
JOURNAL
OF
LAW & INNOVATION

VOL. 1

OCTOBER 2019

NO. 1

THE “NEW MADISON” APPROACH TO ANTITRUST AND
INTELLECTUAL PROPERTY LAW

Makan Delrahim

EXPLAINING CRIMINAL SANCTIONS IN INTELLECTUAL
PROPERTY LAW

Irina D. Manta

ABSTRACTION, FILTRATION, AND COMPARISON IN PATENT
LAW

Michael Risch

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JOURNAL OF LAW & INNOVATION

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VOL. I

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FOREWARD

Volume I of the *Journal of Law & Innovation* consists of three articles. This volume explores the many ways in which the development of intellectual property law has impacted tangential legal doctrines, with each article examining a distinct nexus. We thank our authors for filling this inaugural volume with interesting, interdisciplinary, and novel legal scholarship.

MAKAN DELRAHIM, Assistant Attorney General of the Antitrust Division of U.S. Department of Justice, begins the volume with *The “New Madison” Approach to Antitrust and Intellectual Property Law*, adapted from his keynote address at “The Future of Standard Essential Patents” conference held at the University of Pennsylvania Law School in 2018. Mr. Delrahim argues that James Madison, and not Thomas Jefferson, is “the true father of U.S. patent law.” Relying on the early writings of Madison, as well as correspondence between Jefferson and Madison, Mr. Delrahim outlines the “New Madison” approach for applying antitrust law to intellectual property rights.

Mr. Delrahim presents a four part framework, rooted in Madisonian principles, that he believes should guide modern day intellectual property regulation. Specifically, he argues that “(1) patent hold-up is fundamentally not an antitrust problem, and therefore antitrust law should not be used as a tool to police contractual commitments patent holders make to SSOs; (2) SSOs should not become vehicles for implementers to skew conditions in their favor when incorporating a patented technology; (3) SSOs and courts should have a very high burden before adopting rules that severely restrict the right of patent holders to exclude or—even worse—adopting rules that amount to a de facto compulsory licensing scheme; and (4) a unilateral and unconditional refusal to license a patent should be considered per se legal from the perspective of the antitrust laws.” Together, these four premises make up the “New Madison” approach to antitrust and intellectual property law.

The final two articles were prepared for the Journal’s inaugural symposium, entitled “Revisiting the Historic Kinship between Copyright and Patent Law.” This symposium took place on April 19, 2018.

In *Explaining Criminal Sanctions in Intellectual Property Law*, IRINA D. MANTA, Professor of Law and Founding Director of the Hofstra Center for Intellectual Property Law at the Maurice A. Deane School of Law at Hofstra University, explores and evaluates the historical interplay between intellectual property infringement, property offenses, and the criminalization of these acts.

Professor Manta begins with a comparison of intellectual property infringement and property offenses, arguing that the “parallels between the harms of intellectual property infringement and those of a number of

property crimes are striking,” but that “IP infringement is generally more remote and hence does not tend to interfere directly with the safety of owners.” She also notes that intellectual property infringement “may be less wrongful than property offenses because the boundaries of IP are less clearly delineated and hence accidental illegal conduct is more likely,” and thus concludes that “courts must pay special attention to whether IP infringers genuinely had the mens rea necessary to meet criminal statutory definitions.”

Professor Manta also considers the “Not-So-Curious Case of Patents,” and the historical reasoning behind why patent infringement, as compared to other forms of intellectual property theft, rarely leads to criminal liability. In doing so, Professor Manta analyzes “the differences between the various branches of intellectual property, the relative ease of infringing on a large scale in these regimes, the possibility of using tools other than criminal law to lower infringement levels, and the respective risks of overdeterrence.” Professor Manta ultimately posits that criminal sanctions are often unnecessary for the protection of intellectual property rights. Professor Manta concludes with an example-based discussion of how public backlash can lead to the demise of harsh IP laws.

In the Journal’s concluding Article, *Abstraction, Filtration, and Comparison in Patent Law*, MICHAEL RISCH, Vice Dean & Professor of Law at Villanova University Charles Widger School of Law, describes how the titular copyright doctrine “is being used in patent law, and how that use could be improved.”

Professor Risch begins with an in-depth description of the history and application of “abstraction, filtration and comparison,” traditionally believed to be a copyright law doctrine. He then likens this three-part copyright doctrine to the modern two-step test for patentable subject matter eligibility. In doing so, Professor Risch notes that the first step of the modern patent test “necessarily requires selection of the level of abstraction to view the claim” and the second step “filters out whatever the court deems is unprotectable and compares the remaining elements against some notion of conventionality.”

Professor Risch repeats the comparison for design patent subject matter, articulating the problems with functional designs. He argues that “[w]here a design patent claim is both ornamental and functional, courts have had difficulty determining the proper scope of analysis for allegedly infringing devices that look similar only because they perform a similar function.” Professor Risch ultimately suggests “that courts should more explicitly filter out functional elements before determining design patent infringement.”

JOURNAL OF LAW & INNOVATION

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VOL. I

OCTOBER 2019

NO. I

KEYNOTE ADDRESS

THE “NEW MADISON” APPROACH TO ANTITRUST AND INTELLECTUAL PROPERTY LAW

MAKAN DELRAHIM[†]

There has been growing concern in recent years that patents confer too much power in the context of standard setting organizations (“SSOs”), creating a “hold-up problem” for implementers. Those concerned often urge antitrust enforcers to intervene or claim SSOs should establish patent policies that better protect implementers. This Article explains why these concerns undermine incentives to innovate and proposes a “New Madison” approach for the application of antitrust law to intellectual property rights. The New Madison approach, inspired by the writings of James Madison in the Founding Era, has four basic premises: (1) patent hold-up is fundamentally not an antitrust problem, and therefore antitrust law should not be used as a tool to police contractual commitments patent holders make to SSOs; (2) SSOs should not become vehicles for implementers to skew conditions in their favor when incorporating a

[†] Assistant Attorney General, Antitrust Division, U.S. Department of Justice. The author would like to thank Luke Froeb, William Rinner, and Gregory Werden for their assistance and insights in preparing this article.

patented technology; (3) SSOs and courts should have a very high burden before adopting rules that severely restrict the right of patent holders to exclude or—even worse—adopting rules that amount to a de facto compulsory licensing scheme; (4) a unilateral and unconditional refusal to license a patent should be considered per se legal from the perspective of the antitrust laws.

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INTRODUCTION

Many in the patent community champion Thomas Jefferson as the father of patent law.¹ President Jefferson's contributions and public influence in this area cannot be understated, as he was the first lead patent examiner in the United States,² and his writings on patent policy were influential in the early years of the Republic. But, lately, it has been vogue among some critics of the U.S. patent system to selectively

¹ The Supreme Court in the mid-Twentieth Century was a primary mover in this regard. See, e.g., *Graham v. John Deere Co.*, 383 U.S. 1, 7-10 (1966). See generally Adam Mossoff, *Who Cares What Thomas Jefferson Thought About Patents? Reevaluating the Patent "Privilege" in Historical Context*, 92 CORNELL L. REV. 953, 961 (2007) (explaining that the Court's "lengthy and numerous quotations from Jefferson's writings established his views as the historical policy foundation for American patent law").

² Jefferson served this role in his capacity as Secretary of State. The Patent Act of 1790 gave the Secretary of State, the Secretary of War, and the Attorney General together the duty to consider patent applications, and any two of these officials could grant a patent. The Patent Act of 1793 changed course and created a registration-based (rather than examination-based) system. See *Hyatt v. Kappos*, 625 F.3d 1320, 1343 (Fed. Cir. 2010) (en banc), *aff'd and remanded*, 566 U.S. 431 (2012).

quote Jefferson to make the case that intellectual property rights ought to be reined in.³

I submit that the true father of U.S. patent law was the Founding Father principally responsible for drafting the Constitution, James Madison.

Madison wrote in *The Federalist Papers* that “[t]he copyright of authors has been solemnly adjudged, in Great Britain, to be a right of common law,” and that “[t]he right to useful inventions seems with equal reason to belong to the inventors.”⁴ Madison went on to note a policy rationale for patent rights, stating that “the public good fully coincides . . . with the claims of individuals.”⁵ Analogizing patent rights to common law rights was a truly revolutionary position. In Great Britain, patents were conferred on an arbitrary basis by the King or Queen to political and economic allies, often with little regard for the utility of the invention.⁶

The notion that “rights” should belong to inventors and that this right “coincides” with “the public good” was not widely shared at the time.⁷ Indeed, Benjamin Franklin, the famous inventor, intellectual, and founder of the University of Pennsylvania, took a more magnanimous approach. He wrote in his autobiography that he did not oppose the use of his inventions without compensation, as he had “no desire of profiting from patents himself, and hat[ed] disputes.”⁸

The exchanges between Jefferson and Madison on the question of patent rights in 1788 are therefore illuminating of Madison’s intellectual influence. Reflecting the general anti-monopoly sentiment at the time, Jefferson wrote from his post in Paris that “the benefit even of limited

³ See, e.g., Mossoff, *supra* note 1, at 962 n.42, 963-64 & n.46 (citing examples); Eric E. Johnson, *The Economics and Sociality of Sharing Intellectual Property Rights*, 94 B.U. L. REV. 1935, 1941 (2014).

⁴ THE FEDERALIST No. 43, at 271-72 (James Madison) (Clinton Rossiter ed., 1961).

⁵ *Id.*

⁶ See *Graham v. John Deere Co.*, 383 U.S. 1, 5 (1966) (noting “the power often exercised in the sixteenth and seventeenth centuries by the English Crown . . . granting monopolies to court favorites in goods or businesses which had long before been enjoyed by the public”); Tyler T. Ochoa & Mark Rose, *The Anti-Monopoly Origins of the Patent and Copyright Clause*, 84 J. PAT. & TRADEMARK OFF. SOC’Y 909, 912-18 (2002). One of the more (in)famous instances was *The Case of Monopolies*, which condemned an “odious monopoly” in playing cards granted by Queen Elizabeth. 77 Eng. Rep. 1260, 1266 (K.B. 1603).

⁷ See Ochoa & Rose, *supra* note 6, at 926 (“Jefferson’s concerns were widely shared by others at the time.”).

⁸ BENJAMIN FRANKLIN, THE AUTOBIOGRAPHY OF BENJAMIN FRANKLIN 124 (John Bigelow ed., Houghton Mifflin & Co. 1906) (1791).

monopolies is too doubtful to be opposed to that of their general suppression.”⁹

In response, Madison acknowledged that monopolies “are justly classed among the greatest nuisances in Government.”¹⁰ But he recognized a limited exception for patents. “[I]s it clear,” he asked Jefferson, “that as encouragement to literary works and ingenious discoveries, [monopolies] are not too valuable to be wholly renounced?”¹¹ Madison answered his own question, demonstrating a nuanced understanding of how to balance concerns about monopolies with creating incentives to innovate: “Monopolies are sacrifices of the many to the few. . . . Where the power . . . is in the many not in the few, the danger can not be very great that the few will be thus favored. It is much more to be dreaded that the few will be unnecessarily sacrificed to the many.”¹²

Madison understood that replacing monarchy with democracy reversed the threat of the misapplication of power, creating a risk that patent holders might suffer from the tyranny of the majority seeking to benefit unfairly from their innovation.

Madison’s view ultimately prevailed in the text of the Constitution, tying the right to a patent to innovation, or “the progress of science and useful arts.”¹³

Remarkably, the word “right” appears only *once* in the original Constitution—which took effect two years before the Bill of Rights was ratified—in the Copyright and Patent Clause. The reward of a patent for a fixed period aligned the interests of inventors, who need incentives to innovate, with the interests of the public, who want the fruits of innovation. It was an ingenious compromise that unleashed the power of innovation in the young Republic.

⁹ Letter from Thomas Jefferson to James Madison, July 31, 1788, *available at* <http://founders.archives.gov/documents/Madison/01-11-02-0147>.

¹⁰ Letter from James Madison to Thomas Jefferson, Oct. 17, 1788, *available at* <http://founders.archives.gov/documents/Madison/01-11-02-0218> [hereinafter “Oct. 17, 1788 Madison Letter”].

¹¹ *Id.*

¹² *Id.* Though both Jefferson and Madison conceptualized patents as conferring “monopolies,” that is not presumptively true from the perspective of the antitrust laws. *See* *Illinois Tool Works Inc. v. Independent Ink, Inc.*, 547 U.S. 28 (2006); U.S. DEP’T OF JUSTICE & FED. TRADE COMM’N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY § 2.2 (2017) (“The Agencies will not presume that a patent, copyright, or trade secret necessarily confers market power upon its owner. . . . If an intellectual property right does confer market power, that market power does not by itself offend the antitrust laws.”).

¹³ U.S. CONST. art. I, sec. 8.

This history would not be complete without noting that, in the end, Thomas Jefferson shifted his perspective on patents to embrace a more Madisonian position. He wrote Madison in 1789 that he would support an article in the Bill of Rights specifying that “[m]onopolies may be allowed to persons for their own productions in literature and their own inventions in the arts” for a fixed term.¹⁴ Jefferson went on to become the administrator of the patent system under the 1790 Patent Act, and authored the subsequent 1793 Patent Act.¹⁵ In his writings, Jefferson voiced his support for patent protection for invention on the ground that “ingenuity should receive a liberal encouragement.”¹⁶

In recent months I have found inspiration in this history and Madison’s dogged perseverance in favor of strong patent protections—a view that stood at odds with much of the received wisdom and practice of the day.

There has been a shift in recent years toward what I would call a “retro-Jefferson” view of patents as conferring too much power that ought to be curbed, either through reinterpreting antitrust law or establishing patent policies of standard setting organizations (“SSO”) in order to favor implementers who practice on a patent when they build new technologies. Many advocates of reducing the power of intellectual property rights cite the so-called “hold-up” problem in the context of SSOs. As many of you know, I believe these concerns are largely misplaced.¹⁷ Instead, I favor what I call the “New Madison” approach to the application of antitrust law to intellectual property rights.

The New Madison approach, if I may, has four basic premises that are aimed at ensuring that patent holders have adequate incentives to innovate and create exciting new technologies, and that licensees have appropriate incentives to implement those technologies.

First, hold-up is fundamentally not an *antitrust* problem, and therefore antitrust law should not be used as a tool to police FRAND commitments that patent holders make to standard setting organizations.

Second, standard setting organizations should not become vehicles for concerted actions by market participants to skew conditions for patented technologies’ incorporation into a standard in favor of

¹⁴ Letter from Thomas Jefferson to James Madison, Aug. 28, 1789, *available at* <https://founders.archives.gov/documents/Jefferson/01-15-02-0354>.

¹⁵ *Graham v. John Deere Co.*, 383 U.S. 1, 7 (1966).

¹⁶ Letter from Thomas Jefferson to Oliver Evans, May 2, 1807, *available at* <http://founders.archives.gov/documents/Jefferson/99-01-02-5538>.

¹⁷ See, e.g., Makan Delrahim, Assistant Attorney General – Antitrust Division, “Take It To the Limit: Respecting Innovation Incentives in the Application of Antitrust Law” (Nov. 10, 2017), *available at* <https://www.justice.gov/opa/speech/file/1010746/download>.

implementers because this can reduce incentives to innovate and encourage patent hold-out.

Third, because a key feature of patent rights is the right to exclude, standard setting organizations and courts should have a very high burden before they adopt rules that severely restrict that right or—even worse—adopt rules that amount to a *de facto* compulsory licensing scheme.

Fourth, consistent with the fundamental right to exclude, from the perspective of the antitrust laws, a unilateral and unconditional refusal to license a patent should be considered *per se* legal.

I. PATENT HOLD-UP IS NOT AN ANTITRUST PROBLEM

To understand what I mean when I say that patent hold-up is not an antitrust problem, it is important to step back to consider the purpose of antitrust law—what it does, and what it should not do. At its core, antitrust law aims to protect competition and consumers.¹⁸

Antitrust law is guided by a consumer welfare standard, which dates back to the origins of the Sherman Act.¹⁹ The ultimate focus on the consumer gained prominence in the late 1970s and 1980s through the intellectual leadership of Judge Robert Bork,²⁰ Judge Frank Easterbrook,²¹ and others.²² This standard sharpens the focus of antitrust

¹⁸ See, e.g., *NCAA v. Bd. of Regents of Univ. of Okla.*, 468 U.S. 85, 104 n.27 (1984); *N. Pac. Ry. Co. v. United States*, 356 U.S. 1, 4 (1958) (“The Sherman Act was designed to be a comprehensive charter of economic liberty aimed at preserving free and unfettered competition as the rule of trade. It rests on the premise that the unrestrained interaction of competitive forces will yield the best allocation of our economic resources, the lowest prices, the highest quality, and the greatest material progress But even were that premise open to question, the policy unequivocally laid down by the Act is competition.”).

¹⁹ See ROBERT BORK, *THE ANTITRUST PARADOX* 66 (1978) (“The Sherman Act was clearly presented and debated as a consumer welfare prescription.”); Charles S. Dameron, Note, *Present at Antitrust’s Creation: Consumer Welfare in the Sherman Act’s State Statutory Forerunners*, 125 YALE L.J. 1072, 1078 (2016) (explaining that the Sherman Act’s state predecessors were designed to promote what we now call consumer welfare, and that “[t]he federal courts’ current focus on consumer welfare should be understood not as a modern contrivance, but as a faithful application of the Sherman Act as it was written”).

²⁰ BORK, *supra* note 19, at 66.

²¹ Frank H. Easterbrook, *Workable Antitrust Policy*, 84 MICH. L. REV. 1696, 1698 (1986) (explaining that doubts expressed by “Chicago School” antitrust scholars about earlier models of antitrust policy “coupled with data backing up many of their claims, have coincided with a change in the Supreme Court’s antitrust jurisprudence that emphasizes efficiency and consumers’ welfare”); Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEX. L. REV. 1, 18 (1984) (explaining that the antitrust plaintiff “should be required to demonstrate that the defendant’s practices are capable of enriching the defendant by harming consumers”).

²² E.g., Phillip Areeda & Donald F. Turner, *Predatory Pricing and Related Practices Under Section 2 of the Sherman Act*, 88 HARV. L. REV. 697 (1975); see William E. Kovacic, *The*

scrutiny to anticompetitive practices that are harmful to consumers, rather than competitors, so that the antitrust laws are not misapplied to advance social goals unrelated to consumer welfare and efficiency.

Importantly, however, the consumer welfare standard is not synonymous with a policy always favoring lower prices.²³ For example, high demand for an exciting new product may drive up its price, but that price increase may simply reflect consumer preference for a superior product relative to alternatives.²⁴ Antitrust law is intended to protect this behavior, not punish it, so that others will have incentives to innovate and compete themselves, all for the benefit of consumers.²⁵ Such dynamic competition should be encouraged by our enforcement policies.

Rather than focusing on prices in isolation, antitrust law instead protects consumers where practices also *harm competition*—that is, they harm some “competitive process” in a manner that causes harm to consumers in the form of above-competitive prices, lower output, or reduced efficiency.²⁶ Indeed, directly showing harm to end-consumers

Antitrust Paradox Revisited: Robert Bork and the Transformation of Modern Antitrust Policy, 36 WAYNE L. REV. 1413, 1444 (1990) (explaining that Areeda and Turner “proposed an average variable cost pricing test” that “made courts and enforcement agencies far more skeptical of predatory pricing allegations”).

²³ I note that Chairman Maureen Ohlhausen has thoughtfully expressed a similar point in criticizing the application of antitrust law to FRAND disputes. See Maureen K. Ohlhausen, “What Are We Talking About When We Talk About Antitrust?” at 3 (Sept. 22, 2016), available at https://www.ftc.gov/system/files/documents/public_statements/985823/concurrence_dinner_speech_092216.pdf (“Simply condemning a high price, a refusal to deal, or the use of a SEP without showing harm to supply- and demand-side limits on market power, however, is not antitrust. It is regulatory action meant to reengineer market outcomes to reflect enforcers’ preferences.”).

²⁴ See *Harrison Aire, Inc. v. Aerostar Int’l, Inc.*, 423 F.3d 374, 381 (3d Cir. 2005) (“Competitive markets are characterized by both price and quality competition, and a firm’s comparatively high price may simply reflect a superior product.”); *Blue Cross & Blue Shield United v. Marshfield Clinic*, 65 F.3d 1406, 1412 (7th Cir. 1995) (Posner, J.) (“Generally you must pay more for higher quality.”).

