

# PATENT LAW'S PURPOSEFUL AMBIGUITY

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INTRODUCTION .....	187
I. MISPLACED AMBIGUITY: BACK TO THE FUTURE .....	194
II. PURPOSEFUL AMBIGUITY AND PATENT LAW'S INCENTIVE DYNAMIC .....	199
III. ENABLEMENT AND "UNDUE EXPERIMENTATION" .....	201
IV. DEFINITENESS AND "REASONABLE CERTAINTY" .....	207
CONCLUSION .....	212

## INTRODUCTION

The ambiguity of language is an unremarkable, yet persistent force within our legal system.<sup>1</sup> Faced with an onslaught of vagueness, the law has relied on countervailing measures grounded in the Constitution such as due process and separation of powers, which, respectively, focus on fair notice and democratic accountability. Moreover, contracts, statutes, and judicial pronouncements provide opportunities to espouse and develop substantive input, interpretive theories, and canons of construction. And, of course, academics have offered reams of ponderous scholarship on law and language that will break the back of the most Herculean among us.

Patent law forms part of this dynamic, and therefore cannot elude ambiguity's grip on language; indeed, ambiguity presents a dilemma for the "useful arts." While describing technological innovations is a salient feature of the patent system, affecting the validity and scope of one's property right, "the nature of language," as Justice Kennedy wrote, "makes it impossible to capture the essence of a thing in a patent application."<sup>2</sup> To address this vexing fixture, patent *doctrine*

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1. And, indeed, legal systems worldwide. See DAVID MELLINKOFF, *THE LANGUAGE OF THE LAW*, at vii–viii (1963) ("The law is a profession of words.").

2. *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 731 (2002). The blunt nature of language and fluidity of innovation make drafting precise patent claims and encyclopedic disclosures elusive goals, even for the most seasoned and best-intentioned patent attorney. This fact has been expressly recognized by the courts. See, e.g., *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 909 (2014) (referring to the "inherent limitations of language" when drafting patent claims); *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 397 (Ct. Cl. 1967) (stating the "conversion of machine to words allows for unintended idea gaps which cannot be satisfactorily filled. Often the invention is novel and words do not exist to describe it"); see also Margaret Jane Radin, *Patent Notice and the Trouble with Plain Meaning*, 96

purposely embraces ambiguity, a linguistic accommodation that provides measured flexibility for actors to claim and describe their innovations. It should not be surprising, therefore, that some of patent law's most venerable doctrines, such as the requirements for enablement and definiteness, reflect this form of ambiguity<sup>3</sup>—two doctrines directly tethered to the disclosure function of patent law.

At first blush, it may seem ironic that purposeful ambiguity would find a home in patent law, given that patent jurisprudence is a property rights' regime and is so closely related to empirically-driven technological fields.<sup>4</sup> But from a greater remove, ambiguity has an important role in a well-functioning patent system, providing judges, practitioners, and policymakers with room to lithely navigate the ex ante-ex post incentive continuum. Distilling the central feature of this dynamic, Suzanne Scotchmer aptly wrote, “[t]he problem introduced for incentive mechanisms is how to make sure that earlier innovators are compensated for their contributions, while ensuring that later innovators also have an incentive to invest.”<sup>5</sup>

Achieving optimality on this continuum is unrealistic; yet, history informs us that too much or misplaced ambiguity can potentially tip the scales aggressively toward either extreme, disrupting

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B.U. L. REV. 1093, 1094 (2016) (“[T]here is no such thing as plain meaning that everybody concerned will accept, especially when it comes to innovative products and processes where there is money at stake.”).

3. See 35 U.S.C. § 112 (2018). Purposeful ambiguity can also be found in the non-obviousness requirement, patent law's gatekeeper. See 35 U.S.C. § 103 (2018). As the Supreme Court in *Graham v. John Deere Co.*, 383 U.S. 1, 18 (1966), noted, “What is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context.”

4. Although ambiguity is no stranger to science, different people will interpret direct experimental evidence differently, depending on their background theory. Thomas Kuhn famously invoked the duck-rabbit graphic and reminded us that interpretation is influenced by experimental precedents and norms—formalism means different things to different researchers. This reminder is pertinent here even though Kuhn ultimately emphasized a lack of ambiguity afforded by measurement. See generally THOMAS S. KUHN, *Second Thoughts on Paradigms*, in THE ESSENTIAL TENSION 293 (1977) (discussing the role of paradigms); THOMAS S. KUHN, *The Function of Measurement in Modern Physical Science*, in THE ESSENTIAL TENSION 178 (1977) (discussing the role of measurement in various physical sciences); THOMAS S. KUHN, THE STRUCTURE OF SCIENTIFIC REVOLUTIONS (2d ed. 1970) (discussing the duck-rabbit illustration and the role of paradigm in the scientific community). For a discussion on the role of “productive ambiguities” in mathematics and science, see generally EMILY R. GROSHOLZ, REPRESENTATION AND PRODUCTIVE AMBIGUITY IN MATHEMATICS AND THE SCIENCES (2007). Thanks to my colleagues, Colin McLarty and Chris Haufe, for their helpful thoughts on Kuhn and the issue of ambiguity in science, more generally.

