, in contrast, offer a better option for governing the conduct of potentially unwary citizens who might simply stumble into an infringement dispute.

These three potential causes for the overall framework schism in patent law—the parallel schism in patent adjudicators, the intellectual inheritance from traditional property law, and the mixed nature of patents as both public and private law—are, to some extent, overlapping and interrelated. But the precise combination of all three is essentially unique to patent law, and suggests that the fairly rigid divide between utilitarian and moral reasoning is not mere path dependence, but rather a reflection of the gravitational pull of functionalist needs. Absent radical shifts to the institutional structure or overall conception of patent law, in other words, it seems highly unlikely that the framework schism will reverse or lessen on its own.

³⁶¹ Andrew S. Gold, *A Moral Rights Theory of Private Law*, 52 WM. & MARY L. REV. 1873, 1899 (2011).

³⁶² Benjamin C. Zipursky, *The Inner Morality of Private Law*, 58 AM. J. JURISPRUDENCE 27, 40 (2013).

CONCLUSION

The dominance of utilitarian-focused patent scholarship and comparative marginalization of moral theory has been, at best, severely myopic. Although the law governing patent validity—from novelty to enablement—has, in truth, been wholly infused with utilitarian reasoning, an inverse phenomenon has occurred with respect to the law governing patent infringement. The contours of that doctrine, ranging from damages to defenses, can only be adequately explained by resort to freestanding moral theories—and even, at times, exhibit an outright hostility to prioritizing efficiency over other values. This grand framework split has several interrelated causes, predicated on the unique legal position of patents today: a stark divide in adjudication between traditional courts and administrative tribunals, the deep influence of traditional property law, and the mix of public-law and private-law features that patents exhibit. Advocates for functional changes in the patent system—whether based on morality or economic concerns—would be well-served to acknowledge the gravitational pull behind this split. If their efforts are focused on the wrong doctrinal half of patent law, they may find themselves in a surprisingly uphill battle.