²⁵ See, e.g., *Verizon Comm’ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 407 (2004) (noting that “charging of monopoly prices . . . is an important element of the free-market system”); Frank H. Easterbrook, *Ignorance and Antitrust*, in ANTITRUST, INNOVATION, AND COMPETITIVENESS 119, 122-23 (Thomas M. Jorde & David J. Teece eds., 1992) (“An antitrust policy that reduced prices by 5 percent today at the expense of reducing by 1 percent the annual rate at which innovation lowers the cost of production would be a calamity.”).

²⁶ See *NYNEX Corp. v. Dicson, Inc.*, 525 U.S. 128, 135-36 (1998) (explaining that higher telephone rates from consumers did not flow “from a less competitive market,” but from lawfully acquired market power, and that the plaintiff had to “allege and prove harm . . . to the competitive process, i.e., to competition itself”); *Morrison v. Murray Biscuit Co.*, 797 F.2d 1430, 1437 (7th Cir. 1986) (Posner, J.) (“The purpose of antitrust law, at least as articulated in the modern cases, is to protect the competitive process as a means of promoting economic efficiency.”).

is not always necessary to prove a violation of the antitrust laws. For example, collusion among buyers to push input prices down—what economists call a monopsony effect—may violate the antitrust laws because there is harm to competition even though it results in lower prices.²⁷

This is where theories that unilateral patent hold-up is an antitrust problem go wrong. Stating that a patent holder can derive higher licensing fees through hold-up simply reflects basic commercial reality. Condemning this practice, in isolation, as an antitrust violation, while ignoring equal incentives of implementers to “hold out,” risks creating “false positive” errors of over-enforcement that would discourage valuable innovation.

Advocates of using antitrust law to reduce the supposed risk of patent hold-up fail to identify an actual harm to the competitive process that warrants intervention. If an inventor participates in a standard-setting process and wins support for including a patented technology in a standard, that decision does not magically transform a lawful patent right into an unlawful monopoly. To be sure, that decision gives the patent holder some bargaining power in claiming a piece of the surplus created by standardization. And, it would require the patent holder to live up to commitments they bargained for, which are enforceable by contract laws. But standard setting decisions are intended to be a recognition that a technology is superior to its alternatives. A favorable SSO decision, like a patent itself, is a reward for an innovator’s meritorious contribution whose wide-ranging benefits can ripple throughout the economy, contributing to dynamic competition. Arguments that inclusion in a standard confers market power that could harm competition typically rest on the unreasonable assumption that the winning technology is no better than its rivals.²⁸

It is therefore unsurprising that proponents of using antitrust law to police FRAND commitments principally rely on models devoid of economic or empirical evidence that hold-up is a real phenomenon,²⁹

²⁷ See *Vogel v. Am. Soc’y of Appraisers*, 744 F.2d 598, 601 (7th Cir. 1984) (Posner, J.) (“[B]uyer cartels, the object of which is to force the prices that suppliers charge the members of the cartel below the competitive level, are illegal per se. Just as a seller’s cartel enables the charging of monopoly prices, a buyer’s cartel enables the charging of monopsony prices.”).

²⁸ See Alexander Galetovic & Stephen Haber, *The Fallacies of Patent-Holdup Theory*, 13 J. COMP. L. & ECON. 1, 36-41 (2017).

²⁹ Richard A. Epstein & Kayvan B. Noroozi, *Why Incentives for ‘Patent Holdout’ Threaten to Dismantle FRAND, and Why it Matters*, 32 BERKELEY TECH. L.J. 1381, 1388 (2018) (“[D]etailed empirical studies . . . have all come to the same conclusion: theoretical concerns regarding patent holdup and royalty stacking have not borne out in industries subject to innovation-driven standardization, such as mobile handsets, where the evidence points to the

much less one that harms competition. Since hold-up theories gained traction in the early 2000s, it is striking that they still remain an empirical enigma in the academic literature.³⁰ Antitrust law demands evidence-based enforcement, without which there is a real threat of undermining incentives to innovate.

That is why I believe so strongly that antitrust law should play no role in policing unilateral FRAND commitments where contract or common law remedies would be adequate.³¹ I worry that courts and enforcers have overly indulged theories of patent hold-up as a supposed competition problem,³² while losing sight of the basic policies of antitrust law. They lose sight of the fact that antitrust law is not just remedial; it is, importantly, intended to deter through the threat of treble damages.³³ As enforcers, we have a responsibility to ensure that antitrust policy remains sound, so that U.S. consumers continue to enjoy the benefits of dynamic competition and innovation, and so we do not export unsound theories of antitrust liability abroad, where economically dubious enforcement actions can have serious, harmful effects on U.S. businesses, consumers, and workers.

sharp lowering of prices continuous innovation, low aggregate patent royalty payments, and increasing market penetration.”).

³⁰ See Galetovic & Haber, *supra* note 28, at 9 (“At the same time that there are self-evident stelaе contradicting patent-holdup theory, there is no positive evidence in support of its core predictions.”); Anne Layne-Farrar, *Patent Holdup and Royalty Stacking Theory and Evidence: Where Do We Stand After 15 Years of History?*, OECD INTELLECTUAL PROPERTY AND STANDARD SETTING, at 7 (Nov. 18, 2014), <http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DAF/COMP/WD%282014%2984&doclanguage=en> (“Despite the 15 years proponents of the theories have had to amass evidence, the empirical studies conducted thus far have not shown that holdup or royalty stacking is a common problem in practice.”).

³¹ Delrahim, *supra* note 17, at 7-9; see also Douglas H. Ginsburg, Koren W. Wong-Ervin & Joshua D. Wright, *The Troubling Use of Antitrust To Regulate FRAND Licensing*, CPI ANTITRUST CHRONICLE, at 6-7 (2015).

³² E.g., U.S. Dep’t of Justice & U.S. Patent & Trademark Office, “Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments” (Jan. 8, 2013), [available at https://www.justice.gov/sites/default/files/atr/legacy/2014/09/18/290994.pdf](https://www.justice.gov/sites/default/files/atr/legacy/2014/09/18/290994.pdf) [hereinafter “DOJ-PTO Joint Policy Statement”]; see Layne-Farrar, *supra* note 30, at 4 (noting that “several competition agencies have weighed in either directly or indirectly” on theories of patent hold-up, and “[t]aking their cue from the[se] debates . . . manufacturers implementing standards moved patent holdup and royalty stacking arguments into court filings, complaints at competition agencies, and proposals to change standard setting rules”).

³³ 15 U.S.C. § 15(a).

II. STANDARD-SETTING ORGANIZATIONS SHOULD BETTER PROTECT AGAINST HOLD-OUT TO ENSURE MAXIMUM INCENTIVES TO INNOVATE

The second premise of the New Madison approach I advocate is that standard setting organizations, as collective bodies, themselves should avoid over-indulging theories of patent hold-up, to the detriment of patent rights. SSOs should instead strive to ensure that their patent policies create maximum incentives for innovators to invent (or at a minimum don't curtail incentives to innovate), and for licensees to implement.³⁴

Achieving this goal is not an easy task. At minimum, it requires a recognition that implementer hold-out poses a more serious threat to innovation than innovator hold-up. To be sure, both practices threaten to undermine innovation through under-investment in new technology. But, there is an asymmetry between the two: innovators must make significant upfront investments in technology before they know whether the investments will pay off, whereas implementers can delay at least some of their investments in a technology until after royalty rates have been determined.³⁵

To the extent antitrust law should play a role, it is to ensure that concerted action among implementers or innovators does not occur at any level of the supply chain. Specifically, as I noted this past Fall, the Antitrust Division will be skeptical of rules that SSOs impose that appear designed specifically to shift bargaining leverage from IP creators to implementers, or vice versa.³⁶ What do I mean by that? As enforcers, we have only limited insight into the patent policies of various standard-setting organizations, and we do not seek to impose a top-down mandate to skew the playing field clearly in the direction of innovators or implementers. But we expect there to be some symmetry between these competing interests, which manifests itself in two ways.

First, at SSOs, we hope to see a diversity of views represented on patent policy committees to give us confidence that patent policies are based on reasoned and unbiased decision-making. We strongly

³⁴ To be sure, innovation occurs at different levels of the supply chain in most industries, with patent holders and implementers each adding value that ultimately benefits consumers. I encourage SSOs to adopt patent policies that ensure that there are appropriate incentives for innovation at every level.

³⁵ Luke Froeb & Mikhael Shor, *Innovators, Implementers, and Two-Sided Hold-Up*, ANTITRUST SOURCE, August 2015, at 2-3; Bernhard Ganglmair, Luke M. Froeb & Gregory J. Werden, *Patent Hold-Up and Antitrust: How a Well-Intentioned Rule Could Retard Innovation*, 60 J. INDUS. ECON. 249, 260-61 (2012); Epstein & Noroozi, *supra* note 29, at 17.

³⁶ Delrahim, *supra* note 17, at 11.

encourage SSOs to avoid allowing voting blocks of competitors to dominate decisions on patent policy or on which technology to incorporate into a standard. That kind of action would confirm the Supreme Court’s observation that SSOs “can be rife with opportunities for anticompetitive activity.”³⁷ Ensuring that no voting blocks take hold would help negate the risk that a rule or standard is the product of a buyer’s or seller’s cartel. As long as an SSO’s IP policies are the product of a consensus or a clear majority that includes both standard-essential patent holders and implementers, the Department of Justice should have no reason for concern. On the other hand, if an SSO’s policymaking decisions appear to be dominated by implementers, *and* the resulting policies or standards appear to be heavily skewed toward implementers and away from innovators, that’s already two strikes.³⁸

Second, I believe innovation policy would benefit from a diversity of patent policies *across* standard setting organizations. Optimally, competition can begin to emerge among SSOs within the same industry, with dueling patent policies that allow for the more efficient regime to prevail. Across industries, we expect that patent policies and the requirements for the inclusion of patented technology in a standard will vary depending on the technology in question. By contrast, I worry that advocacy by government agencies in recent years could lead SSOs to adopt a uniform approach to articulating specific commitments necessary for inclusion in a standard—an approach that may be skewed too far in the direction of implementers. This unfortunate trend should not continue.

III. PATENT HOLDER INJUNCTION RIGHTS SHOULD BE PROTECTED, NOT PERSECUTED

The third premise of the New Madison approach to antitrust law and intellectual property is to respect the core of what it means to hold an IP right—namely, the right to exclude.³⁹ In his letters to Thomas Jefferson,

³⁷ *Am. Soc’y of Mech. Eng’rs, Inc. v. Hydrolevel Corp.*, 456 U.S. 556, 571 (1982); *see also* *Allied Tube & Conduit Corp. v. Indian Head, Inc.*, 486 U.S. 492, 500 (1988) (“There is no doubt that the members of such [standard setting] associations often have economic incentives to restrain competition and that the product standards set by such associations have a serious potential for anticompetitive harm. . . . Accordingly, private standard-setting associations have traditionally been objects of antitrust scrutiny.”).

³⁸ The same would be true if an SSO’s policymaking decisions appear to be dominated by IP holders and the resulting standards appear heavily skewed in their favor.

³⁹ 35 U.S.C. § 283 (“The several courts having jurisdiction of cases under this title may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable.”); *eBay Inc. v. MercExchange*,

Madison acknowledged that state-conferred monopolies are “among the greatest nuisances in government,”⁴⁰ but maintained that these “nuisances” could be harnessed to serve the greater good of social progress and innovation through patent protection. His analogy of patents to the “common law . . . copyright of authors” in *The Federalist Papers*⁴¹ is telling because, at the time, the copyright of authors was understood as a *property right*.⁴² Equipping patent holders with the property right to exclude therefore goes hand-in-hand with the goals Madison envisioned for the U.S. patent regime.

Understanding patent rights, once conferred, as a form of property right helps frame the current debate over injunctions, and demonstrates how far we’ve strayed off course.⁴³ Under current Federal Circuit law, a standard-essential patent holder faces significant difficulty in establishing a right to an injunction instead of damages.⁴⁴ In a worrisome trend, some commentators have suggested that the mere act of *seeking* an injunction order to prevent infringement raises competition concerns,⁴⁵ and, with a degree of hubris, litigants have advanced such theories as a basis for antitrust liability.⁴⁶ Taken together, these trends fundamentally transform the nature of patent rights away from their constitutional underpinnings.

L.L.C., 547 U.S. 388, 391-93 (2006); Frank H. Easterbrook, *Intellectual Property Is Still Property*, 13 HARV. J.L. & PUB. POL’Y 108, 109 (1990) (“Patents give a right to exclude, just as the law of trespass does with real property.”).

⁴⁰ Oct. 17, 1788 Madison Letter, *supra* note 10.

⁴¹ THE FEDERALIST No. 43, *supra* note 4.

⁴² See Mossoff, *supra* note 1, at 982 (explaining that Blackstone in Great Britain and Chancellor Kent in America conceptualized copyright as a right of property).

⁴³ See Robert P. Merges, *Of Property Rules, Coase, and Intellectual Property*, 94 COLUM. L. REV. 2655, 2667 (1994) (“Without the right to obtain an injunction, the right to exclude granted to the patentee would have only a fraction of the value it was intended to have, and would no longer be as great an incentive to engage in the toils of scientific and technological research.” (quoting *Smith Int’l, Inc. v. Hughes Tool Co.*, 718 F.2d 1573, 1578 (Fed. Cir. 1983))).

⁴⁴ *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1332 (Fed. Cir. 2014) (reversing decision finding that commitment to license on FRAND terms strips patent holder of right to seek injunction, but finding that such a commitment “strongly suggest[s]” that damages for infringement should be adequate).

⁴⁵ See, e.g., Greg Sivinski, *Patently Obvious: Why Seeking Injunctions on Standard-Essential Patents Subject to a FRAND Commitment Can Violate Section 2 of the Sherman Act*, COMPETITION POL’Y INT’L, Oct. 2013, <https://www.competitionpolicyinternational.com/assets/Uploads/SivinskiOct-2.pdf>; cf. DOJ-PTO Joint Policy Statement, *supra* note 32, at 6 (asserting that an injunction order against infringement of a FRAND-encumbered patent “may harm competition and consumers by degrading one of the tools SDOs employ to mitigate the threat of such opportunistic actions by the holders of FRAND-encumbered patents that are essential to their standards”).

⁴⁶ See, e.g., *Microsoft Mobile Inc. v. Interdigital, Inc.*, No. 15-723-RGA, 2016 WL 1464545, at *1 (D. Del. Apr. 13, 2016); Answer, Affirmative Defenses, and Counterclaims, *Huawei Techs. Co. v. T-Mobile US, Inc.*, No. 2:16-cv-00052-JRG-RSP, 2016 WL 8470351 (E.D. Tex. Dec. 6, 2016).

They convert a property rule into a liability rule,⁴⁷ and amount to a troubling *de facto* compulsory licensing scheme.⁴⁸

It is not difficult to understand why that is the case, particularly in the context of standard setting. If a patent holder effectively loses its right to an injunction whenever a licensing dispute arises, or is deterred from seeking an injunction due to the prospect of treble damages, an implementer can freely infringe, knowing that the most he or she will eventually have to pay is a reasonable royalty rate.⁴⁹ Implementers have a strong incentive to pursue this course while holding out from accepting a license due to the high injunction bar for innovators that make FRAND commitments.⁵⁰ It is a harmful arbitrage that should be discouraged.

Some may be skeptical of this claim, given that “willful” infringement entitles a patent holder to compensation up to treble damages.⁵¹ But it is extremely difficult to prove willfulness, a demanding standard that the Supreme Court emphasizes should be limited “to egregious cases of misconduct.”⁵² Under recent developments of the law, the standard for obtaining an injunction and the standard for proving willfulness both work to the benefit of implementers and significantly limit the downside risk of infringement. This results in a *de facto* compulsory licensing scheme for FRAND-encumbered patents deemed “standard essential,” and could serve as a disincentive for innovation or for patent holders to contribute technology to the standard-setting process in the first place. Deterring the

⁴⁷ See Epstein & Noroozi, *supra* note 29, at 20-21; Merges, *supra* note 43, at 2664-67.

⁴⁸ See Anne Layne-Farrar, *Business Models and the Standard Setting Process*, in THE PROS AND CONS OF STANDARD SETTING 34, 48 (Konkurrensverket 2010) (“Once upstream patent holders have no option of seeking injunctive relief, they will have no bargaining power at all in licensing negotiations. Especially within standard setting contexts, where the parties typically commit to license via a FRAND promise, such a rule would amount to compulsory licensing, leaving upstream patent holders at the mercy of licensees.”). Some commentators have argued that such a scheme could lead to “an eventual breakdown of the FRAND-enabled innovation marketplace.” Epstein & Noroozi, *supra* note 29, at 15.

⁴⁹ See *id.* at 17. As one commentator has noted, this free-riding effect is particularly pernicious because patent holders cannot assert an entire portfolio of infringed patents at the same time. See Anne Layne-Farrar, *Why Patent Holdout Is Not Just a Fancy Name for Plain Old Patent Infringement*, CPI NORTH AMERICA COLUMN, at 2 (2016) (“[E]ven if the SEP holder prevails in a given infringement action, standard implementers can (and typically do) proclaim that they are only obligated to take a license to the specifically adjudicated patents, which have been proven to be valid and infringed.”).

⁵⁰ See Douglas H. Ginsburg, Taylor M. Owings & Joshua D. Wright, *Enjoining Injunctions: The Case Against Antitrust Liability for Standard Essential Patent Holders Who Seek Injunctions*, ANTITRUST SOURCE, at 4 (2014) (“[W]e have not found even one injunction or exclusion order that actually kept a product off the shelf because it infringed a SEP.”); Layne-Farrar, *supra* note 30, at 6 (“While an injunction is a strong penalty, these have rarely ever been granted for SEP infringements.”).

⁵¹ See 35 U.S.C. § 284; *Halo Elecs., Inc. v. Pulse Elecs., Inc.*, 136 S. Ct. 1923 (2016).

⁵² *Id.* at 1935.

right to enjoin other parties from infringement—particularly competitors—seriously reduces incentives to innovate, much in the same way that the DOJ’s enforcement policies in the 1970s prevented field of use restrictions in patent licensing. This can cause great harm to consumers,⁵³ and is particularly problematic as more and more products and services come to depend on standardized technology.

IV. A UNILATERAL AND UNCONDITIONAL REFUSAL TO LICENSE A VALID PATENT SHOULD BE *PER SE* LEGAL

The foregoing analysis leads me to the fourth premise of the “New Madison” approach, which is that a unilateral and unconditional refusal to license a valid patent should be *per se* legal.⁵⁴ A refusal to license should not be a source from which a competitor or customer may seek treble damages under the Sherman Act. That is because competition and consumers both benefit when inventors have full incentives to exploit their patent rights. This requires an assurance to inventors that they need not subsidize their competitors’ business models if they prefer not to do so. The Supreme Court clarified as much in *Trinko*, explaining that a refusal to deal is not an antitrust violation if the parties have never done business with each other, because “there is no duty to aid competitors.”⁵⁵ A *de facto* compulsory licensing scheme turns this policy underlying the Sherman Act on its head.

To that end, I urge scholars and policymakers to give careful consideration to the underlying policies of the *Trinko* decision. The Supreme Court emphasized that its earlier *Aspen Skiing* decision was merely a “limited exception” to the rule that there is no duty to deal under the antitrust laws.⁵⁶ But some, particularly some of the newer enforcement agencies abroad, may think the “exception” leaves room for a licensee to bring an antitrust suit if a patent holder terminates or refuses to renew the licensing agreement.⁵⁷ The licensor thus could be forced to litigate for

⁵³ See Epstein & Noroozi, *supra* note 29, at 17, 21 (“[I]n the face of high transaction costs, pure liability rules tend both to encourage ‘patent holdout’ and to shortchange innovators in ex post allocations of the cooperative surplus created by FRAND negotiations.”).

⁵⁴ Delrahim, *supra* note 17, at 8; see Ginsburg et al., *supra* note 50, at 5 (explaining that explaining that an antitrust remedy for seeking an injunction “would be harmful” to consumer welfare and that “[o]verdeterring SEP holders from seeking an injunction effectively diminishes the value of their patents and hence their incentive to innovate”).

⁵⁵ *Verizon Comm’cns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 411 (2004).

⁵⁶ *Id.* at 409 (citing *Aspen Skiing Co. v. Aspen Highlands Skiing Corp.*, 472 U.S. 585 (1985)).

⁵⁷ *Id.*

years the consequences of a business decision stemming from changed competitive dynamics or a new licensing strategy. Antitrust laws should not be used to transform an inventor’s one-time decision to offer a license to a competitor into a forever commitment that the inventor will continue licensing that competitor in perpetuity.