5. SUZANNE SCOTCHMER, INNOVATION AND INCENTIVES 127 (2004).

expectations and established norms. The Supreme Court's patent jurisprudence of the 1930s and 1940s is often cited as an example of excessive doctrinal ambiguity.<sup>6</sup> The Court's deep suspicion of patents during this time took many forms,<sup>7</sup> but was epitomized by the use of the polysemous "invention requirement," a common law doctrine employed to strike down numerous patents, and eventually prompting a legislative response in 1952.<sup>8</sup> In fact, the Court's anti-patent resolve led Justice Jackson to write, "the only patent that is valid is one which this Court has not been able to get its hands on."<sup>9</sup>

American patent law is again experiencing an ethos of skepticism abetted by undue ambiguity, but this time in the context of patent eligibility,<sup>10</sup> the *idé fixe* of patent law for the past several years. This cultural shift is ten years in the making, but has been particularly pronounced since 2012. As in the 1930s and 1940s, the Supreme Court, acting as principal skeptic, has deployed its considerable influence in a manner that provides cover to like-minded judicial and administrative actors. The current Court's doctrinal vehicles are the ineffable "abstract idea" test,<sup>11</sup> and, seemingly, a reprise of the "invention requirement," although applied through the lens of eligibility. These doctrines preclude patents on inventions that are either deemed to be "merely an abstract idea"<sup>12</sup> or lack an "inventive concept," sometimes referred to as the "inventive application" requirement. Both "abstract idea" and "inventive concept" found expression in *Alice Corp. Pty. v. CLS Bank International*<sup>13</sup> and *Mayo*

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6. See Herbert H. Mintz & C. Larry O'Rourke, *The Patentability Standard in Historical Perspective: "Invention" to Section 103 Nonobviousness*, in *NONOBVIOUSNESS: THE ULTIMATE CONDITION OF PATENTABILITY* 2:201, 2:214 (John F. Witherspoon ed., 1980) (noting that the Supreme Court's patent jurisprudence during this time "expressed an ever-growing hostility toward patents in the application of the standard of patentability, distorting that standard and causing confusion and unpredictability").

7. During this time, the Court emphasized the social costs and monopolistic aspects of patents. See, e.g., *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1, 11–12 (1946); *Mercoid Corp. v. Mid-Continent Inv. Co.*, 320 U.S. 661, 665–68 (1944).

8. See generally Mintz & O'Rourke, *supra* note 6, at 2:212–21 (tracing the Court's adoption of the "invention" standard to the legislative response relating to nonobviousness in the 1952 patent act).

9. *Jurgensen v. Ostby & Barton Co.*, 335 U.S. 560, 572 (1949) (Jackson, J., dissenting); see also Mintz & O'Rourke, *supra* note 6, at 2:213 ("The problem that arose in the United States during the 1930's was that the courts became skeptical of the value of the patent system and allowed that skepticism to influence the patentability decisions which they were charged with making.").

10. See 35 U.S.C. § 101 (2018) (outlining what inventions are patentable).

11. See, e.g., *Bilski v. Kappos*, 561 U.S. 593, 598–601 (2010).

12. *Bilski*, 561 U.S. at 598.

13. 573 U.S. 208, 217–18, 220–23 (2014).

*Collaborative Services v. Prometheus Laboratories, Inc.*,<sup>14</sup> and like the invention requirement of the 1930s and 1940s, the terms are hopelessly ambiguous and oftentimes lethal in their application.<sup>15</sup> Indeed, one can plausibly argue that Judge Learned Hand's description of the mid-twentieth century "invention requirement" as a "fugitive, impalpable, wayward, and vague a phantom as exits in the whole paraphernalia of legal concepts" applies with equal force to patent law's current eligibility test.<sup>16</sup>

Few would argue that the application of *Alice* and *Mayo* did not lead to increased invalidity rates,<sup>17</sup> particularly in the computer-implemented arts<sup>18</sup> and biotechnology.<sup>19</sup> But a consensus has formed among the bar and some Federal Circuit judges that the pendulum has swung too far and, more importantly, the means by which the ongoing correction has been achieved is ill-advised. Indeed, it has been argued the Supreme Court's recent reform of subject matter eligibility jurisprudence has been notably disruptive, resulting in "the most radical redefinition of patent-eligible subject matter in U.S. history;"<sup>20</sup> and, not surprisingly, delivering "a shock to patent practitioners and the inventive community."<sup>21</sup> A particularly striking example of push

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14. 566 U.S. 66, 71–72, 81–82 (2012).