CONCLUSION

This past Fall, I urged all of us who care about innovation to consider “fresh thinking” about the implications of SSOs and the proper role of antitrust.⁵⁸ So far, I have been encouraged and humbled by the positive response. To look forward to the future of standard-essential patents, however, we should take a moment to look back to the wisdom of the Founding Fathers, and the vision of James Madison in particular. He understood the value of strong IP protection as a means of fueling innovation and technological progress. I submit that a “New Madison” approach to these issues may help restore the promise of patent *and* antitrust law, and unleash America’s full potential for innovation. We should, in the words of Madison, continue to recognize that “as encouragement to . . . ingenious discoveries,” patent rights are “too valuable to renounce,” and that we should fear not that the many are sacrificed to the few, but rather that “the few will be unnecessarily sacrificed to the many.”⁵⁹

⁵⁸ *Id.* at 14.

⁵⁹ Oct. 17, 1788 Madison Letter, *supra* note 10.

ARTICLE

EXPLAINING CRIMINAL SANCTIONS IN INTELLECTUAL PROPERTY LAW

IRINA D. MANTA[†]

This symposium piece first seeks to unpack the relationship between intellectual property infringement and property offenses, and then to understand how the connection between the two has informed when the former is criminalized. The piece examines the porous nature of the boundary line between intangible and tangible resources, showing the at-times uncomfortable fit of the non-rivalrous label to intellectual property. An analysis of the respective harms of the two types of violations follows. This symposium contribution shows how lawmakers have treated patents differently from other forms of intellectual property by choosing not to criminalize their infringement, due both to utilitarian reasons and public choice rationales. While historically the entities who pushed for harsher sanctions for copyright violations in particular have often not encountered resistance, a combination of large tech companies' and grassroots organizations' activism has thwarted attempts at strengthened enforcement in recent times. The political landscape of copyright lawmaking, however, may be on its way to the greater degree of equipoise between support and opposition to greater sanctions that one observes in the patent legislative context.

[†] Visiting Professor, St. John's University School of Law; Professor of Law and Founding Director of the Hofstra Center for Intellectual Property Law, Maurice A. Deane School of Law at Hofstra University; Yale Law School, J.D.; Yale College, B.A. I would like to thank for comments Dmitry Karshtedt as well as the participants of the symposium of which this piece is a part, of the Eighth Annual Tri-State Region Intellectual Property Workshop at the New York University School of Law, and of the Intellectual Property in the Trees workshop at Lewis & Clark University Law School. I also owe a debt of gratitude for support to the St. John's University School of Law, and the Maurice A. Deane School of Law at Hofstra University and its faculty workshop, as well as to my research assistant Matthew Nevola.

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INTRODUCTION¹

The criminal law is frequently a last resort when other methods of resolution have failed. When an individual engages in anti-social behavior, his victim and bystanders might begin by reasoning with him one-on-one. As a next step, the community would take measures, a mixture of carrots and sticks, perhaps involving ostracism. If the problem is of sufficient gravity, the civil court system might intervene, providing a forum for the victim to seek official redress in the form of making the perpetrator cease his behavior and, in some cases, provide reparations for past wrongs. Punishing crime is expensive and forces the government, and hence the public, to pay in exchange for greater safety, retribution, and deterrence of both the specific offender and potential future wrongdoers.

We traditionally associate criminal law with offenses that involve the use of force against people and things. If you try to kill me, it would likely be unwise for me to rely on trying to reason with you afterwards or assume that ostracism alone will prevent you from doing so in the future. While a monetary fine might provide some reparation to me, it is unlikely to do so fully, and the fear of such fines may not be enough to assure society that you will not come after me or another potential victim down the line. The same is true for many property-based offenses. After all, every time you consider stealing something, there is

¹ Portions of this piece have been adapted from Irina D. Manta, *The Puzzle of Criminal Sanctions for Intellectual Property Infringement*, 24 HARV. J.L. & TECH. 469 (2011) [hereinafter “Manta, *Puzzle of Criminal Sanctions*”] and Irina D. Manta, *The High Cost of Low Sanctions*, 66 FLA. L. REV. 157 (2014).

a chance that you will not get caught. So you may well conclude from a cost-benefit calculation that you may as well give it another shot and pay a fine the percentage of the time that you do get nabbed. At the end of the day, as criminal law scholar Erin Sheley summarized in short, “[b]oth criminal and tort law can be said to redress a form of wrong.”² The criminal justice system relies on a mix of retribution, denunciation, utilitarian, and other moral factors (some of which stand in tension with each other).³

Turning our attention to intellectual property offenses specifically, the rationale for criminal sanctions in that area—which are available for some forms of infringement in copyright, trademarks, and trade secrets—is not immediately obvious. The need for a legal rather than extra-legal response is, in itself, not a mystery. Intellectual property infringers often have little to no direct interaction with their victims, and so interpersonal negotiations or community responses would generally not yield much by way of redress. It therefore makes intuitive sense why an IP owner would need to turn to the civil court system for help. Why would legislators, however, at times enact criminal laws to respond to this kind of non-violent offense? The answer turns on both utilitarian factors and the public choice landscape of U.S. politics. To understand both of these facets, it is useful to begin with an examination of how analogies to property offenses have historically led to the criminalization of some forms of intellectual property infringement.

Part I of this symposium piece explains the relationship between intellectual property infringement and property violations such as theft, which includes a discussion of the relative harms that different kinds of infringement impose as compared to the harms inflicted as connected to tangible property. Part II shows why patents have been treated differently in the context of criminal law, both as a matter of utilitarian concern and public choice rationale. Part III discusses what happens when intellectual property owners, such as in the case of copyright, push too far and eventually a popular backlash results. The piece ends in a brief Conclusion section.

I. INTELLECTUAL PROPERTY INFRINGEMENT AND PROPERTY OFFENSES

This Part describes the development of the concept of theft as it applies to intellectual property infringement. It then analyzes the harms

² Erin L. Sheley, *Tort Answers to the Problem of Corporate Criminal Mens Rea*, 97 N.C. L. REV. 773, 812 (2019).

³ See *id.* at 812-813.

of intellectual property infringement to advance a clearer understanding of the ways in which that label does or does not fit, and how there may be more applicable analogies in the realm of property law violations. Examining property offenses in a more nuanced way shows that intellectual property and its infringement may transcend the usual binary of rivalrousness or lack thereof. A broader understanding of rivalrousness than one based on mere physical use allows for goods and their infringement to lie on a spectrum of rivalrousness. Offenses such as vandalism and trespass have implicitly long recognized the possibility of that spectrum.

A. *How the Intellectual Property Infringer Became a Thief*

Defining even the theft of *tangible* property turns out to be remarkably fraught in the first place. Legal dictionaries speak of the “felonious taking and removing of another’s personal property with the intent of depriving the true owner of it.”⁴ Problems abound in understanding what makes property someone’s own (that which may not be stolen, is the circular answer), what it means to take it, how we determine intent in this context, and what form of deprivation qualifies. Regardless of these theoretical problems, ancient societies felt little compunction punishing theft, which they perceived as an attack against God’s will and for which they were willing to award the death penalty.⁵ While most countries have eliminated the death penalty for acts involving deprivations of property,⁶ they have retained a variety of other harsh criminal punishments such as imprisonment.

The application of similar principles to intangible resources both accompanied and reinforced in turn the propertization of IP. As intellectual property increased in value, often much outpacing in the business context what the brick-and-mortar assets were worth, the stakes grew higher around IP infringement as well as around the regime addressing its deterrence and punishment.⁷ Once the barrier had been cleared to use criminal sanctions in this context, the question regarding its particular applications changed from “whether” to “when”. This has, to some extent, paralleled the general expansion of criminal law in the punishment of

⁴ BLACK’S LAW DICTIONARY 1615 (9th ed. 2009).

⁵ See, e.g., Richard A. Epstein & Thomas P. Brown, *Cybersecurity in the Payment Card Industry*, 75 U. CHI. L. REV. 203, 204 (2008).

⁶ China remains an exception. See, e.g., CORNELL CENTER ON THE DEATH PENALTY WORLDWIDE, DEATH PENALTY DATABASE: CHINA (2014), <https://www.deathpenaltyworldwide.org/country-search-post.cfm?country=China>.

⁷ GERALDINE SZOTT MOOHR, JACQUELINE LIPTON & IRINA MANTA, *THE CRIMINAL LAW OF INTELLECTUAL PROPERTY AND INFORMATION: CASES AND MATERIALS* 2D (2016).

property-related offenses, where the list of actionable violations transitioned from violent crimes like robbery to non-violent ones like larceny.

Intellectual property infringement does not meet the strictest dictionary definitions of theft because an IP owner is virtually never completely deprived of a good. That owner's complaint tends to be that her intangible goods have experienced an often-significant reduction in value as a result of the infringement rather than that she has lost the ability to use the goods in a literal sense. I have argued that this strengthens the case for an understanding of intellectual property infringement as vandalism (defined as an act that involves some degree of damage to the property) or trespass (in cases of unauthorized access that did not necessarily result in damage) rather than theft.⁸ Suffice it to say here, however, that an understanding of intellectual property infringement as some form of property offense—whatever the particular offense may be—contains the elements of basic legitimacy, and that arguments against the use of criminal sanctions in the context of intangible goods would do better not to place overly great reliance on the distinctions between IP and property.

Indeed, as I and others have argued, even the old chestnut that characterizes intellectual property as non-rivalrous does not hold up to closer scrutiny.⁹ The traditional definition of non-rivalrousness as pertaining to things that cannot be used by two people simultaneously is unhelpfully formalistic. The real question which we have to confront in daily life is whether one person's enjoyment of a good conflicts with another's enjoyment. As a matter of utility, be it economic, hedonic, or of any other sort, that is ultimately the relevant consideration. Once one accepts that definition, many different examples in intellectual property come to mind that involve no physical inability for a good to be shared, but rather a conflict in its enjoyment. For one, this can occur in the context of luxury trademarked goods.¹⁰ Wearing a Gucci purse feels less special if too many people have one (worse, at some point one may be mistaken for a user of counterfeit goods oneself—which is very different from the image many Gucci purse wearers want to portray).¹¹ In the copyright context, the distribution of a surreptitiously-made recording of an

⁸ See Irina D. Manta & Robert E. Wagner, *Intellectual Property Infringement as Vandalism*, 18 STAN. TECH. L. REV. 331 (2015).

⁹ See Irina D. Manta, *Keeping IP Real*, HOUSTON L. REV. (forthcoming) (on file with author); Manta & Wagner, *supra* note 8, at 338; James Y. Stern, *Intellectual Property and the Myth of Nonrivalry* (on file with author).

¹⁰ Pub. L. No. 98-473, tit. II, ch. XV § 1502(a), 98 Stat. 2178-79 (codified as amended at 18 U.S.C. § 2320 (2006 & Supp. 112008)).

¹¹ See Irina D. Manta, *Hedonic Trademarks*, 74 OHIO ST. L.J. 241, 248-49 (2013).

exclusive concert at the Met potentially detracts from the experience for which live spectators paid dearly.¹²

This goes much beyond the case of luxury trademarked goods and their copyright equivalents, however. One of the charges made explicitly or implicitly against those who rail about illegal streaming/downloading of their intellectual property, be it in the form of songs or movies or the like, is that they are greedy. As long as some people buy goods legally, does it really matter that *Game of Thrones* episodes are routinely streamed without payment? The answer is two-fold. First, illegal streaming or downloading can have a tendency to snowball. Many users who would normally stream for payment may become resentful of doing so when others receive the good for free. The legal users may in fact feel like they are not just subsidizing free-riders, but that they are paying much higher prices than they would but for the illegal streamers. The underlying theory is that at least some of the illegal streamers would pay for *Game of Thrones* if the choice was between paying and not watching the episodes at all. The money that this set of users refuses to pay can drive up prices for what is left of the population that streams legally.

The second, related point in such cases is that the producer has put out a good that is desired by a significant number of people, but she receives proportionally little value in return. For one, this may feel disheartening and demoralizing even outside of economic questions. The producers of artistic works, in particular, often think that they have infused these works with their hearts and souls, and it can be troublesome to have large groups of individuals essentially say that this intellectual property is good enough to be consumed for free but not good enough to spend a few dollars on. The reality is that virtually anyone who wanted to watch *Game of Thrones* was legally able to wait until a season ended, purchase an HBO Now pass for one month at \$14.99, and watch a full season in that month (each season only had between six and ten episodes).¹³ This is not an unbearable cost for most fans, and yet a large number chose not to pay it.

Despite a number of measures to prevent it, illegal streaming persists, and it is fair to assume—as mentioned above—that at least some percentage of the individuals involved would be willing to pay for the goods if this costless alternative did not exist. Just like with the non-rivalrousness aspect specifically, a more flexible approach as to whether intellectual property infringement can be likened to property offenses generally makes sense. Leaving aside some of the matters regarding sentimental value of goods that come up in the case of personal property,

¹² See Manta & Wagner, *supra* note 8, at 338.

¹³ See HBO, <https://www.hbo.com/order> (last accessed Apr. 14, 2019).

most situations involving theft or vandalism of tangible property produce negative consequences for the owner because she loses all or part of the *value* of her property. The physical loss or damage, while non-negligible, does not tend to be the central feature of the event. If a malicious neighbor tramples down and destroys potatoes I just grew, I can no longer sell them (or not at the same price). Similarly, if I sell my music for a living, illegal downloading of the music may eventually hamper my ability to sell my goods.

This will not always occur. For example, some people may choose to buy my music legally after initial illegal downloads. Indeed, in specific cases listeners may encounter my music through such downloads who otherwise would not have bothered taking the financial risk of purchasing it without testing. Also, artists make their revenues through a number of different avenues. A singer could witness a cut in profits via illegal downloads that is compensated through later increased sale of concert tickets and official merchandise. The empirics behind some of these tradeoffs are highly uncertain and context-dependent, however, and one might query why the illegal downloaders (and/or those who offer those goods) rather than the artist herself should be the ones to make the decision of how a work should be sold or given away in the marketplace.

The artist always has the option to distribute the good for free, or to ask for voluntary donations—indeed, Radiohead did just that a dozen years ago when it released an album on the Internet that anyone could download and pay a price of their choice.¹⁴ The same is true of the potato farmer. He can decide how much of his agricultural goods to distribute at no cost as a matter of marketing (imagine a cooked version as a free sample at a farmer's market) or good will. Some farms control their distribution strictly, while others including a number of apple-picking farms and the like assume that they can give buyers some discretion when it comes to sampling goods and that in the end, the total purchases made will financially justify earlier investments in offering samples.

Musical artists have so many different ways to offer samples, however, that it is not clear why whole-hog free downloading of their entire albums will be in the interest of most artists. They can allow listeners to hear the first thirty seconds of some or all songs, or they can make a few songs available for free while expecting purchase before a listener can have access to the entire album. Just like we do not expect potato farmers to allow potential buyers to take bites out of every potato before purchase, it is unrealistic to expect that most artists can or should be able to afford

¹⁴ Josh Tyrangiel, *Radiohead Says: Pay What You Want*, TIME (Oct. 1, 2007), <http://content.time.com/time/arts/article/0,8599,1666973,00.html>.

having large numbers of people consume their goods for free to encourage sales.

B. *The Harms of Intellectual Property Infringement Juxtaposed with Those of Property Crimes*

Criminal law is generally supposed to be used in the case of conduct involving nontrivial harm and wrongful conduct.¹⁵ As discussed above, both property and intellectual property offenses reduce the wealth of owners and provide disincentives for further investments. One distinction in this context between property and IP offenses is that property crimes have a greater potential for endangering victims' sense of physical safety. IP infringers generally operate remotely, working behind a computer screen or at a different facility, unlike thieves and vandals that often personally intrude on one's space.

A reason that has been given for why criminal sanctions are more justified for property offenses than IP ones is that we must place greater emphasis on protecting the bodily integrity of victims than on punishing financial loss, and a thief of tangible goods could suddenly attack if a victim caught her in the act, or violence could ensue when the victim tries to protect his property (including potentially through the use of weapons). The law does not view this distinction as crucial for culpability even within property offenses, however, and someone can land in jail for improperly wiring money out of someone else's account, which is an offense that would also not present the potential for violent clashes as such.

On the issue of wrongfulness, convictions both in the property and intellectual property contexts generally require evidence of intent.¹⁶ The particular level of wrongfulness differs in each scenario, but it is safe to assume that offenders who are criminally convicted in both the property and IP worlds usually have a high level of awareness of the illegality of their conducts.

American courts have frequently recognized informally the relationship between the two types of offenses, especially when they have referred to IP infringers' actions as "intellectual property theft" or "piracy". The Supreme Court has not expressed its views on the subject directly. The closest it came was in *Dowling v. United States*, where it ruled that the National Stolen Property Act (NSPA) that criminalized the interstate transportation of stolen property did not extend to bootleg records.¹⁷ The Court called a copyrighted

¹⁵ See DOUGLAS HUSAK, *OVERCRIMINALIZATION: THE LIMITS OF THE CRIMINAL LAW* 103-19 (2008).

¹⁶ See, e.g., MODEL PENAL CODE §§ 220.1-.3 (1962).

¹⁷ 473 U.S. 207 (1985).

good “no ordinary chattel” and emphasized the inability of infringers to take over physical control of copyright or completely to deprive the owner of the ability to use it.¹⁸ As is apparent from multiple statements in the opinion, the Court was concerned about interfering with congressional intent and pointed out that 1) Congress could have explicitly included copyright in the NSPA if it wished to do so and 2) the NSPA could be used as a tool to criminalize trademark infringement (when Congress had known to legislate in this area separately shortly before, in the narrow context of counterfeiting) and even patent infringement (which Congress has not done to this day).¹⁹ Justice Powell argued in dissent that the NSPA does in fact cover the transportation of bootlegs, an act that he described as involving the offenses of theft, unauthorized use, and conversion.²⁰

The subsequent judicial history is muddled, with lower courts distinguishing *Dowling* in a number of cases and referring explicitly to infringed intellectual property as having been “stolen”. While lower courts’ inconsistent application of *Dowling* could be explained by (willful or innocent) mistake or by the statutory changes to the NSPA to include the transmission of some forms of data,²¹ it may also evidence an understanding on the part of the lower courts that *Dowling* did not truly reject the possibility that theft and conversion of intangible assets can occur.

In short, and while a final pronouncement by the Supreme Court remains to be heard, the parallels between the harms of intellectual property infringement and those of a number of property crimes are striking. IP infringement can partially or almost completely destroy the value of a good and reduce the incentives for productive behavior just like property crimes do. The criminal law also tends to demand willfulness before punishing either type of conduct. On the other hand, IP infringement is generally more remote and hence does not tend to interfere directly with the safety of owners. Further, complete deprivation of a good does not usually occur in the IP context. Last, on average, IP infringement may be less wrongful than property offenses because the boundaries of IP are less clearly delineated and hence accidental illegal conduct is more likely. As a result, courts must pay special attention to whether IP infringers genuinely had the mens rea necessary to meet criminal statutory definitions.

¹⁸ *Id.* at 216.

¹⁹ *See id.* at 220-27.

²⁰ *Id.* at 232 (Powell, J., dissenting).

²¹ *See, e.g.,* United States v. Farraj, 142 F. Supp. 2d 484, 490 (S.D.N.Y. 2001); United States v. Alavi, No. CR07-429-PHX-NVW, 2008 WL 1971391, at *2 (D. Ariz. May 2, 2008). *But see* United States v. Brown, 925 F.2d 1301, 1307 (10th Cir. 1991) (stating that the *Dowling* decision removed all intangible property from the purview of the NSPA).

II. THE NOT-SO-CURIOUS CASE OF PATENTS

There is a noticeable gap in the criminal law framework that deals with intellectual property infringement, which is that it does not cover patent infringement. The roots of this predicament can be found in a combination of 1) utilitarian and other moral considerations and 2) public choice explanations. This Section will focus on the differences between the various branches of intellectual property, the relative ease of infringing on a large scale in these regimes, the possibility of using tools other than criminal law to lower infringement levels, and the respective risks of overdeterrence.

The first question is, again, the one of harm. Inventors and other patent owners have complained at times that the sanctions imposed on infringers are insufficient, and that the process of civil litigation to vindicate rights in this context is really expensive. Indeed, “[p]atent litigation in district court typically costs millions of dollars.”²² One can surmise from patent owners’ willingness to spend such sums that they have a high level of faith in their legal claims and that they perceive the harm they experience as large enough to invest millions into recovery.

Criminal actions against infringers could reduce civil litigation costs both by shifting some enforcement costs to the government and reducing the amount of infringement via deterrence mechanisms. The question at that point becomes whether this would promote innovation. This could occur because criminal sanctions reduce the costs of enforcing patents and provide a signal to inventors that society values them as much as it does copyright and trademark owners. Patent infringers may also be sensitive to being called thieves and criminals, and so this would increase the personal costs of infringing patents.

While this idea holds some appeal at first blush, the differences between patents and other forms of intellectual property cause significant problems in this context. First, even though the process to obtain patents is time-consuming and expensive,²³ a large percentage of litigated patents are ultimately deemed invalid.²⁴ While the patent term is shorter than that for other types of IP protection (twenty years for

²² John F. Duffy, *Standing to Challenge Patents, Enforcement Risk, and Separation of Powers*, 83 GEO. WASH. L. REV. 628, 644 (2015).

²³ The application costs for a patent (including fees paid to the PTO and attorneys) are estimated at about \$20,000. Jonathan M. Barnett, *Property as Process: How, Innovation Markets Select Innovation Regimes*, 119 YALE L.J. 384, 396 (2009); see also Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1498 (2001) (estimating application costs at “\$10,000 to \$30,000 per patent”).

²⁴ John R. Allison & Mark A. Lemley, *Empirical Evidence on the Validity of Litigated Patents*, 26 AIPLA Q.J. 185, 205 (1998).

patents versus seventy years plus life of the author for copyright, and versus indefinite duration while the mark is in use for trademarks), patents provide the greatest level of excludability of these different forms of IP. Reverse engineering and independent invention do not provide defenses to a claim of patent infringement.²⁵ In contrast, copyright allows for an independent creation defense as well as the obligation on the part of the copyright owner to accept fair use of her works and compulsory licensing in some contexts.²⁶ For trademarks, owners have to let other parties use their marks unless it is done commercially and leads to consumer confusion, dilution, or a few other illicit outcomes.²⁷

This means that the law is already rather intolerant of any use of patented material, and that on top of it, it is not always clear which patents are valid at all. The criminal law must provide proper notice to the public and define mens rea precisely, but defining willfulness in patent infringement for criminal purposes creates risks. Due to recent developments in the law, the current standard for willfulness to obtain enhanced civil damages is to some extent unsettled, but it may amount to an “egregiousness” requirement.²⁸ Because this standard has not really been tested, or clarified, in civil cases due to its novelty, it is difficult to determine whether it would be workable in the criminal context. As a general matter, it is easy to see how analyzing mens rea in patent infringement could prove quite confusing to the average criminal jury that may struggle with the subject matter of patents in the first place. It seems easier, to some extent, to justify criminal sanctions in contexts in which 1) willfulness can and is established conclusively and 2) the invention was such that there was little to no doubt that the patent itself was valid.

Both setting too high and too low a threshold for criminal prosecution in the patent context presents problems. If the bar is high, and large amounts of hard-to-obtain evidence are required to prove willfulness, prosecutors may not want to take the chance of bringing cases frequently at all, and even when they do, they may not succeed. This would reduce the upsides of having such sanctions because infringers may continue to proceed undeterred if there is much to gain

²⁵ The issue of exclusive use in different forms of IP is covered in Brian M. Hoffstadt, *Dispossession, Intellectual Property, and the Sin of Theoretical Homogeneity*, 80 S. CAL. L. REV. 909, 951-52 (2007).

²⁶ *Id.*

²⁷ *Id.*

²⁸ *Halo Elecs. v. Pulse Elecs.*, 136 S.Ct. 1923 (2016).

from infringement and the chance of actually being caught and prosecuted is minimal. Meanwhile, a low bar could over-deter innovation if individuals who do not wish to take the risk of incarceration or other criminal sanctions choose to stay out of the invention business altogether or work in areas that produce less useful inventions for the public. Ultimately, the realistic goal cannot be to reduce the level of patent infringement to zero because that is likely impossible without costs so severe to innovation that a cost-benefit analysis could not justify doing so.

Additionally, willful infringement can benefit society if it forces the examination of improperly granted patents that stand in the way of innovation.²⁹ In the copyright and trademark contexts, it is less often the case that willful infringement results in information as to whether owners properly received protection in the first place.³⁰ In a further difference, any overdeterrence that occurs in the patent context could prove more dangerous than overdeterrence for copyrights and trademarks. In trademarks, a new producer could probably still find a mark of some sort to use even if it is sub-optimal. In copyright, some artistic works may not be created or distributed.³¹ While that can be problematic, the consequences in the patent world are far worse if whole classes of technology and perhaps even some life-saving medicines never see the light of day due to overdeterrence. On top of that, it is possible that in at least some cases, criminal sanctions already exist for patent infringement through indirect means, such as if a pharmaceutical drug infringer also engages in counterfeiting of the original trademark attached to the drug.³² In such cases, the marginal benefit of having criminal sanctions for the patent infringement portion specifically may be low.

²⁹ Multiple scholars have noted that society suffers when civil patent lawsuits are settled if bad patents that block “very useful or valuable” technology are allowed to continue existing as a result. Jay P. Kesan & Gwendolyn G. Ball, *How Are Patent Cases Resolved? An Empirical Examination of the Adjudication and Settlement of Patent Disputes*, 84 WASH. U. L. REV. 237, 244 (2006).

³⁰ Indeed, it is patents specifically that are often improvidently granted, and patent infringement lawsuits are a tool to uncover that. See *supra* note 24 and accompanying text. I would like to thank Jacqueline Lipton for our conversation on this topic.

³¹ See, e.g., Geraldine Szott Moohr, *The Crime of Copyright Infringement: An Inquiry Based on Morality, Harm, and Criminal Theory*, 83 B.U. L. REV. 731, 760 (2003) (“Fear of criminal penalties may inhibit second-generation creators from working with material they believe may be off-limits—even when such use is in fact lawful.”).

³² Press Release, U.S. Dep’t of Justice, Distributor of Counterfeit Pharmaceutical Drugs Sentenced (Jan. 15, 2009), available at <https://www.justice.gov/sites/default/files/criminal-ccips/legacy/2012/03/15/XuSent.pdf>.

Differences in the type of infringement we see in the patent context versus the copyright and trademark worlds likely also account for the lack of criminal sanctions in patents. First, most cases of patent infringement do not appear to involve copying or willfulness, so it is unclear to what extent intentional infringement—the type that the criminal law would punish—represents a significant problem in the United States.³³ When it comes to the other forms of intellectual property, and especially copyright, relatively modern technologies had a significant impact on increased levels of infringement, including specifically intentional infringement. The ability to reproduce with exactitude copyrighted materials and distribute them broadly exploded through the advent of the Internet.³⁴ Some have argued that this has come at a large loss to the U.S. economy as a matter of revenue and jobs.³⁵ Meanwhile, the sale of some types of goods, such as counterfeit pharmaceutical drugs distributed over the Internet, can cause grave health risks and be difficult to detect.³⁶ In most more innocuous cases, the victims of counterfeiting are dispersed and their respective financial losses low enough that they are unlikely to go after counterfeiters themselves.³⁷ Criminal prosecutions can address that problem by having the government seek to protect these victims in a single action.³⁸ In the case of copyright infringers, it is the infringers that are often dispersed, such as in peer-to-peer sharing contexts. Criminal sanctions against the biggest offenders are thought to deter future bad actors and to cost less than broad civil litigation.³⁹ Copyright infringers also often do not have

³³ Christopher A. Cotropia & Mark A. Lemley, *Copying in Patent Law*, 87 N.C. L. REV. 1421, 1451-54 (2009).

³⁴ See DAVID G. POST, IN SEARCH OF JEFFERSON'S MOOSE: NOTES ON THE STATE OF CYBERSPACE 202 (2009).

³⁵ See 138 CONG. REC. 31,182 (1992); H.R. REP. NO. 106-216, at 3; STEPHEN E. SIWEK, INST. FOR POLICY INNOVATION, THE TRUE COST OF COPYRIGHT INDUSTRY PIRACY TO THE U.S. ECONOMY 14 (2007), https://www.ipi.org/docLib/20120515_CopyrightPiracy.pdf. But see Eric Goldman, *A Road to No Warez: The No Electronic Theft Act and Criminal Copyright Infringement*, 82 OR. L. REV. 369, 397-98 (2003) (criticizing these figures as vastly overstating the losses to U.S. copyright owners).

³⁶ See, e.g., John A. Vernon et al., *The Internet and Pharmaceutical Importation: Economic Realities and Other Related Issues*, 16 ALB. L.J. SCI. & TECH. 545, 550-51 (2006).

³⁷ See David J. Goldstone & Peter J. Toren, *The Criminalization of Trademark Counterfeiting*, 31 CONN. L. REV. 1, 13 (1998).

³⁸ See *id.*

³⁹ See generally Geraldine Szott Moohr, *Defining Overcriminalization Through Cost-Benefit Analysis: The Example of Criminal Copyright Lairs*, 54 AM. U. L. REV. 783 (2005) (weighing the utilitarian pros and cons of criminalizing copyright infringement, including in file-sharing scenarios).

much income, and so it is difficult to recover against them even if a civil lawsuit proves successful.⁴⁰

The advent of the Internet has not affected patent infringement figures in the same way. And patent infringers tend to be large companies that do have the financial resources to pay for damage awards in civil lawsuits,⁴¹ which means that corporations have a serious financial incentive not to infringe that lower-means individuals in other IP contexts may lack.⁴² Further, patent infringement is not as woven into the fabric of our society as trademark and copyright infringement. Counterfeiting can affect the economic and even physical well-being of individuals. Copyright infringement can include regular people and potentially desensitize them to committing other forms of legal violations. Because patent infringement largely occurs between corporations, it is unlikely to have these effects. These factors make criminal sanctions less justifiable in the patent context than for copyright and trademarks.

Some of the development of the law, and of the differences between patent law on the one hand and copyright/trademark law on the other, can be traced back to public choice factors rather than utilitarian or moral rationales, however. The Recording Industry Association of America (RIAA) and the Motion Picture Association of America (MPAA) repeatedly pushed for increased criminal sanctions over the years because they thought that civil sanctions or insufficiently harsh criminal laws were not enough to deter infringement.⁴³ These organizations managed to expand which acts would count as felonies under the law and how high the monetary fines and prison sentence

⁴⁰ See Ray Beckerman, *Ha Ha Ha Ha Ha. RIAA Paid Its Lawyers More Than \$16,000,000 in 2008 to Recover Only \$391,000!!!*, RECORDING INDUSTRY VS THE PEOPLE (July 13, 2010, 11:26 AM), <http://recordingindustryvspeople.blogspot.com/2010/07/ha-ha-ha-ha-ha-riaa-paid-its-lawyers.html>.

⁴¹ One study of 1000 patents found that 707 were owned by large companies, and that 293 were owned by small entities, 175 of which were individuals. John R. Allison & Mark A. Lemley, *Who's Patenting What? An Empirical Exploration of Patent Prosecution*, 53 VAND. L. REV. 2099, 2117 (2000).

⁴² This also means that if violations occur, the victims of patent infringement are more likely to be compensated for the harms they experienced than do the victims of other types of intellectual property infringement. This is especially true because some of the most blatant cases of patent infringement risk drawing awards of treble damages and attorney's fees.

⁴³ Lanier Saperstein, Comment, *Copyrights, Criminal Sanctions and Economic Rents: Applying the Rent Seeking Model to the Criminal Law Formulation Process*, 87 J. CRIM. L. & CRIMINOLOGY 1470, 1478-79 (1997) (citing *Piracy and Counterfeiting Amendments Act of 1981: Hearing on S. 691 Before the Subcomm. on Criminal Law, of the S. Comm. on the Judiciary*, 97th Cong. 27 (1981) (joint statement of the MPAA and RIAA)).

maxima would run.⁴⁴ Lobbying is a logical act as a matter of self-interest on the part of the RIAA, MPAA, and various other organizations. Large copyright owners tend to be frequent victims of copyright infringement and most do not commit great amounts of infringement themselves. These owners have to spend significant sums to pursue their claims in court, often do not recover much money, and, as discussed, experience that civil sanctions may not prove as effective a deterrent as criminal penalties.⁴⁵ Trademark owners are also generally organized to favor harsher laws because they tend to be the victims rather than perpetrators of infringement.

There is some historical evidence to suggest that the United States and other governments have better insulated the patent system from lobbying.⁴⁶ That said, patent lobbies can be powerful, in part because most people are fairly indifferent as to how their Congressmen vote in the context of patent laws. What has kept sanctions in check regardless, however, is that large pharmaceutical companies have tended to favor large sanctions while information technology (IT) firms have gone against that trend.⁴⁷ Unlike big pharma, IT corporations are likely to find themselves accused of patent infringement rather than just being its victims.⁴⁸ Hence, they often do not wish to expose themselves to the risk of greater liability that harsher laws would cause.⁴⁹ Over the long term, changes in the relative power of the pharmaceutical versus IT industries could influence the level of patent enforcement and associated sanctions that we see.⁵⁰

Technological changes could also affect the calculus and Congress's willingness to pass criminal sanctions for patent infringement. One of

⁴⁴ *Id.* at 1480.

⁴⁵ *See id.* at 1507-08.

⁴⁶ *See* Craig Allen Nard & Andrew P. Morriss, *Constitutionalizing Patents: From Venice to Philadelphia*, 2 REV. L. & ECON. 223, 309 (2006).

⁴⁷ *See* Jay P. Kesan & Andres A. Gallo, *The Political Economy of the Patent System*, 87 N.C. L. REV. 1341, 1369-70, 1376 (2009).

⁴⁸ *Id.* at 1369-70.

⁴⁹ *Id.*

⁵⁰ Pharmaceutical companies may further be influenced by two other factors. One is substitution effects whereby illicit drugs might also be trademarked under a counterfeit name, which would draw the risk of criminal sanctions as it is. *See* Manta, *Puzzle of Criminal Sanctions*, *supra* note 1, at 499-500. Second, the makers of generic drugs often concede infringement altogether—while contesting the validity of the original patent—under the Hatch-Waxman Act because they have to show bioequivalence to the existing drugs. *See* Janet Freilich, *The Paradox of Legal Equivalents and Scientific Equivalence: Reconciling Patent Law's Doctrine of Equivalents with the FDA's Bioequivalence Requirement*, 66 SMU L. REV. 59, 76 (2013).

the most salient examples in this context is the advent of 3D printing,⁵¹ whose potential to increase opportunities for trademark violations I have noted previously.⁵² This technology has the potential to disrupt intellectual property as we know it because users can share computer-aided design (CAD) files digitally that would enable users from all over the world to infringe on patented inventions as long as they have the necessary raw materials and printer.⁵³ Should this start occurring on a large scale, patent owners would quite likely band together to encourage and lobby Congress to pass more punitive legislation, including quite possibly criminal sanctions.

III. BACKLASH TO HARSH SANCTIONS

Even when IP owners manage to get harsh laws passed that carry hefty civil damages or criminal sanctions with them, the possibility of later upheaval by the population remains. This is particularly true in the copyright context, in part because such a large percentage of American Internet users has engaged in some degree of infringement.⁵⁴ The public reaction was galvanized by the sky-high civil damages that copyright owners obtained against Boston University student Joel Tenenbaum and Minnesota mom Jammie Thomas-Rasset, who would each come to owe hundreds of thousands of dollars for illegal downloading.⁵⁵ While such high sanctions, according to scholarly work on the subject, appear to have some effect on deterring future illegal downloads, the effects are temporary and illicit behavior tends to resume eventually.⁵⁶

Many people had not necessarily paid much attention to intellectual property legislation in the pre-Internet era, but grassroots efforts took hold and ultimately defeated the bills for the Stop Online Piracy Act (SOPA) in the House of Representatives⁵⁷ and for the Preventing Real Online Threats

⁵¹ See Deven R. Desai & Gerard N. Magliocca, *Patents, Meet Napster: 3D Printing and the Digitization of Things*, 102 GEO. L.J. 1691 (2014); Dinusha Mendis et al., *The Future of Printcrime: Intellectual Property, Innovation Law, and 3D Printing*, 3D PRINTING AND BEYOND: INTELLECTUAL PROPERTY AND REGULATION 361 (Dinusha Mendis et al., eds. 2019); Lucas Osborn, *Regulating Three-Dimensional Printing: The Converging Worlds of Bits and Atoms*, 51 SAN DIEGO L. REV. 553 (2014).

⁵² See Irina D. Manta, *Intellectual Property and the Presumption of Innocence*, 56 WM & MARY L. REV. 1745, 1780 (2015).

⁵³ See Timothy R. Holbrook & Lucas Osborn, *Digital Patent Infringement in an Era of 3D Printing*, 48 U.C. DAVIS L. REV. 1319, 1372 (2015).

⁵⁴ See Annemarie Bridy, *Why Pirates Won't Behave: Regulating P2P in the Decade After Napster*, 40 RUTGERS L.J. 565, 604 (2009).

⁵⁵ Sony BMG Music Entm't v. Tenenbaum, 721 F. Supp. 2d 85, 87, 121 (D. Mass. 2010).

⁵⁶ See Bridy, *supra* note 54.

⁵⁷ H.R. 3261, 112th Cong. (2011).

to Economic Creativity and Theft of Intellectual Property Act (PIPA, or also PROTECT IP Act) in the Senate.⁵⁸ These bills would have enabled the possibility of court orders to thwart advertisers and banks from engaging in financial dealings with infringing websites, as well as of court orders that could make Internet Service Providers (ISPs) prevent access to websites or make search engines like Google and their brethren block links to infringing sites.⁵⁹ SOPA also came with criminal sanctions that included up to five years' imprisonment for anyone who illegally streamed copyrighted works.⁶⁰

Online petitions garnered millions of signatures, and websites like Wikipedia and Reddit rose up in protest.⁶¹ Others such as Google, Flickr, and Mozilla soon joined. Unlike in many previous contexts, large copyright owners did not unite in the effort to pass SOPA/PIPA, and Silicon Valley proved to be an opponent to the entertainment world for the first time.⁶² The combination of angered Internet users and pushback from several major corporations proved fatal to the bills even though those bills did not plan to change the actual substance of intellectual property law. The inclusion of harsh sanctions, however, set against the backdrop of aggressive enforcement of copyright law against the likes of Thomas-Rasset and Tenenbaum, contributed to the success of the protests. Indeed, studies show that individuals' intuitions about what constitutes ethical punishment of copyright infringement is directly connected to the level of sanctions imposed.⁶³ While many people support warnings and fines, few wish to see offenders disconnected from the Internet or put in jail.⁶⁴ Most of the people who expressed support for fines in one study would have limited them to below \$100, which is vastly below the statutory penalties

⁵⁸ S. 968, 112th Cong. (2011).

⁵⁹ See H.R. 3261 § 102(c)(2)(A)-(D); S. 968, § 3(d)(B)-(D).

⁶⁰ See H.R. 3261 § 201(a); see also 18 U.S.C. 2319(b)(1) (2006).

⁶¹ Larry Downes, *Who Really Stopped SOPA, and Why?*, FORBES (Jan. 25, 2012, 1:15 AM), <http://www.forbes.com/sites/larrydownes/2012/01/25/who-really-stopped-sopa-and-why>.

⁶² Yochai Benkler, *Seven Lessons from SOPA/PIPA/Megaupload and Four Proposals on Where We Go from Here*, TECHPRESIDENT (Jan. 25, 2012), <http://techpresident.com/news/21680/seven-lessons-sopapipamegaupload-and-four-proposals-where-we-go-here>; see also David Post, *What the Hell Happened? The Campaign Against (and Defeat of) SOPA*, VOLOKH CONSPIRACY (Sept. 17, 2013, 11:21 AM), <http://www.volokh.com/2013/09/17/happened-bring-sopas-downfall> (analyzing the factors that led to the downfall of SOPA).

⁶³ See Ben Depoorter et al., *Copyright Backlash*, 84 S. CAL. L. REV. 1251, 1278-83 (2011); Ben Depoorter & Sven Vanneste, *Norms and Enforcement: The Case Against Copyright Litigation*, 84 OR. L. REV. 1127, 1161 (2005).

⁶⁴ Joe Karaganis, Am. Assembly, *Copyright Infringement and Enforcement in the US*, 2 (Nov. 2011), <http://piracy.americanassembly.org/wp-content/uploads/2011/11/AA-Research-Note-Infringement-and-Enforcement-November-2011.pdf>, at 6.

for copyright infringement.⁶⁵ Answers in this area were also sensitive to the particular phrasing of survey questions, suggesting that the portrayal of copyright issues in the media might have an important effect on individuals' perceptions and likelihood of taking political action.⁶⁶

The media may have also contributed to people's existing biases toward developing empathy for identifiable perceived victims of harsh sanctions (as opposed to remote statistical victims). Thomas-Rasset, Tenenbaum, and others became the faces of a struggle against large corporate actors who, according to significant portions of the public, suffered questionable economic harms. The SOPA/PIPA bills increased individuals' fears of what could happen if they themselves got caught infringing, given how life-changing the pre-existing civil statutory sanctions on the books already turned out to be for some.