15. See Robert Sachs, #Alicestorm: Patent Invalidations and USPTO Practice After Alice, BILSKI BLOG (Jan. 13, 2015), <http://www.bilskiblog.com/blog/alicestorm/> (tracking invalidity rates under 35 U.S.C. § 101).

16. *Harries v. Air King Prods. Co.*, 183 F.2d 158, 162 (2d Cir. 1950).

17. See Sachs, *supra* note 15.

18. See Mark Nowotarski, *Surviving Alice in the E-Commerce Arts*, BILSKI BLOG (May 17, 2017), <http://www.bilskiblog.com/blog/2017/05/surviving-alice-in-the-e-commerce-arts.html>; Mark Nowotarski, *Surviving Alice in the Finance Arts*, BILSKI BLOG (Jan. 30, 2017), <http://www.bilskiblog.com/blog/2017/01/surviving-alice-in-the-finance-arts-1.html>.

19. See Robert Sachs, *The One Year Anniversary: The Aftermath of #AliceStorm*, BILSKI BLOG (June 20, 2015), <http://www.bilskiblog.com/blog/2015/06/the-one-year-anniversary-the-aftermath-of-alicestorm.html> ("Overall, data shows that in 2012 subject matter rejections were mainly in the computer related Tech Centers (2100, 2400) and began declining thereafter, while escalating in biotechnology (1600) and so-called 'business methods' Tech Center, TC 3600, following *Mayo* and *Alice*.").

20. Jeffrey A. Lefstin & Peter S. Menell, *Restoring the Legislative Framework for Patenting Applications of Scientific Discoveries 2* (U.C. Berkeley Pub. Law Research Paper No. 2767904, 2016), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2767904](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2767904).

21. Jason Rantanen, *Patent Protection for Scientific Discoveries: Sequenom, Mayo, and the Meaning of § 101*, PATENTLYO (Apr. 22, 2016), <http://patentlyo.com/patent/2016/04/protection-scientific-discoveries.html>. For a background of legislative proposals relating to section 101, see Jeffrey A. Lefstin et al., *Final Report of the Berkeley Center for Law and Technology Section 101 Workshop: Addressing Patent Eligibility Challenges*, 33 BERKELEY TECH. L.J. 551, 562–66 (2018).

back came from Federal Circuit Judge Alan Lourie, who wrote, “I believe the law needs clarification by higher authority, perhaps by Congress, to work its way out of what so many in the innovation field consider are [section] 101 problems.”<sup>22</sup> This view was echoed by

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Moreover, in comments submitted to the U.S. Patent and Trademark Office (USPTO) regarding section 101’s eligibility requirements, the American Bar Association section on intellectual property wrote:

Over the last few years . . . the Supreme Court has injected ambiguity into the subject-matter eligibility determination. In particular, the current jurisprudence on patent eligibility under section 101 is confusing, creates uncertainty as to the availability and enforceability of patent assets, arguably risks the incentive to innovate provided by patents in technologies in which U.S. industry has historically led the world, and potentially places the U.S. in a less advantageous position on patent protection than our leading competitor nations. Indeed, the uncertainty that has resulted from recent Supreme Court precedent and its progeny may create the risk that investment by U.S. businesses in certain new technologies will be discouraged by virtue of the Court’s interpretation of the definition of what may be patented, as found in 35 U.S.C. § 101.

Letter from Donna P. Suchy, Section Chair, Am. Bar Ass’n Section of Intellectual Prop. Law, to Michelle K. Lee, Under Sec’y for Intellectual Prop. and Dir. of the U.S. Patent and Trademark Office 2 (Jan. 18, 2017) (citing *Alice Corp. Pty. v. CLS Bank Int’l*, 573 U.S. 208 (2014); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012)); see also Lefstin et al., *supra*, at 594–97 (discussing concerns within the biotechnology industry); David O. Taylor, *Confusing Patent Eligibility*, 84 TENN. L. REV. 157, 158 (2016) (“What started as a crisis of confidence in the patent system has now transformed into a crisis of confusion in the patent system.”). The American Intellectual Property Law Association (AIPLA) letter to USPTO is also instructive in its assessment:

Overall, our experience is that Patent Office examination decisions on patent eligibility have been inconsistent and confusing. At the same time, there has been a sharp uptick in litigating eligibility issues both before the courts and the Patent Trial and Appeal Board. The result is uncertainty and inefficiency for patent applicants and litigants, which is not healthy for our patent system and puts the incentives to innovate at risk.