The most prominent actor in the context of harsh sanctions, however, was Aaron Swartz, an anti-SOPA activist that the DOJ later prosecuted for his own involvement with copyright infringement. Swartz rose to tech fame due to his roles in helping to form Reddit, the Creative Commons Project, and OpenLibrary.org.⁶⁷ In 2011, in an effort to give the public free access to subscription-only articles in the academic database JSTOR, he broke into computer networks at M.I.T. by leaving a laptop connected to the system in a closet and then downloading 4.8 million documents after signing in under a false account.⁶⁸ His plan to release the documents failed because he was caught by law enforcement.⁶⁹ Prosecutors charged him with a total of thirteen criminal counts,⁷⁰ and he faced up to thirty-five years in prison as well as other consequences such as a fine of up to \$1 million.⁷¹ His likely prison sentence would have likely been in the

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ Kevin Poulsen, *Aaron Swartz, Coder and Activist, Dead at 26*, WIRED (Jan. 12, 2013, 4:01 PM), <http://www.wired.com/threatlevel/2013/01/aaron-swartz>.

⁶⁸ Of the 4.8 million documents, 1.7 million normally required payment to be accessed. Charles Arthur, *Reddit Co-Founder Accused of Stealing 4.8m JSTOR Documents from MIT*, THE GUARDIAN (July 19, 2011, 1:56 PM), <http://www.guardian.co.uk/technology/2011/jul/19/reddit-founder-swartz-jstor-accused>.

⁶⁹ John Schwartz, *Internet Activist, a Creator of RSS, Is Dead at 26, Apparently a Suicide*, N.Y. TIMES (Jan. 12, 2013), <http://www.nytimes.com/2013/01/13/technology/aaron-swartz-internet-activist-dies-at-26.html>.

⁷⁰ Tim Cushing, *US Government Ups Felony Count in JSTOR/Aaron Swartz Case from Four to Thirteen*, TECHDIRT (Sept. 18, 2012, 7:24 AM), <https://www.techdirt.com/articles/20120917/17393320412/us-government-ups-felony-count-jstoraaron-swartz-case-four-to-thirteen.shtml>.

⁷¹ Alleged Hacker Charged with Stealing over Four Million Documents from MIT Network, U.S. Dep't Just. (July 19, 2011), <https://web.archive.org/web/20110724043722/http://www.justice.gov/>

neighborhood of seven years had a court convicted him,⁷² but we will never find out the exact figure because Aaron Swartz took his own life by hanging before the case proceeded.⁷³

There is scholarly disagreement on the firmness of the legal foundation of his prosecution.⁷⁴ As a more general matter, however, it is indeed likely that many people today have engaged in behavior that would theoretically fall under the purview of the criminal law.⁷⁵ Some policymakers and scholars have suggested changes to the laws that made Swartz's

usao/ma/news/2011/July/SwartzAaronPR.html. Some others place that figure as high as fifty or more years in prison and \$4 million in fines. Cushing, *supra* note 70.

⁷² Orin Kerr, *The Criminal Charges Against Aaron Swartz (Part 2: Prosecutorial Discretion)*, VOLOKH CONSPIRACY (Jan. 16, 2013, 11:34 PM) [hereinafter Kerr, Prosecutorial Discretion], <http://www.volokh.com/2013/01/16/the-criminal-charges-against-aaron-swartz-part-2-prosecutorial-discretion>. It is worth noting that for some types of defendants, the "collateral effects [of criminal law] are quite steep, attach very early, and are often irrevocable." Miriam H. Baer, *Linkage and the Deterrence of Corporate Fraud*, 94 VA. L. REV. 1295, 1312 (2008).

⁷³ Family and Partner of Aaron Swartz, Official Statement, Soup (Jan. 12, 2013), <http://soupsoup.tumblr.com/post/40373383323/official-statement-from-the-family-and-partner-of-aaron-swartz> Was 'Killed by the Government,' Father Tells Mourners, L.A. TIMES (Jan. 15, 2013), <https://www.latimes.com/nation/la-xpm-2013-jan-15-la-na-nn-aaron-swartz-funeral-eulogy-father-20130115-story.html>. The precise reasons for any suicide are certainly complex, and Swartz had preexisting struggles with depression. See Laurie Segall, *Activist Aaron Swartz's Suicide Sparks Talk About Depression*, CNNMONEY (Jan. 14, 2013, 7:41 PM), <http://money.cnn.com/2013/01/14/technology/swartz-suicide-depression/index.html>.

⁷⁴ See Max Kennerly, *Examining the Outrageous Aaron Swartz Indictment for Computer Fraud*, LITIG. & TRIAL BLOG (July 19, 2011), <http://www.litigationandtrial.com/2011/07/articles/series/special-comment/aaron-swartz-computer-fraud-indictment> (arguing that the charges against Aaron Swartz rest on an unsteady legal basis); Mike Masnick, *The Lack of a Legal or Moral Basis for the Aaron Swartz Indictment Is Quite Troubling*, TECHDIRT (July 20, 2011, 12:06 PM), <http://www.techdirt.com/articles/20110720/00581915173/lack-legal-moral-basis-aaron-swartz-indictment-is-quite-troubling.shtml> (responding to Kennerly's analysis regarding the charges against Aaron Swartz). But see Orin Kerr, *The Criminal Charges Against Aaron Swartz (Part 1: The Law)*, VOLOKH CONSPIRACY (Jan. 14, 2013, 2:50 AM), <http://www.volokh.com/2013/01/14/aaron-swartz-charges>. For a partial critique of Professor Kerr's take, see James Boyle, *The Prosecution of Aaron Swartz: A Reply to Orin Kerr*, HUFFINGTON POST (Jan. 18, 2013, 10:11 PM), http://www.huffingtonpost.com/james-boyle/prosecution-aaron-swartz_b_2508242.html.

⁷⁵ See, e.g., Tim Wu, *How the Legal System Failed Aaron Swartz—and Us*, NEW YORKER (Jan. 14, 2013), <http://www.newyorker.com/online/blogs/newsdesk/2013/01/everyone-interesting-is-a-felon.html>.

prosecution possible,⁷⁶ and there were bipartisan criticisms⁷⁷ and public demonstrations after his death.⁷⁸ Many, including a number of Congressmen, asked whether Swartz would have been prosecuted as harshly but for his opposition efforts to SOPA,⁷⁹ which is a disconcerting possibility for those concerned with free expression in our society. The DOJ came under suspicion that it sought to make an example of Swartz because he was a famous figure that angered the government when criticizing SOPA and attempting to distribute documents to the public that usually require individual payments through the PACER system.⁸⁰

The criminal law system relies on the fact that 95% of charged individuals accept plea bargains.⁸¹ Having large sanctions on the books

⁷⁶ Kerr, Prosecutorial Discretion, *supra* note 72; see also Ian Bassin, *In Remembering Aaron Swartz, Let's Not Forget Jamel Dossie*, THE MORUM (Jan. 18, 2013, 12:01 PM), <http://themorum.blogspot.com/2013/01/in-remembering-aaron-swartz-lets-not.html> (“Often it takes a rare injustice perpetrated against a privileged young person for our society to recognize the common injustices we visit every day upon less-privileged minorities.”); James Grimmelmann, Comment to *My Career as a Bulk Downloader*, LABORATORIUM (Jan. 16, 2013, 9:48 PM), http://laboratorium.net/archive/2013/01/16/my_career_as_a_bulk_downloader#comment-70137 (“The treatment he received—using an insanely disproportionate sentence as a threat to pressure him into accepting a sentence that is ‘only’ seriously disproportionate—is a standard part of the prosecutorial toolkit.”). For proposals to limit prosecutorial discretion in the aftermath of Aaron Swartz’s and others’ legal cases, see Glenn Harlan Reynolds, *Ham Sandwich Nation: Due Process When Everything Is a Crime*, 113 COLUM. L. REV. SIDEBAR 102 (2013).

⁷⁷ Ryan J. Reilly et al., *Darrell Issa Probing Prosecution of Aaron Swartz, Internet Pioneer Who Killed Himself*, HUFFINGTON POST (Jan. 15, 2013, 6:30 PM), http://www.huffingtonpost.com/2013/01/15/darrell-issa-aaron-swartz-n_2481450.html.

⁷⁸ Clare Trapasso & Daniel Beekman, *Crowd Mourns Reddit Founder Aaron Swartz*, N.Y. DAILY NEWS (Jan. 20, 2013, 1:01 AM), <http://www.nydailynews.com/new-york/friends-family-mourn-reddit-founder-article-1.1243444>.

⁷⁹ Letter from Darrell E. Issa & Elijah E. Cummings, Comm. on Oversight & Gov’t Reform, to Eric H. Holder, Attorney Gen., Dep’t of Justice (Jan. 28, 2013), <https://oversight.house.gov/sites/democrats.oversight.house.gov/files/migrated/2013-01-28%20DEI%20EEC%20to%20Holder%20re%20Aaron%20Schwartz%20prosecution.pdf>.

⁸⁰ See, e.g., Tim Carmody, *Memory to Myth: Tracing Aaron Swartz Through the 21st Century*, THE VERGE (Jan. 22, 2013, 12:30 PM), <http://www.theverge.com/2013/1/22/3898584/aaron-swartz-profile-memory-to-myth> (describing Aaron Swartz’s life, accomplishments, and the motivations behind his actions).

⁸¹ Lincoln Caplan, *Aaron Swartz and Prosecutorial Discretion*, N.Y. TIMES (Jan. 18, 2013, 10:06 AM), <http://takingnote.blogs.nytimes.com/2013/01/18/aaron-swartz-and-prosecutorial-discretion>; see also Erik Eckholm, *Prosecutors Draw Fire for Sentences Called Harsh*, N.Y. TIMES (Dec. 5, 2013), <http://www.nytimes.com/2013/12/06/us/federal-prosecutors-assailed-in-outcry-over-sentencing.html> (discussing the criticism that “federal prosecutors are strong-arming defendants into pleading guilty and overpunishing those who do not—undermining the fairness and credibility of the justice system”). Given the power of prosecutors, another concern is the possibility that much prosecutorial misconduct and failure to turn over to the defense exculpatory evidence goes undetected. See Editorial, *Rampant*

ensures that this number remains high, but the question is at what cost.⁸² Swartz was one of the few that did not want to “take the deal”—while he worried about the possibility of prison, he was most concerned about being branded a felon.⁸³ It is questionable whether the drafters of the criminal laws that may have been used ultimately to convict Swartz envisioned defendants like him. His case, and those of people like Thomas-Rasset and Tenenbaum in the civil setting, shows that bills involving new criminal or civil sanctions against offenders in the quickly developing world of information reproduction and dissemination deserve special attention.

CONCLUSION

Patents and copyrights are both protected by the same constitutional clause, and both regimes seek to incentivize the creation of more intangible goods from which society will benefit. They both struggle with defining how much an individual must add to the goods that preceded it before protection kicks in, and with how best to punish legal violations. Copyright law, like trademark law but unlike patent law, has chosen to include the possibility of criminal sanctions. As this symposium piece describes, this has come about for both utilitarian reasons and due to the nature of the American public choice landscape. Copyright owners’ ability to push for increased sanctions and enforcement has, however, hit some roadblocks in recent times. Similarly to how tech companies have put up an important obstacle to the expansion of patent infringement sanctions, they—together with popular grassroots movements—have now drawn lines in the copyright context. The future will show whether these developments will eventually lead to greater convergence between copyright enforcement and patent enforcement.

Prosecutorial Misconduct, N.Y. TIMES (Jan. 4, 2014), <http://www.nytimes.com/2014/01/05/opinion/sunday/rampant-prosecutorial-misconduct.html>.

⁸² *Id.*

⁸³ David Amsden, *The Brilliant Life and Tragic Death of Aaron Swartz*, ROLLING STONE (Feb. 15, 2013), <http://www.rollingstone.com/culture/news/the-brilliant-life-and-tragic-death-of-aaron-swartz-20130215>; see also Lawrence Lessig, *Prosecutor as Bully*, HUFFINGTON POST (Jan. 13, 2013, 10:01 AM), http://www.huffingtonpost.com/lawrence-lessig/aaron-swartz-suicide_b_2467079.html (questioning the government's need to press for felony charges against Swartz). Swartz also drew parallels between his experience with the prosecution and the tale that Franz Kafka describes in the novel “The Trial”.

ARTICLE

ABSTRACTION, FILTRATION, AND COMPARISON IN PATENT LAW

MICHAEL RISCH[†]

This essay explores how copyright's doctrine of abstraction, filtration, and comparison is being used in patent law, and how that use could be improved. This test, which finds its roots in the 1930's but wasn't fully developed until the 1990's, is one that defines scope for determining infringement. The copyrighted work is abstracted into parts, from ideas at the highest level to literal expression at the lowest. Then, unprotected elements are filtered out. Finally what remains of the original work is compared to the accused work to determine if the copying was illicit.

This sounds far removed from patent law, but there is a kinship, though perhaps one that is not so historic and a bit hidden. The essence of the test is determining protectable subject matter. These same needs permeate patent law as well. This essay explores how the test is implicitly used and should be explicitly used.

With design patents, the test might apply as it does in copyright, with functional elements being filtered out during infringement. Current precedent allows for this filtering, but not clearly or consistently. With utility patents, the abstraction, filtration, and comparison happen earlier, during the test for patentable subject matter. Here, the comparison is with what is conventional or well known. The essay concludes by discussing why the application is different for design and utility patents.

[†] Vice Dean & Professor of Law, Villanova University Charles Widger School of Law. I thank participants of the 2018 Penn Law Symposium on the Historic Kinship of Copyright and Patent Law. Priscilla Torres provided valuable research assistance.

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INTRODUCTION

The notion of abstraction and filtration has been a core part of the copyright infringement inquiry at least since Judge Hand issued his opinion in *Nichols v. Universal Pictures*.¹ First, the plaintiff's work is abstracted into its various components, from the most literal (say, the words of a novel) to the most abstract (the main idea of the novel). Then, those abstracted elements are put through a filter, whereby unprotected material is eliminated from consideration. The idea of a novel is not usually protectable, but the specific expression of the story would be. Only then are the remaining bits of copyright-protected expression compared with the allegedly infringing work.

Patent law lacks an obvious analogue. The "all elements rule" is straightforward: every element of the patentee's claim is compared against the allegedly infringing product or method. If every element is met, there is infringement. If any element is missing, there is no infringement. We do not eliminate the unpatentable, nor do we compare only the point of novelty.² This particular "historic kinship"³ between copyright and patent law seems to be estranged.

This essay seeks to heal the family rift in an unconventional way. It suggests that the courts are implicitly using abstraction, filtration, and comparison in both design patent and utility patent subject matter cases, and that they should do so more explicitly and carefully.

Patentable subject matter, whether design or utility, is a natural fit for abstraction, filtration, and comparison. In copyright, after all, the filtration step is intended to remove those elements that are not copyrightable. So too with patent law. For utility patents, courts are attempting to filter unprotectable abstract ideas and natural phenomena

¹ *Nichols v. Universal Pictures Corp.*, 45 F.2d 119 (2d Cir. 1930).

² Mark A. Lemley, *Point of Novelty*, 105 NW. U. L. REV. 1253 (2011).

³ *Sony Corp. of America v. Universal City Studios, Inc.*, 464 U.S. 417, 439 (1983) ("The closest analogy is provided by the patent law cases to which it is appropriate to refer because of the historic kinship between patent law and copyright law.").

from protected inventions. For design patents, courts should filter functional elements from protected ornamental designs. The kinship of copyright and patent thus lends itself to similar filtration analysis.

This essay proceeds in three parts. Part I describes the history and application of abstraction, filtration and comparison in copyright. It turns out that this “historic” practice is not all that historic. Furthermore, the rule is not uniformly adopted (or adopted at all) in all the circuits, though academics have come to view it as essential to proper copyright infringement analysis.⁴

Part II examines utility patentable subject matter jurisprudence since *Mayo v. Prometheus*⁵ set forth a new two-step test to determine eligibility. First requiring a determination if the claim is “directed”⁶ to an abstract idea or natural phenomenon and then examining whether something unconventional was added to it.⁷ This test is an exercise in abstraction and filtration. The first step necessarily requires selection of the level of abstraction to view the claim, from very general to very specific. The second step then filters out whatever the court deems is unprotectable and compares the remaining elements against some notion of conventionality.

Part III introduces design patent subject matter and the problem of functional designs. Where a design patent claim is both ornamental and functional, courts have had difficulty determining the proper scope of analysis for allegedly infringing devices that look similar only because they perform a similar function. This essay suggests that courts should more explicitly filter out functional elements before determining design patent infringement.

The essay concludes by briefly discussing how and why abstraction and filtration differs between design patents and utility patents. The reason has little to do with the rationale for the kinship and everything to do with administrability. Quite simply, given how patentable subject matter and infringement are tested in the different regimes, abstraction, filtration, and comparison can only work at one particular point in the process.

⁴ See generally, Mark A. Lemley, *Convergence in the Law of Software Copyright?*, 10 HIGH TECH. L.J. 1 (1995) (discussing the “filtration bandwagon” and widespread adoption of the test).

⁵ *Mayo Collaborative v. Prometheus Labs.*, 566 U.S. 66 (2012).

⁶ *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014) (explaining the *Mayo* test and applying it to abstract ideas).

⁷ *Id.* at 2357 (“At *Mayo* step two, we must examine the elements of the claim to determine whether it contains an ‘inventive concept’ sufficient to ‘transform’ the claimed abstract idea into a patent-eligible application.”).

I. ABSTRACTION, FILTRATION, AND COMPARISON

When two copyrighted works share some similarities but many differences, how might infringement be determined? Assume for a moment that there is copying: that the accused saw the original work and intended to copy from it.⁸ How similar is too similar? What if the similarities are non-literal – that is, they are in plot but not words or just a paraphrase?

Courts struggled with this question,⁹ but eventually settled on a formulation devised by Judge Learned Hand in the *Nichols* case:

Upon any work, and especially upon a play, a great number of patterns of increasing generality will fit equally well, as more and more of the incident is left out. The last may perhaps be no more than the most general statement of what the play is about, and at times might consist only of its title; but there is a point in this series of abstractions where they are no longer protected, since otherwise the playwright could prevent the use of his “ideas,” to which, apart from their expression, his property is never extended.¹⁰

Of course, Judge Hand did not call it abstraction, filtration, and comparison, and as discussed below, it was not until the 1990s that this terminology took hold. Indeed, the test was known primarily as the *Nichols* abstractions test.¹¹ However, just a few years prior, the Second Circuit had introduced the notion of “dissection.” In *Dymow v. Bolton*, the court held that there could be no infringement where ordinary observation showed no similarity. *Dymow*’s use of dissection bears a strong resemblance to our modern understanding of filtration, finding that the only similarities between two plots in that case were

⁸ In copyright law, this is a requirement, though it is often skipped if there is no infringement under the abstraction filtration test. Skipping this requirement is convenient here, because patent law has no such copying requirement.

⁹ *Nichols v. Universal Pictures Corp.*, 45 F.2d 119, 121 (2d Cir. 1930) (“[A]s soon as literal appropriation ceases to be the test, the whole matter is necessarily at large, so that... the decisions cannot help much in a new case.”).

¹⁰ *Id.*

¹¹ See, e.g. *Computer Associates Int’l, Inc. v. Altai, Inc.*, 775 F. Supp. 544, 560 (S.D.N.Y. 1991) (“Professor Nimmer suggests that in lieu of the Whelan test of ‘structure, sequence, and organization’, a better approach to determining similarities in computer programs can be found in the ‘abstractions test’ first enunciated by Learned Hand . . .”). Indeed, Nimmer still calls this the abstractions test, and only briefly mentions filtration with respect to computer software. 4 Nimmer on Copyright § 13.03[A][1][a] (2018).

unprotectable ideas.¹² *Nichols* cites *Dymow*, but never mentions dissection while comparing elements of similarity between the works.

About fifteen years later, the Second Circuit expanded (and, frankly redefined) dissection in more music cases. The opinion in the first case, *Arnstein v. Broadcast Music*, required a dissection, specifically a technical analysis that involved breaking the work up into little pieces (rather than comparing the whole) to show that it was copied by the defendant.¹³ Thus, the court kept the first part of *Dymow*'s formulation of dissection and ignored the second. In *Arnstein v. Porter*, the second and more famous opinion, the court made clear that dissection was only proper in the first stage of infringement analysis: determining whether there was copying in the first place.¹⁴ Once copying has been established, the finder of fact then compares the whole work, with no dissection.¹⁵

Arnstein v. Porter's notion of dissection is at odds with the *Nichols* view of abstraction. Judge Hand assumed copying in *Nichols*.¹⁶ Under *Porter*, then, there should have been no dissection. This means that *Nichols* was either a) applying the *Dymow* version of dissection, or b) applying some test other than dissection. One might think that *Arnstein v. Porter* would have disavowed the *Nichols* approach, but instead *Nichols* was cited approvingly.

This left the legacy of *Nichols* in a state of flux. While it was followed, it was not universally loved. Judge Easterbrook noted: "Sometimes called the 'abstractions test', Hand's insight is not a 'test' at all. It is a clever way to pose the difficulties that require courts to avoid either extreme of the continuum of generality. It does little to help resolve a given case...."¹⁷ Of course, Hand was not blind to this difficulty; after laying out his test, he noted: "Nobody has ever been able to fix that boundary, and nobody ever can."¹⁸

¹² *Dymow v. Bolton*, 11 F.2d 690, 692 (2d Cir. 1926) ("It requires dissection rather than observation to discern any resemblance here. If there was copying [which we do not believe], it was permissible, because this mere subsection of a plot was not susceptible of copyright.").

¹³ *Arnstein v. Broadcast Music Inc.*, 137 F.2d 410, 412 (2d Cir. 1943) ("When we are confronted with the fact that similarities between these songs cannot be readily detected by the lay ear, nor by the effect of the composition as a whole, but can only be discovered by what Judge Hough aptly called 'dissection,' we can find no infringement."), citing *Dymow*.

¹⁴ *Arnstein v. Porter*, 154 F.2d 464, 468 (2d Cir. 1946).

¹⁵ *Id.*

¹⁶ *Nichols v. Universal Pictures Corp.*, 45 F.2d 119, 120 (2d Cir. 1930) ("[W]e may assume, arguendo, that in some details the defendant used the plaintiff's play . . .").

¹⁷ *Nash v. CBS, Inc.*, 899 F.2d 1537, 1540 (7th Cir. 1990).

¹⁸ *Nichols*, 45 F.2d at 121. Whenever I teach *Nichols*, I show this quote and say to my students, "So good luck with that."

The Ninth Circuit made its own attempt to clean up the doctrine. It first introduced the term analytic dissection in the landmark case *Sid & Marty Krofft Television Prods., Inc. v. McDonald's Corp.*¹⁹ As discussed above, dissection had long been used in copyright, but it is unclear from where the Ninth Circuit developed the term “analytic dissection.” This was the first reported case to use the term, but the court announces that analytic dissection is proper under its new rule with no citation, explanation, or other background, as if anyone reading will understand what that term means.

More importantly, the 1977 opinion uses analytic dissection not as a threshold test, like *Porter*, but in a two-part, concurrent analysis similar to *Dymow*. So-called “extrinsic” similarity is an objective comparison of the copyrighted and accused works that allows for “analytic dissection” by experts to determine which elements were not protectable.²⁰ “Intrinsic” similarity is a subjective test by the finder of fact, similar to *Arnstein v. Porter*’s second step.²¹ The *Krofft* court cites the *Porter* case, and essentially follows it, finding that the defendants may not avoid infringement by extracting out ideas and other unprotected aspects before comparison.

But this was not the end. Other circuits found *Krofft* and *Porter* too restrictive. In 1982, *Atari, Inc. v. North American Philips Consumer Electronics, Corp.*, the Seventh Circuit found that filtration-style analytic dissection was proper to ensure that only protected expression was being compared.²² *Krofft* was eventually modified in 1987, so that similarities could be dissected in the intrinsic test, so that only protected expression was compared.²³ This was reinforced in 1988, where the court applied analytic dissection of similarities to exclude unprotected elements.²⁴ And in 1990, the Ninth Circuit again allowed analytic dissection, but reverted to making it part of the extrinsic test.²⁵ This is

¹⁹ 562 F.2d 1157 (9th Cir. 1977).

²⁰ *Shaw v. Lindheim*, 919 F.2d 1353, 1359 (9th Cir. 1990); *Sid & Marty Krofft Television v. McDonald's Corp.*, 562 F.2d at 1164.

²¹ *Sid & Marty Krofft Television v. McDonald's Corp.*, 562 F.2d at 1164.

²² *Atari, Inc. v. N. Am. Philips Consumer Elecs., Corp.*, 672 F.2d 607, 614-15 (7th Cir. 1982).

²³ *Aliotti v. R. Dakin & Co.*, 831 F.2d 898, 901 (9th Cir. 1987) (“[N]o substantial similarity may be found under the intrinsic test where analytic dissection demonstrates that all similarities in expression arise from the use of common ideas.”).

²⁴ *Data East USA, Inc. v. Epyx, Inc.*, 862 F.2d 204, 208-9 (9th Cir. 1988).

²⁵ *Brown Bag Software v. Symantec Corp.*, 960 F.2d 1465, 1475-76 (9th Cir. 1992) (“Brown Bag’s argument ignores the evolution of the ‘extrinsic’ component of the *Krofft* analysis. Properly understood, the district court’s analysis was not a misapplication of the ‘intrinsic test,’ but a proper application of the revised ‘extrinsic test.’ Under the reformulated extrinsic test, we

more similar to filtration, but it is different from *Porter* and a complete reimagination of *Krofft*.

Thus, it took some sixty years for the courts to explicitly note that some form of abstraction, filtration, and comparison should take place when comparing works.²⁶ It is unclear how the *Computer Associates* Court was swayed to adopt the term “filtration” for the second step. It did not appear in any of the briefing. The court appears to have been persuaded by David Nimmer, who had suggested using a “successive filtering” in his treatise and earlier in a law review article.²⁷ In any event, *Computer Associates v. Altai* still governs how we apply the abstraction-filtration-comparison test today.

Despite analytical dissection’s tortured past in other circuits, the notion of filtration was new in the Second Circuit. Given that *Porter* was the law of the circuit, it is not surprising that *Computer Associates* instead cited to Ninth Circuit case law²⁸ to justify that “analytic dissection” was proper during the comparison stage. In doing so, it ruled that computer programs are outside the normal rules of *Arnstein v. Porter*.²⁹ As a result, the rule has been explicitly applied primarily to computer programs, though there are some exceptions.³⁰ Nonetheless, *Nichols* remains good law and continues to be cited, so it is unclear whether, in complex non-software works, a separate test will always apply to other types of expressive works.

Though there are slight differences across circuits, the basic abstraction, filtration, and comparison procedure is the same. First, the elements of the work (the court focused on computer software but noted that it could apply to other works) should be parsed into their various levels of abstraction, from the highest level (the idea) to the lowest (the specific expression). Second, those elements are put through the sieve of copyrightability. Anything unprotected is removed. In software, the court notes that this may include elements dictated by efficiency or external factors, but more generally ideas, scenes à faire, and pure fact

mean to perpetuate ‘analytic dissection’ as a tool for comparing not only ideas but also expression.”).

²⁶ *Computer Assocs. Int’l, Inc. v. Altai, Inc.*, No. 762, 1992 WL 139364, at *12 (2d Cir. June 22, 1992), opinion withdrawn and superseded on reh’g, 982 F.2d 693 (2d Cir. 1992).

²⁷ 4 Nimmer on Copyright § 13.03[F] (2018); David Nimmer et al., *A Structured Approach to Analyzing the Substantial Similarity of Computer Software in Copyright Infringement Cases*, 20 ARIZ. ST. L.J. 625 (1988).

²⁸ *Computer Assocs. Int’l, Inc. v. Altai, Inc.*, 982 F.2d 693, 707 (2d Cir. 1992), citing *Brown Bag Software v. Symantec Corp.*, 960 F.2d 1465, 1475 (9th Cir. 1990).

²⁹ *Id.* at 713.

³⁰ *King Zak Indus., Inc. v. Toys 4 U USA Corp.*, No. 16-CV-9676 (CS), 2017 WL 6210856, at *5 (S.D.N.Y. Dec. 8, 2017) (discussing application of test).

might be filtered. The filtration process leaves behind the “golden nuggets”³¹ of copyrightable expression. The finder of fact then compares the remaining expression to the accused work to determine infringement.

When applied this way, the test solved some of Easterbrook’s concerns in *Nash*. Abstraction alone is no test, but the decomposition of the work allows the uncopyrightable items to be poked out before two works are compared. To be sure, this does not make the comparison step any easier; it is still difficult to determine how much copying is too much. But using the abstraction-filtration method, at least the finder of fact is comparing copying of protected expression rather than unprotected ideas.

It did not take long for the new test to take hold. A district court in Colorado cited (and disregarded as a minority view) the initial, withdrawn opinion in *Computer Associates* a mere two days after it issued.³² The Tenth Circuit reversed and followed *Computer Associates*.³³ Other circuits, though not all, followed suit.³⁴

Recounting the muddled history of abstraction, filtration, and comparison is important for several reasons. First, the historic kinship of copyright and patent law described in *Sony* may not be terribly historic.³⁵ Abstraction and filtration is, at most, less than one hundred years old. Second, what kinship there is may be unclear in part because there is no clear body of law that ties the two together beyond the Constitution. Copyright courts and scholars cannot agree about when or how to apply abstraction, filtration, and comparison, so garnering agreement in patent law may be difficult.

All is not lost, however. The rise of abstraction and filtration came with the growth of expressive works imbued with functional, unprotectible aspects: computer software. Whether that development started in 1930 or in 1990, the result is the same: courts have special concerns about combined subject matter. And, as further explored below, these issues also permeate patent law. While there have always been business methods patents,³⁶ for example, there is no denying the

³¹ *Computer Associates Int’l, Inc. v. Altai, Inc.*, 982 F.2d 693, 710 (2d Cir. 1992).

³² *Gates Rubber Co. v. Bando American, Inc.*, 798 F. Supp. 1499, 1524 (D. Colo. 1992).

³³ *Gates Rubber Co. v. Bando Chemical Indus., Ltd.*, 9 F.3d 823, 834 (10th Cir. 1993).

³⁴ *Bateman v. Mnemonics, Inc.*, 79 F.3d 1532 (11th Cir. 1996); *Engineering Dynamics, Inc. v. Structural Software, Inc.*, 26 F.3d 1335 (5th Cir. 1994).

³⁵ See also, Peter Menell, *The Use and Misuse of Intellectual Property Kinship* at the J.L. & INNOVATION Symposium at the University of Pennsylvania (April 19, 2018).

³⁶ Michael Risch, *America’s First Patents*, 64 FLA. L. REV. 1279 (2012).

growth of software patents in the last thirty years,³⁷ and these patents are more likely to be abstract. Based on these parallels, the “historic” kinship between copyright and patent has something to offer. It is with this background that we explore the patent law.

II. UTILITY PATENT SUBJECT MATTER

Unlike design patents, utility patents protect useful inventions.³⁸ But they do not protect all inventions. Products of nature, natural phenomena, and abstract ideas may not be protected.³⁹ When the Court announced these limitations, there were no cases that directly tackled these subject matters. Instead, patentable subject matter was a series of cases that rejected patent claims using different language and focusing on other problems of patentability.⁴⁰ It was not until 2012, in *Mayo v. Prometheus*, that the Court settled on some sort of regularized test of patentable subject matter with respect to natural phenomena.⁴¹ Two years later, the Court stated the test more succinctly while applying it to abstract ideas:⁴²

First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts. If so, we then ask, what else is there in the claims before us? To answer that question, we consider the elements of each claim both individually and as an ordered combination to determine whether the additional elements transform the nature of the claim into a patent-eligible application. We have described step two of this analysis as a search for an inventive concept — *i.e.*, an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept itself.⁴³

This test was not entirely new, despite the mish-mosh of cases to come before. Instead, the notion of “inventive concept” had been

³⁷ James Bessen, *A Generation of Software Patents*, 18 B.U. J. SCI. & TECH. L. 241 (2012).

³⁸ 35 U.S.C. §101.

³⁹ *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980).

⁴⁰ See generally, Michael Risch, *Everything is Patentable*, 75 TENN. L. REV. 591 (2008).

⁴¹ *Mayo Collaborative v. Prometheus Labs.*, 566 U.S. 66 (2012).

⁴² *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014). The test does not seem to apply to products of nature, and this essay does not address them. *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107 (2013) (not citing *Prometheus* in determining eligibility); Dan Burk, *The Curious Incident of the Supreme Court in Myriad Genetics*, 90 NOTRE DAME L. REV. 505, 541 (2014).

⁴³ *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. at 2355.

introduced in a 1948 case⁴⁴ and then renamed “post-solution activity” in a later case.⁴⁵ But it was an attempt to solve a longstanding problem in patentable subject matter jurisprudence.

That problem is simple to identify, but extremely difficult to solve: every invention, at bottom, is in some sense a natural phenomenon or abstract idea, and so separating unpatentable ideas and phenomena from patentable ones requires judgment calls. The two-step test attempts to solve this problem by identifying whether the elements claimed in addition to the unpatentable subject matter are enough to warrant eligibility for protection.

Regardless of the level of abstraction chosen, courts are necessarily performing filtration and comparison as they go about applying the second *Prometheus-Alice* step.⁴⁶ Once the essence of the claim has been determined via abstraction, it is essentially filtered out, no longer to be considered part of the patentable subject matter. The reasons for this filtering are not so clear cut as in copyright. Some cases call it preemption.⁴⁷ Some assume that natural phenomena or abstract ideas are part of the prior art.⁴⁸ Others just say such material is unpatentable as a matter of history.⁴⁹ Regardless, the parallels with copyright are straightforward: that which is unpatentable should be excluded.

The comparison step is not so straightforward, though it is parallel. Once the unpatentable has been filtered, the remaining claim elements are compared with “conventional” solutions. If the elements are new and different from the conventional, then the subject matter is eligible. If, however, little remains but the conventional, then the subject matter is not patent eligible.

Breaking the *Prometheus-Alice* test into its copyright-like parts illustrates the difficulties associated with the method. Beginning with the level of abstraction, as noted above, the choice can have an outsized effect on what is filtered. As a first matter, it is unclear why there must be a single level of abstraction. The genius of the copyright test is that multiple levels of abstraction are separated, and uncopyrightable

⁴⁴ Funk Bros. Seed Co. v. Kalo Co., 333 U.S. 127 (1948).

⁴⁵ Parker v. Flook, 437 U.S. 584 (1978). See Jeffrey A. Lefstin, *Inventive Application: A History*, 67 FLA. L. REV. 565 (2015) for a thorough historical treatment of this test.

⁴⁶ Enfish, LLC v. Microsoft Corp., 822 F.3d 1327, 1335 (Fed. Cir. 2016) (“Rather, the ‘directed to’ inquiry applies a stage-one filter to claims, considered in light of the specification, based on whether ‘their character as a whole is directed to excluded subject matter.’”); *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 720 (Fed. Cir. 2014) (discussing “coarse filter” approach to patentable subject matter).

⁴⁷ *Gottschalk v. Benson*, 409 U.S. 63, 72 (1972).

⁴⁸ *Parker v. Flook*, 437 U.S. at 591.

⁴⁹ *Bilski v. Kappos*, 561 U.S. 593, 625 (2010).

elements are filtered at each level so that the remaining pieces — from abstract to literal — can be compared and analyzed. By forcing patents into a single level of abstraction, the error rate is much higher, because valuable information about the patent claim is removed at the abstraction stage rather than the filtration stage.

Thus, if the level of abstraction is set too broadly, then too much of the invention is filtered out. Consider, for example, Davenport's electric motor: "Applying magnetic and electro-magnetic power as a moving principle for machinery in the manner above described, or in any other substantially the same in principle."⁵⁰ At the lowest level of abstraction it is a motor, which is decidedly not abstract. Little is filtered, and the motor is a big inventive leap from the conventional. At the highest level of abstraction, it is the natural phenomenon that electricity running through a coil wrapped around a magnet will cause the magnet to spin. Once this is filtered out, little remains but actually running current through a wire, which was conventional, even in 1837.⁵¹

In this sense, the level of abstraction is orthogonal to that of copyright. In copyright, abstraction at a high level leaves more to be compared, but that comparison is specific expression. With patents, abstraction at a high level leaves less to be compared, because the idea often subsumes the specific elements of the patent claim. In the electric motor, for example, abstracting to the level of wire coiled around a magnet eliminates the specifics: wire and a magnet. To the extent that the wire and magnet were new, non-obvious, unconventional, difficult to implement, or otherwise inventive, they are lost in the abstraction of the general idea.

The difficulties of abstraction in this framework have been well studied even before *Prometheus*,⁵² and solutions to it have been proposed.⁵³ Under the current two-step test, selection of the proper level of abstraction can mean the difference between eligibility or not.

⁵⁰ U.S. Patent No. 132 (issued Feb. 25, 1837).

⁵¹ RICHARD PHILLIPS, A MILLION OF FACTS, AND CORRECT DATA, IN THE ENTIRE CIRCLE OF THE SCIENCES, AND ON ALL SUBJECTS OF SPECULATION AND PRACTICE: ADAPTED TO THE CLOSET AND THE ACTIVE WORLD 432–34 (1833) (describing Faraday's and others' experiments with electricity and magnetism), available at https://books.google.com/books?id=524y_35YY1gC.

⁵² Tun-Jen Chiang, *The Levels of Abstraction Problem in Patent Law*, 105 NW. U. L. REV. 1097 (2011); Mark R. Carter, *Copyright's Hand Abstractions Test for Patent's Section 101 Subject-Matter Eligibility*, 30 SANTA CLARA HIGH TECH. L. J. 469 (2014); Michael Risch, *Nothing is Patentable*, 67 FL. L. REV. FORUM 45 (2015).

⁵³ Risch, *supra* note 40; Mark A. Lemley, Michael Risch, Ted Sichelman & R. Polk Wagner, *Life After Bilski*, 63 STAN. L. REV. 1315 (2011).

Depending on any given court's selected level, some of our most famous inventions might suddenly become abstract ideas.⁵⁴

Even if the difficulties of abstraction are solved, filtration also presents challenges. Filtration asks the court to consider patent claims at the point of novelty, rather than consider them as a whole. From the time since *Diamond v. Diehr*,⁵⁵ courts have been instructed to consider patent claims as a whole. Even the Court in *Alice* repeats the mantra that the entire claim should be considered.⁵⁶ Indeed the Court then went on to characterize a very particular process for handling escrow as the abstract idea of "intermediated settlement."⁵⁷ From there, the Court ruled that all that remained after filtering would "merely require generic computer implementation."⁵⁸ In other words, though the Court gave lip service to considering the whole claim, it did so by finding the gist of the patent.⁵⁹

The practical result is that courts engage in little filtering. They typically determine the gist of the claim, which is dispositive. Cases are won and lost in the high stakes abstraction phase, as cases that find the claim to be abstract/natural and *then* add something unconventional are exceedingly rare.

If *Prometheus-Alice* two-step test is to continue, courts should better calibrate their abstraction and filtration steps by abandoning the fiction that they are examining claims as a whole. Rather than simply identifying the gist of the claim, during step one the court should instead focus on the ideas or phenomena at play. This would be true in any claim. But that abstraction, once filtered, would leave much more remaining for comparison.

Judges, lawyers, and commentators might protest that courts are already undertaking this fine-grained analysis, but they are not. Courts are caught in the cycle of trying to identify what whole claims mean when those claims clearly have specific elements. Even the recent case

⁵⁴ Risch, *supra* note 52, at 53.

⁵⁵ 450 U.S. 175 (1981).

⁵⁶ *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014) ("To answer that question, we consider the elements of each claim both individually and 'as an ordered combination' to determine whether the additional elements 'transform the nature of the claim' into a patent-eligible application.").

⁵⁷ *Id.* at 2356.

⁵⁸ *Id.* at 2357.

⁵⁹ *SRI Int'l v. Matsushita Elec. Corp. of Am.*, 775 F.2d 1107, 1124 (Fed. Cir. 1985) (disapproving of the use of "gist" of the patent for determining factual questions); see also, Lemley, *supra* note 2, at 1279 (discussing difficulties associated with point of novelty analysis in patentable subject matter).

*Berkheimer v. HP*⁶⁰ — in which the Federal Circuit recognized that courts should do a better job analyzing step two — simplified a patent claim to a very broad and general idea rather than considering each specific element’s abstractness.⁶¹

The comparison stage is also troublesome. A primary problem, of course, is merely an extension of filtration. When the right level of abstraction is selected, comparison is often rendered moot. Secondary, though, is the difficulty in determining what constitutes a sufficient inventive step, including what is routine, well-known, or conventional. The Federal Circuit recently recognized this problem, ruling that — at least in some cases — this determination is a question of fact, and that mere presence in the prior art is insufficient.⁶²

A more deliberate comparison step should define the threshold necessary to determine what is a sufficient inventive step. But that comparison should also operate differently than an anticipation or obviousness analysis. Instead, the goal of the comparison should be to determine whether the non-abstract (or non-natural) elements constitute an application of the natural principle.⁶³ Such a comparison would take a detailed look at those elements of the claim that were not filtered out, something that rarely happens now. It would consider whether those elements are, in the words of *Mayo*, “more than simply [] the law of nature while adding the words ‘apply it.’”⁶⁴ While the Court called this an inventive step, the heart of the analysis was to determine whether the claims did something “more” than the unpatentable.⁶⁵ Abstraction, filtration, and comparison is well suited for this, though courts are not actually performing this comparison.

Thus, courts are implicitly performing abstraction, filtration, and comparison in utility patent subject matter. But they aren’t doing so deliberately or optimally. If courts are to continue with their current subject matter jurisprudence,⁶⁶ then they should more deliberately learn

⁶⁰ 881 F.3d 1360 (Fed. Cir. 2018).

⁶¹ *Id.* at 1368 (holding that a claim including parsing, comparing, and presenting differences for reconciliation to be “directed to the abstract idea of parsing and comparing data”).

⁶² *Id.* at 1369 (“Whether something is well-understood, routine, and conventional to a skilled artisan at the time of the patent is a factual determination. Whether a particular technology is well-understood, routine, and conventional goes beyond what was simply known in the prior art. The mere fact that something is disclosed in a piece of prior art, for example, does not mean it was well-understood, routine, and conventional.”).

⁶³ *Mayo Collaborative v. Prometheus Labs.*, 566 U.S. 66 (2012); Lemley, *supra* note 2; Lemley et al., *supra* note 53.

⁶⁴ *Mayo Collaborative*, 566 U.S. at 72.

⁶⁵ *Id.* at 72-73.

⁶⁶ This is a contested point. Risch, *supra* note 40.

from the lessons of copyright to filter out only those specific elements that are unpatentable, and then compare what remains with common or conventional elements to ensure that what remains is an application of the unpatentable, rather than simply a repetition of it.

III. DESIGN PATENT SUBJECT MATTER

Design patents protect non-useful aesthetic product designs: “Whoever invents any new, original, and ornamental design for an article of manufacture may obtain a patent therefore . . .”⁶⁷ An “article of manufacture” can include an entire product for sale, or just a portion of it.⁶⁸ As a result, an infringing device could look nothing like the original, so long as the (potentially very small) portion — for example, the shank of a drill bit — that happens to be patented is infringed.

Design patents afford their owners much stronger protection than copyrights,⁶⁹ not the least of which is that one can infringe without ever copying, let alone seeing, the original.⁷⁰ Any use of the design brings liability, and there is no independent development defense. Any infringement brings liability, without regard to any fair or other equitable use defense.⁷¹

This stronger protection is coupled with two offsetting rules designed to mitigate unfair application of design patents on unsuspecting defendants. First, because the protection is stronger, the duration is much shorter. Protection lasts for fourteen years from the date the patent is granted.⁷² Second, design patents are still patents. They must survive the rigors of patent examination. Only those designs that are novel and nonobvious may be granted. These rigors tend to be more illusory than protective, however. One study found that the PTO grants 90% of design patent applications,⁷³ with an average pendency of merely 15 months.⁷⁴

⁶⁷ 35 U.S.C. § 171 (2011).

⁶⁸ *Samsung Elecs. Co., Ltd. v. Apple Inc.*, 137 S. Ct. 429, 436 (2016) (“[T]he term ‘article of manufacture’ is broad enough to embrace both a product sold to a consumer and a component of that product, whether sold separately or not.”).

⁶⁹ *But see* Sarah Burstein, *Not (Necessarily) Narrower: Rethinking the Relative Scope of Copyright Protection for Designs*, 3 IP THEORY 114 (2013) (arguing that design patents do not necessarily provide stronger protection than copyright).

⁷⁰ *Compare* 17 U.S.C. § 501 (2011) (defining copyright infringement as violation of a right, for example, to make copies), with 35 U.S.C. § 271(a) (2011) (outlawing the making, using, or selling of an infringing product).

⁷¹ 35 U.S.C. § 271(a) (2011).

⁷² 35 U.S.C. § 173 (2011).

⁷³ Dennis D. Crouch, *A Trademark Justification for Design Patent Rights*, RESEARCH PAPER NO. 2010-17 *18 (Missouri Law Legal Studies Research Paper Series, 2010).

⁷⁴ *Id.* at *20.

Forty-five percent of design patent applications had a pendency less than one year.⁷⁵ In contrast, the average pendency of utility patents during the same time period was more than four years for the most common filing type.⁷⁶

Some of the reduced pendency may be due to a better application-to-examiner ratio for design patents. But even with this worker advantage, the examination process should be adding work. Design patents tend to cite a lot of prior art,⁷⁷ and examiners added more than half of that prior art from their own searches.⁷⁸

Despite finding so much prior art,⁷⁹ examiners almost never reject based on prior art. First, design patents, including GUI patents that are examined slightly more closely, rarely face a rejection during prosecution. A study of design patent examination found that only 13% of design patent applications received *any* rejection at all, with a slightly higher percentage of 19% for graphical user interface patents.⁸⁰ The other 80+% issue with no rejection whatsoever. Non-GUI design patents are virtually never rejected; in a sample from 1996 until the 2011, only 3.37% of all rejections were for novelty or obviousness, and of those, no final rejection in the sample group cited novelty or obviousness.⁸¹ For graphical user interface patents, fewer than 15% of all rejections were based on non-novelty or obviousness.⁸²

With respect to subject matter, the study found that, in its sample, there were almost no rejections for functionality in a 15-year sample, including in graphical user interface and animated design patents.⁸³ This is unsurprising given the history and current interpretation of the statute.

⁷⁵ *Id.*

⁷⁶ Dennis Crouch, *Update on Patent Pendency*, PATENTLY-O (Apr. 30, 2010, 6:43 AM), <http://www.patentlyo.com/patent/2010/04/average-pendency-of-utility-patents-issued-april-27-2010claim-priority-to-foreign-applicationyesnoclaim-priority-to-us-no.html>.

⁷⁷ 20.6 mean references, 13 median.

⁷⁸ 11 mean references, 9 median. These counts reflect all issued patents between 2005 and 2012. Data on file with author. The number of references cited has increased with time. Jason J. Du Mont & Mark D. Janis, *Virtual Designs*, 17 STAN. TECH. L. REV. 107, 144 (2013).

⁷⁹ Examiners add only 34% of the references for utility patents. *Id.* at 148 n. 181 (citing Christopher A. Cotropia, Mark Lemley & Bhaven Sampat, *Do Applicant Citations Matter?*, 42 RES. POL'Y 844, 846 (2013)). Even so, utility patents are rejected for novelty and obviousness much more frequently. *Id.* at 153 (noting study showing 86% of utility patents receive at least one novelty or obviousness rejection).

⁸⁰ Du Mont & Janis, *supra* note 78, at 153.

⁸¹ *Id.* at 155.

⁸² *Id.*

⁸³ *Id.* at 155–56.

The first design patent statute, enacted in 1842, envisioned protection for novel drawings and images incorporated into articles of manufacture.⁸⁴ The protection was extremely important for design protection at the time, because drawings, paintings, and photographs were not protected under the Copyright Act until 1870.⁸⁵

Meanwhile, the language of the design patent statute caused great distress. Because it protected “useful” designs, inventors obtained design patents on new shapes for well-known useful inventions. In *Ex parte Crane*,⁸⁶ the first decision to interpret this part of the statute, the Commissioner of Patents stated:

The line of distinction between what is useful and what is merely ornamental is, in some cases, very indefinite. By some it is said that any form or design that is most useful, is also most pleasing. It would be impossible, in the view of such persons, to make any improvement in utility that did not at the same time add to the ornamental and artistic.

I can perceive no necessity for the distinction. There is a large class of improvements in manufactured articles that are not regarded as new inventions, or as coming within the scope of general patent laws. They add to the market value and salability of such articles, and often result from the exercise of much labor, genius, and expense. They promote the best interests of the country, as well as the creations of inventive talent. It seems to me to have been the intent of Congress to extend to all such cases a limited protection and encouragement. Whenever there shall be produced by the exercise of industry, genius, effort and expense, any new and original design, form, configuration or arrangement of a manufactured article, it comes within the provisions and objects of the act creating design patents, whatever be its nature, and whether made for ornament merely, or intended to promote convenience and utility.⁸⁷

⁸⁴ Patent Act of Aug. 29, 1842, § 3, 5 Stat. 543 (protecting any “new and useful pattern, or print, or picture, to be either worked into or worked on, or printed or painted or cast or otherwise fixed on, any article of manufacture . . .”).

⁸⁵ Act of July 8, 1870, ch. 230, § 85-111, 16 Stat. 198, 212-16; Donald M. Millinger, *Copyright and the Fine Artist*, 48 GEO. WASH. L. REV. 354, 356 (1980); cf. *Copyright*, 3 AM. L. REV. 453, 454-55 (1869) (“It was also contended that [the infringed stage play scenes], were not of a literary, but of a mechanical order, and not subject to the protection of the Statute of Copyright; and that the scene . . . must be protected by . . . design patents for the scenery and properties.”).

⁸⁶ *Ex parte Crane*, 1869 Dec. Comm’r Pat 7 (patent granted on new arrangement of product that had already been denied a utility patent as non-novel).

⁸⁷ *Id.* at 7-9; see also *Ex parte Bartholemew*, 1869 Dec. Comm’r Pat. 103, 103 (“In thus denying that a new ‘shape or configuration’ of an article, whereby utility or convenience is

This ruling led to the rise of so-called “patent sharks” that would extract payments from unsuspecting farmers using farm equipment that looked similar to new designs.⁸⁸

In 1902, the Commissioner of Patents requested that Congress eliminate the word “useful” from the statute, noting that design patents were never intended to protect functional equipment.⁸⁹ Instead, the word “ornamental” was introduced into the statute, where it has remained until today.

Early courts struggled with the amendment, but quickly settled on a rule that also still applies: if a design is primarily ornamental, then the fact that it has some functional elements will not disqualify it from protection.⁹⁰ If a design is solely functional, then it must be protected, if at all, by a utility patent. However, courts rarely make distinctions about different types of functionality, and they have long held that where functionality and ornamentality mix, a design patent may issue so long as the design is not dictated by functionality.⁹¹ The number of cases invalidating patents is far outweighed by the number of cases allowing them.

promoted, is the proper subject of a patent, under the acts referred to, the office would seem to have involved itself in the absurdity that if a design is useless it may be patented, whereas if it be useful it is entitled to no protection. Fortunately . . . office is relieved from so grievous an imputation . . . Articles have been, and are being constantly, patented as designs which possess no element of the artistic or ornamental, but are valuable solely because, by a new shape or configuration, they possess more utility than the prior forms of like articles.”).

⁸⁸ Gerard N. Magliocca, *Blackberries and Barnyards: Patent Trolls and the Perils of Innovation*, 82 NOTRE DAME L. REV. 1809, 1820-21 (2007); see also USPTO, ANNUAL REPORT OF THE COMMISSIONER OF PATENTS FOR THE YEAR 1871, at 17 (1872) (“Very many design patents, which cannot, under the law, be denied, are a fraud upon the public. A man applies for a patent on a cultivator, or hammer, or any other useful tool or device, and finding himself fully anticipated in every principle and useful feature of his invention, abandons his application and at once applies for a design patent for the same thing. This application he bases upon some peculiarity of form or color, having nothing whatever to do with the merits or demerits of the article itself; and not being anticipated in these respects, a patent is granted for the new design. The patent gives him no protection whatever, except as to the form or color upon which it is based.”).

⁸⁹ S. REP. NO. 57-1139, at 2-3 (1902).

⁹⁰ *Mygatt v. Zalinski*, 138 F. 88, 89 (C.C.S.D.N.Y. 1905) (“That it is useful as well as ornamental does not affect its patentability as a design patent.”); see also *Ethicon Endo-Surgery, Inc. v. Covidien, Inc.*, 796 F.3d 1312, 1333 (Fed. Cir. 2015) (“[T]he design claim is not invalid, even if certain elements have functional purposes.”). Compare *Ashley v. Weeks-Numan Co.*, 220 F. 899, 901 (2d Cir. 1915) (“[W]e declare that the subject-matter of a patent is not rendered unfit as a design patent by the mere fact that it is possible somewhere in its construction to discover a mechanical function.”), with *Best Lock Corp. v. Ilco Unican Corp.*, 94 F.3d 1563, 1566 (Fed. Cir. 1996) (“However, if the design claimed in a design patent is dictated solely by the function of the article of manufacture, the patent is invalid because the design is not ornamental.”).

⁹¹ *Hupp v. Siroflex of Am., Inc.*, 122 F.3d 1456, 1460-61 (Fed. Cir. 1997) (design of concrete stamp ornamental, even though its sole function is to stamp concrete of the same shape);

Thus, Federal Circuit precedent allows design patents that incorporate functional elements, unless the design embodies the function or unless the function is essential to the use of the product.⁹² But design patents do not require a use, making the test difficult. Designs that might be functional in one context, say a key blade designed to fit a type of lock,⁹³ become completely ornamental when hung as a necklace pendant or used as a (dangerous) toy.⁹⁴ Determinations of functionality in a market must depend, at least in part, on how the product will be used.⁹⁵ Patentees can almost always point to some ornamental aspect that is unrelated to a particular use.

Thus, the current subject matter rule functionality rule tilts toward patentability. The defendant must prove functionality by clear and convincing evidence,⁹⁶ and if design alternatives exist, courts will not find functionality,⁹⁷ presumably even if all the alternatives are patented. This is a distinct departure from copyright, where few design alternatives will bar protection under the merger doctrine. As a result, a combination of elements, each of which might serve some utilitarian purpose, can be

L.A. Gear, Inc. v. Thom McAn Shoe Co., 988 F.2d 1117, 1123 (Fed. Cir. 1993); *In re Carletti*, 328 F.2d 1020, 1022 (C.C.P.A. 1964); *Robert W. Brown & Co., Inc. v. De Bell*, 243 F.2d 200, 202-03 (9th Cir. 1957) (“While it is the design which is patented, it is immaterial that the subject of the design may embody a functional or utilitarian purpose.”); *In re Koehring*, 37 F.2d 421, 424 (C.C.P.A. 1930) (holding that utilitarian objects may be protected with design patents, so long as someone cares about their ornamentation).

⁹² *Best Lock Corp. v. Ilco Unican Corp.*, 94 F.3d 1563, 1566 (Fed. Cir. 1996) (design of key blade functional because no other shape would work in lock); *Avia Grp. Int’l, Inc. v. L.A. Gear Cal., Inc.*, 853 F.2d 1557, 1563 (Fed. Cir. 1988); *Thom McAn*, 988 F.2d at 1123 (“If the particular design is essential to the use of the article, it can not be the subject of a design patent.”).

⁹³ *Best Lock*, 94 F.3d at 1566.

⁹⁴ *See, e.g., Du Mont & Janis, supra* note 78, at 165 (t-shirt can infringe GUI patent since patent covers only the image and is not limited to a display screen). Consider Irwin Mainway’s Bag o’ Glass and Teddy Chainsaw Bear, both of which have dual function/playtime uses. *See Saturday Night Live: Consumer Probe* (NBC television broadcast Dec. 11, 1976), available at <https://www.nbc.com/saturday-night-live/video/irwin-mainway/n8641>, transcript available at SATURDAY NIGHT LIVE TRANSCRIPTS, <https://web.archive.org/web/20180121035746/http://snltranscripts.jt.org/76/76jconsumerprobe.phtml> (last visited July 28, 2018).

⁹⁵ 37 CFR § 1.153 (2012) requires that the title and claim each identify the article of manufacture. However, broad leeway is given to describe use of the article, so long as it is clear what the article is. MPEP § 1503.01 ¶ 15.05 (8th ed. Rev. 9, Aug. 2012) (“An acceptable title would be ‘door for cabinets, houses, or the like,’ while the title ‘door or the like’ would be unacceptable . . .”). Thus, “Key Design for locks, necklaces, or toys” would be acceptable.

⁹⁶ *Thom McAn*, 988 F.2d at 1123. Presumably, the examiner could reject functional designs using a lower evidentiary standard, but this virtually never happens.

⁹⁷ *Hupp v. Siroflex of Am., Inc.*, 122 F.3d 1456, 1460-61 (Fed. Cir. 1997); *Avia*, 853 F.2d at 1563; *Thom McAn*, 988 F.2d at 1123; *see, e.g., Apple, Inc. v. Samsung Elecs. Co.*, 920 F. Supp. 2d 1079, 1091-92 (N.D. Cal. 2013) (ruling that jury need not have been instructed about functional elements because alternate designs were available).

protected as a group if the design in the entirety is primarily ornamental rather than functional.⁹⁸ As such, only the lowest level of abstraction is ever considered with design patents; courts do not ask about the primary focus of the patent to determine subject matter.⁹⁹ As discussed in the next section, courts treat utility patents differently.

The result is that design patents are virtually never rejected, not during prosecution, and not in court. This leaves competitors in a difficult position. Their product (or parts of it) may look like the patented design because they perform the same function. How are they to convince the court that the functional similarities should be allowed? Where does functionality end and ornamentality begin?

Patent law currently has few answers. The rule for design infringement is like that in copyright law: similarity. With design patents, infringement determinations are made by comparing the accused device with the design patent, to see whether the ordinary observer familiar with all the prior designs in that field would believe that the accused product is substantially the same as the claimed design.¹⁰⁰ The designs need not be exact; they need only be similar enough that the ordinary observer would find similarity.¹⁰¹

As noted above, this standard can be easier to meet than copyright because there need be no proof of copying. Furthermore, current law includes neither the newer abstraction-filtration-comparison test, nor even the older *Nichols*-type abstraction test. Design patent infringement rules do not allow for focus on just those elements that are new, the so-called “point of novelty” of the design.¹⁰²

But the design patent rule could allow for filtration. For example, elements associated with the prior art might be filtered somewhat. After all, the ordinary observer is expected to know the prior art, and to consider

⁹⁸ *Thom McAn*, 988 F.2d at 1123; see also *Lee v. Dayton-Hudson Corp.*, 838 F.2d 1186, 1189 (Fed. Cir. 1988). But see *Barofsky v. Gen. Elec. Corp.*, 396 F.2d 340, 344 (9th Cir. 1968) (“[B]ecause the dominant features of the design [for a cabinet door], and therefore the design as a whole, are primarily functional, this is not a valid design patent.”).

⁹⁹ *Ethicon Endo-Surgery, Inc. v. Covidien, Inc.*, 796 F.3d 1312, 1329 (Fed. Cir. 2015) (“We explained that a claimed design was not invalid as functional simply because the ‘primary features’ of the design could perform functions. [] As with its analysis on other validity grounds, the district court used ‘too a high a level of abstraction’ in assessing the scope of the claimed design.”).

¹⁰⁰ *Gorham Mfg. Co. v. White*, 81 U.S. (14 Wall.) 511, 528 (1871) (“[I]f, in the eye of an ordinary observer, giving such attention as a purchaser usually gives, two designs are substantially the same, if the resemblance is such as to deceive such an observer, inducing him to purchase one supposing it to be the other, the first one patented is infringed by the other.”); *Egyptian Goddess, Inc. v. Swisa, Inc.*, 543 F.3d 665, 670 (Fed. Cir. 2008) (en banc).

¹⁰¹ *Egyptian Goddess*, 543 F.3d at 672-73.

¹⁰² *Id.*

similarities that are based on preexisting designs.¹⁰³ Indeed, some courts have also filtered out functional elements when testing for design patent infringement.¹⁰⁴ Such filtration would expressly protect ornamental elements, but not functional ones.

An example may be helpful. Consider Design Patent No. D604,305,¹⁰⁵ owned by Apple, Inc., pictured below. The patent claims a screen for an electronic device with icons presented on it. The icons are square with rounded corners, and they are tiled four across. The patent includes a row of four icons at the bottom of the screen. In the actual device, we know that these bottom icons — presumably those most favored by the user — remain the same, no matter what screen one looks at. Of course, the patent does not require that the icons stay the same from screen to screen. It only requires the icons to be on a gray background at the bottom. Samsung developed a competing interface for its smartphones. Apple sued Samsung, and a jury found that Samsung's user interface (commonly called "Touch Wiz") infringed this design patent.¹⁰⁶



Figure 1: Samsung TouchWiz (left) compared with D604,305 (right)

¹⁰³ *Egyptian Goddess*, 543 F.3d at 672.

¹⁰⁴ See, e.g., *Richardson v. Stanley Works, Inc.*, 597 F. 3d 1288, 1293–94 (Fed. Cir. 2010) (court filtered out functional elements in bench trial); *OddzOn Products, Inc. v. Just Toys, Inc.*, 122 F.3d 1396, 1405 (Fed. Cir. 1997) (construing claim narrowly: “[T]hese functional characteristics do not invalidate the design patent, but merely limit the scope of the protected subject matter.”); *Lee v. Dayton-Hudson Corp.*, 838 F. 2d 1186, 1188 (Fed. Cir. 1988) (“Thus it is the non-functional, design aspects[s] that are pertinent to determinations of infringement.”).

¹⁰⁵ U.S. Patent No. D604,305 (filed June 23, 2007).

¹⁰⁶ Amended Verdict Form, *Apple, Inc. v. Samsung Elecs. Co.*, No. 5:11-cv-01846-LHK (N.D. Cal. Aug. 24, 2012), ECF No. 1931, available at <http://www.groklaw.net/pdf3/ApplevSamsung-1931.pdf>.

At the time of patent application filing, 2007, Apple's design might have been novel, ornamental and not dictated by functionality. After all, the look of the screen does not do anything when viewed. Furthermore, icons need not be rounded, and the icons at the bottom need not have a different color. At a time when few other devices had a touch screen that would accommodate finger taps and gestures, the combination of elements on this screen may have been an "ornamental design for an article of manufacture."¹⁰⁷

But pieces of the design must have been driven by functional considerations. The bottom row "dock" is especially troubling because functionality might dictate a different color for a set of icons that does not change from screen to screen. Because the design patent does not claim any functional features, it presents as if the color is merely ornamental because the context of a working graphical user interface is missing. But any user of the iPhone, indeed any user of computer software, knows better.

There was also significant prior art. The idea of a fixed area using different coloring that held frequently used programs was not terribly new in 2007. Microsoft had used something similar since Windows 95,¹⁰⁸ and many "quick launch" program docks were available, and those docks were all a different color than the background.¹⁰⁹ RIM had introduced icons in rows on its Blackberry devices years before the iPhone was released,¹¹⁰ and Nokia had even provided an interface with square icons aligned in rows.¹¹¹ Of course, one had to scroll through the icons rather than touch them, but the arrangement only made scrolling easier. Scrolling is also irrelevant, because this is a design patent — only the appearance matters. Further, Adobe had used square icons with rounded corners for so long that it abandoned them before Apple even applied for its patent.¹¹² The

¹⁰⁷ 35 U.S.C. § 171 (2011).

¹⁰⁸ See *Windows 95 Taskbar Screenshot*, WIKIPEDIA (Dec. 2, 2011), http://en.wikipedia.org/wiki/File:Windows_95_taskbar_screenshot.png.

¹⁰⁹ See, e.g., *Starfish Software's Sidekick 95*, TELECOMMANDER.COM, <http://www.telecommander.com/pics/links/application%20software/corel/Corel%20Office%20Pro%20V7/Corel%20Office%20Professional%20V7.htm> (last visited July 29, 2018).

¹¹⁰ Bruce Brown, *RIM BlackBerry 7230 Review & Rating*, PCMAG.COM (Oct. 1, 2003), <http://www.pcmag.com/article2/0,2817,1265089,00.asp>; see also Du Mont & Janis, *supra* note 78, at 129–30 (noting that RIM's design patent for rows of icons is one of the most cited design patents).

¹¹¹ Marek Lutonsky, *Nokia 6681 Review: Extra Style*, GSMARENA.COM (May 8, 2005), http://www.gsmarena.com/nokia_6681-review-38p3.php.

¹¹² Prescott Perez-Fox, *Out with the Old*, PRESCOTT'S DESIGN BLOG (Dec. 17, 2006, 2:14 PM), <https://web.archive.org/web/20101118104542/http://www.perezfox.com/2006/12/17/out-with-the-old> (last visited July 29, 2018).

Federal Government had even recommended square icons with rounded corners for icons in vehicle displays.¹¹³

However, it is difficult to argue that Apple's *entire* design is functional or in the prior art. Only some of the basic ideas and other aspects are functional or preexisting. For example, courts should not let a competitor reuse the exact icons, in the exact order, of those in the patented design. The difficulty is determining which designs that are not identical should infringe. This case provides an excellent vehicle to show abstraction-filtration-and comparison because Apple argued that Samsung's use of high level abstractions were infringing, and won.

The Touch Wiz interface shown in Figure 1 is not an exact copy of the Apple design. In many ways, it is not even close. The icons are different. They are different colors. They are in a different order, and there are more of them. The background is a different color. The icons that were similar were driven by functional requirements, like the color green, the shape of a handset (which was not new to Apple), and a clock. Though it is technically irrelevant, the functions of the icons on the dock were different. Given these differences, Apple argued that the *idea* of the design was the same. One of the case exhibits is reproduced below; it makes Apple's strategy clear.¹¹⁴

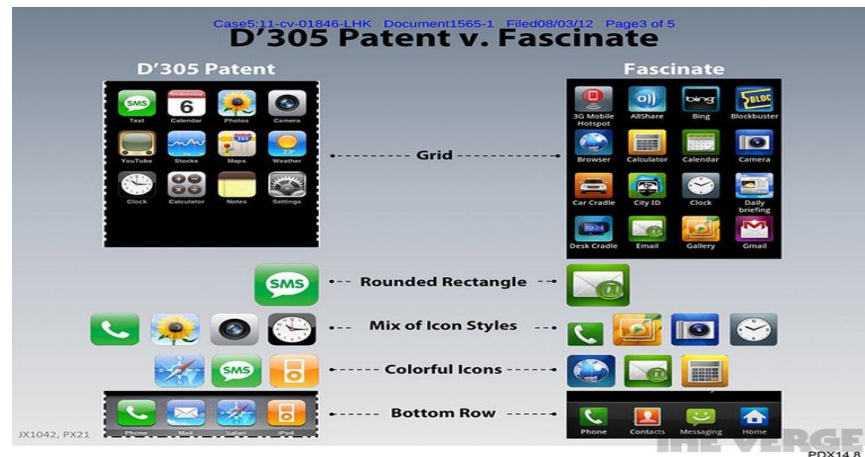


Figure 2: Exhibit showing levels of abstraction in Apple GUI design

¹¹³ See FEDERAL HIGHWAYS ADMINISTRATION, IN-VEHICLE DISPLAY ICONS AND OTHER INFORMATION ELEMENTS, VOLUME I: GUIDELINES, FHWA-RD-03-065, 4-4 (2004), available at <http://www.fhwa.dot.gov/publications/research/safety/03065/03065.pdf>.

¹¹⁴ Exhibit A of Samsung's Submission in Response to Aug. 2 Order at 3, Apple, Inc. v. Samsung Elecs. Co., No. 5:11-cv-01846-LHK (N.D. Cal. Aug. 2, 2012), ECF No. 1565-1.

Apple argued that Samsung infringed because it used a grid, rounded rectangles, mixes of icon styles, colorful icons, and a bottom row with offsetting background. These are functions — ideas, ergonomics, and operations. They are not the design themselves. To be sure, there is some similarity in the structure, sequence, and organization, but it is the structure and selection of *different* design elements.

Based on the differences between the claim and the accused display, the only way Samsung could infringe would be at a higher level of abstraction — the structure and sequence itself. Abstraction, filtration, and comparison is perfectly suited for the task. Apple had already done some abstracting. The next step is filtration. The first level to be removed is the rounded rectangle; it already existed in the prior art. Similarly, lining the icons in a grid would be filtered. This is in the prior art, and functional as well. Third, the court might consider filtering the notion of colorful icons unless the express designs were too similar. Not only did such icons exist, but on a color screen such icons would be functional. Similarly, while a particular mix of icon styles might be protected, the idea of a mix of icon styles would be filtered as functional. In a screen display (which is claimed here), it would make no sense for all the icons to be identical. A primary remaining feature is the bottom row with offsetting colors. This too might see some filtering for the idea of an offsetting color (which is in the prior art), but the prior art is not terribly similar to Apple's claimed look and that might remain in large part.

This type of filtering could have been achieved under current Federal Circuit guidance. The court would have instructed the jury a) not to consider elements of the prior art or functionality (of which these examples would have been submitted), and b) but that it should consider as a whole the ornamental parts of the design in light of those elements. Such an instruction would not fully exclude any part of the design, but would also make the jury cognizant that it should be focused on the novel, non-functional design as it compared the two. In other words, the jury would receive an explicit instruction to consider the ornamental features as a whole in light of the unprotectability of some of the features.

Instead, the court provided no jury instruction about functionality at all. With respect the '305 patent, the court's instruction to the jury stated:

The D'305 Patent claims the ornamental design for a graphical user interface for a display screen or portion thereof, as shown in Figures 1-2. The broken line showing of a display screen in both views forms no part of the claimed design.¹¹⁵

While the jury instructions allowed the jury to consider the prior art, there is no mention whatsoever that infringement cannot be based on functional elements, even though the Federal Circuit had affirmed other courts who had so construed patents.

While Apple, and perhaps the conventional wisdom, believe that Android “copied” the iPhone GUI patent, this was not slavish copying. Furthermore, many of the aspects that were copied were the functional and non-novel aspects. Liability here seems premised on the notion that using the same ideas infringed. This seems to violate the maxim — in use today even as applied to design patents — “[t]hat which infringes, if after, would anticipate, if earlier.”¹¹⁶ It is unlikely that any court would say that Samsung’s interface would render Apple’s patent non-novel or obvious if it predated it;¹¹⁷ Apple would surely claim that the functionality is similar, but the *actual design* differs from the Samsung design in important ways, such as all of the icons having different images.¹¹⁸ And if the Apple patent would be allowed even if Samsung’s design were prior art, then Samsung should not be considered infringing. Abstraction, filtration, and comparison helps achieve a consistent result.

For another example, consider *Richardson v. Stanley Works*.¹¹⁹ In that case, the Federal Circuit compared a multipurpose hammer to a design patent. On the surface, there were many similarities, but many of those similarities were driven by functionality. The court noted:

¹¹⁵ Final Jury Instructions, *Apple, Inc. v. Samsung Elecs. Co.*, No. 5:11-cv-01846-LHK, *60 (N.D. Cal. Aug. 21, 2012), ECF No. 1903, available at <http://groklaw.net/pdf3/ApplevSamsung-1903.pdf>.

¹¹⁶ *Int’l Seaway Trading Corp. v. Walgreens Corp.*, 589 F.3d 1233, 1239 (Fed. Cir. 2009) (quoting *Peters v. Active Manuf’g Co.*, 129 U.S. 530, 537 (1889)) (“Moreover, it has been well established for over a century that the same test must be used for both infringement and anticipation.”). Compare *Int’l Seaway Trading*, 589 F.3d at 1239 (finding that Crocs patent does not anticipate plaintiff’s patent despite relatively small differences), with *Crocs, Inc. v. Int’l Trade Comm’n*, 598 F.3d 1294, 1303 (Fed. Cir. 2010) (finding infringement of Crocs patent despite relatively small differences from accused clogs).

¹¹⁷ 35 U.S.C. § 102 (2011).

¹¹⁸ *Int’l Seaway Trading*, 589 F.3d at 1242 (slight differences in dimpling pattern on shoe insole sufficient to avoid invalidity due to lack of novelty or obviousness).

¹¹⁹ *Richardson v. Stanley Works, Inc.*, 597 F.3d 1288, 1293–94 (Fed. Cir. 2010).

The district court here properly factored out the functional aspects of Richardson’s design as part of its claim construction. By definition, the patented design is for a multi-function tool that has several functional components, and we have made clear that a design patent, unlike a utility patent, limits protection to the ornamental design of the article . . . [W]hen the design also contains ornamental aspects, it is entitled to a design patent whose scope is limited to those aspects alone and does not extend to any functional elements of the claimed article.¹²⁰

The appeals court thus affirmed the district court’s judgment of non-infringement after a bench trial. The differing posture of the case is important, as the non-jury trial allowed the court some leeway in how it interpreted the patent. It did not need to instruct others how to view the patent.

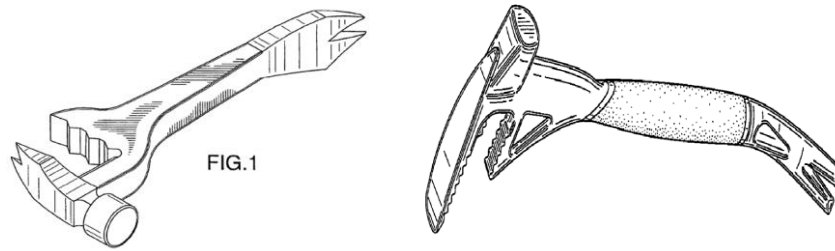


Figure 3: The competing multipurpose hammers

In reality, filtration is much more difficult to achieve under current practices. The Federal Circuit has limited the reach of prior cases that seemed to filter,¹²¹ although the court has continued to rule that functionality can narrow a claim.¹²² Compounding this issue, because all

¹²⁰ *Id.* at 1293-94.

¹²¹ *Ethicon Endo-Surgery, Inc. v. Covidien, Inc.*, 796 F. 3d 1312, 1334 (Fed. Cir. 2015) (“Thus, although the Design Patents do not protect the general design concept of an open trigger, torque knob, and activation button in a particular configuration, they nevertheless have some scope—the particular ornamental designs of those underlying elements.”); *Sport Dimension, Inc. v. Coleman Co., Inc.*, 820 F. 3d 1316, 1322 (Fed. Cir. 2016) (refusing to eliminate functional elements with little ornamentation: “By eliminating structural elements from the claim, the district court improperly converted the claim scope of the design patent from one that covers the overall ornamentation to one that covers individual elements. Here, the district court erred by completely removing the armbands and side torso tapering from its construction.”); *Apple Inc. v. Samsung Elecs. Co., Ltd.*, 786 F. 3d 983, 998 (Fed. Cir. 2015) (“As such, the language ‘dictated by their functional purpose’ in Richardson was only a description of the facts there; it did not establish a rule to eliminate entire elements from the claim scope as Samsung argues.”).

¹²² *Sport Dimension, Inc. v. Coleman Co., Inc.*, 820 F.3d at 1323.

prior art and functionality are submitted to the jury, any filtration is invisible to the record and thus nearly invulnerable to appeal.¹²³ Furthermore, while judges are willing to filter out functional elements in bench trials, they are less willing to do so for jury trials, again leaving such determinations unreviewable.¹²⁴

The primary objection facing application of abstraction, filtration, and comparison is the Federal Circuit's rejection of the point of novelty test in *Egyptian Goddess*.¹²⁵ But this need not be a barrier. As the Court made clear:

Our rejection of the point of novelty test does not mean, of course, that the differences between the claimed design and prior art designs are irrelevant. To the contrary, examining the novel features of the claimed design can be an important component of the comparison of the claimed design with the accused design and the prior art. But the comparison of the designs, including the examination of any novel features, must be conducted as part of the ordinary observer test, not as part of a separate test focusing on particular points of novelty that are designated only in the course of litigation.¹²⁶

Judges should retake a gatekeeping role and filter in every case. Modifying the above quote to add "functionality" would continue to apply the court's ordinary observer test while also mandating that district courts inform juries about functional elements. This is not only consistent with *Egyptian Goddess*, it is expressly contemplated by it.¹²⁷ Given the clear guidance in *Egyptian Goddess* and follow-up cases that filtering of functionality will be helpful to the factfinder, as a matter of policy it seems odd to leave the question to the discretion of the court either to not mention functionality at all, or to give no guidance.¹²⁸

¹²³ See *Apple, Inc. v. Samsung Elecs. Co.*, 920 F. Supp. 2d 1079, 1089-90 (N.D. Cal. 2013) (adopting deferential standard to jury verdict and assuming jury weighed all prior art).

¹²⁴ *Id.* at 1090-91 ("The cases do not suggest that this type of claim construction is appropriate when instructing a jury."). The district court was affirmed. *Apple Inc. v. Samsung Electronics Co., Ltd.*, 786 F. 3d at 998-99.

¹²⁵ *Egyptian Goddess, Inc. v. Swisa, Inc.*, 543 F. 3d 665, 677-78 (Fed. Cir. 2008) (en banc).

¹²⁶ *Id.* at 678.

¹²⁷ *Id.* at 680 ("[A] trial court can usefully guide the finder of fact by addressing a number of other issues that bear on the scope of the claim. Those include . . . distinguishing between those features of the claimed design that are ornamental and those that are purely functional. Providing an appropriate measure of guidance to a jury without crossing the line and unduly invading the jury's fact-finding process is a task that trial courts are very much accustomed to . . ." [citations omitted]).

¹²⁸ Indeed, leaving filtering to the jury without guidance requires the appellate court to guess whether any filtering took place to determine whether there was substantial evidence of

This is not to say that instructing a jury will be easy. Filtering does not mean simply removing functional elements from patent drawings with a black marker as if such elements did not exist. Instead, filtering requires the court to instruct the jury about which elements are functional. While it should consider the design as a whole, neither should it give too much (or any) weight to similarities in functional elements. It is no wonder that courts do not want to instruct juries on filtering, but making the attempt is better than the alternative. Indeed, this test has been applied quite usefully in the copyright context while comparing the overall works (rather than element by element). So-called “thinly” copyrighted works require a higher level of similarity to find infringement.¹²⁹

Without filtering, patentees can seek ever widening infringement claims based on reuse of the ideas and functions in the patent, rather than reuse of the actual design. The great irony of *Egyptian Goddess* is that it disapproves of written claim constructions layered on the drawings themselves; the court makes clear that the drawings should speak for themselves if they can.¹³⁰ Relying on the drawings without filtering leads to the very thing *Egyptian Goddess* disapproves: infringement rulings based not on the drawings but based on the ideas and functions in the drawings.

Thus, courts should compare patented design claims against accused infringers as a whole, but while ensuring that infringement should not be based on similarities due to prior art or functionality. Some district courts have adopted this framework with the Federal Circuit’s approval, and the remaining courts should be instructed to do so.

CONCLUSION

The kinship between copyright infringement analysis and patentable subject matter is a secret, misunderstood one, the beleaguered stepchild cleaning floors in the attic. This essay has sought to bring the relationship into the light and create a Cinderella. Though abstraction, filtration, and comparison is not accepted in every circuit, the idea of excluding

infringement. Worse, appellate courts *cannot guess*; they must *assume* that filtering took place and *assume* that the jury properly compared *only* the ornamental features, even if the jury did not do so.

¹²⁹ Apple Computer, Inc. v. Microsoft Corp., 35 F.3d 1435, 1442 (9th Cir. 1994) (“Rather, considering the license and the limited number of ways that the basic ideas of the Apple GUI can be expressed differently, we conclude that only ‘thin’ protection, against virtually identical copying, is appropriate. Apple’s appeal, which depends on comparing its interface as a whole for substantial similarity, must therefore fail.”).

¹³⁰ *Egyptian Goddess, Inc. v. Swisa, Inc.*, 543 F. 3d at 679.

unprotected subject matter is common, and should be used in both copyright and patent analysis.

With patent law, the fit is easier with design patents than with utility patents. With design patents, unpatentable subject matter — functionality — may be excluded from the infringement comparison. But the tables are turned with patentable subject matter: unpatentable elements are considered only at the protection stage, and the unpatentable is filtered out to see if anything patentable remains.

A key question, then, is why a similar approach shouldn't work with design patents, which are still patents, after all. The answer lies in the lack of claiming, which would identify the elements necessary for infringement. This problem has vexed courts in novelty, obviousness, and claim construction for years, and this essay will not seek to solve it. But so long as design patent claims are a series of drawings, then any patentable subject matter inquiry must take place at the infringement stage, just as it does with copyright. In both cases, virtually everything (except pure function or pure fact, respectively) is protected, and the only way to police subject matter is to abstract, filter, and compare when determining the scope of the right.

Because utility patent claims are based on particular elemental claims, then either all of a claim is protected, or none of it is. It does raise the question for another day: could utility patent subject matter be handled at the infringement stage? If abstract ideas and natural phenomena were filtered out prior to comparing claim elements, perhaps all three systems could coexist under the same infringement framework.