Letter from Am. Intellectual Prop. Law Ass’n to U.S. Trademark and Patent Office, *in* CRAIG ALLEN NARD, *THE LAW OF PATENTS* 205 (5th ed. 2020).

22. *Berkheimer v. HP, Inc.*, 890 F.3d 1369, 1374 (Fed. Cir. 2018) (Lourie, J., concurring) (denying a rehearing en banc). Other judges share Judge Lourie’s sentiment. For instance, Judge Pfaelzer of the Central District of California wrote that the Supreme Court’s eligibility cases “often confuse more than they clarify . . . [and] appear to contradict each other on important issues.” *Cal. Inst. of Tech. v. Hughes Commc’ns, Inc.*, 59 F. Supp. 3d 974, 980 (C.D. Cal. 2014). Judge Pfaelzer’s colleague, Judge Wu, in describing the Supreme Court’s eligibility jurisprudence, evoked Justice Potter Stewart’s famous phrase, “I know it when I see it.” *McRO, Inc. v. Activision Publ’g, Inc.*, No. CV 14-336-GW(FFMx), 2014 WL 4759953, at \*5 (C.D. Cal. Sept. 22, 2014). Judge Plager of the Federal Circuit also wrote that *Alice* and its progeny

members of the U.S. Solicitor General's office, including the Solicitor General of the United States, and solicitors at the USPTO in an amicus curiae brief that encouraged the Justices to revisit its *Alice-Mayo* framework, particularly as it applies to biomedical-related inventions.<sup>23</sup>

The “abstract idea” and “inventive concept” tests, much like the invention requirement, form part of the “murky morass” that is subject matter eligibility jurisprudence.<sup>24</sup> A foray into these doctrines,<sup>25</sup> unmoored to underlying assumptions of the various technologic communities,<sup>26</sup> exacerbates extant institutional ignorance and unnecessarily creates conditions that can lead to the occupation of either margin on the aforementioned ex ante-ex post continuum. The result has “create[d] significant problems for many companies and investors contemplating research and development projects, . . . patent prosecutors, patent examiners, and patent jurists.”<sup>27</sup> As

“renders it near impossible to know with any certainty whether the invention is or is not patent eligible.” *Interval Licensing, LLC v. AOL, Inc.*, 896 F.3d 1335, 1348 (Fed. Cir. 2018) (Plager, J., concurring in part and dissenting in part).

23. In particular, the brief stated:

[I]t is arguably unclear whether even a method of treating disease with a *newly created* drug would be deemed patent-eligible under a mechanical application of *Mayo's* two-part test. . . . The potential for rote application of the *Mayo* two-step framework to call into question such bedrock understandings of the patent system, in a way that the *Mayo* court clearly did not envision, suggests that the *Mayo* framework warrants reconsideration.

Brief for the United States as Amicus Curiae at 14, *Hikima Pharm. USA, Inc. v. Vanda Pharm., Inc.*, 140 S. Ct. 911 (2020), [https://www.supremecourt.gov/DocketPDF/18/18-817/124768/20191206151701002\\_18-817%20-%20Hikima%20-%20CVSG%20-%20v28.pdf](https://www.supremecourt.gov/DocketPDF/18/18-817/124768/20191206151701002_18-817%20-%20Hikima%20-%20CVSG%20-%20v28.pdf). What is interesting is that the Solicitor General saw fit to make this point even though the brief represented that *Hikima* is not the right vehicle to rework section 101. *Id.* at 8.

24. *MySpace, Inc. v. GraphOn Corp.*, 672 F.3d 1250, 1260 (Fed. Cir. 2012).

25. Indeed, the *Alice* Court could not define “abstract idea,” stating: “[W]e need not labor to delimit the precise contours of the ‘abstract ideas’ category in this case.” *Alice Corp. Pty. v. CLS Bank Int'l*, 573 U.S. 208, 221 (2014). In a recent Federal Circuit case, Judge Linn in dissent wrote: “[T]he contours of the abstract idea exception are not easily defined. For that reason, the abstract idea exception is almost impossible to apply consistently and coherently.” *Smart Sys. Innovations v. Chi. Transit Auth.*, 873 F.3d 1364, 1377 (Fed. Cir. 2017) (Linn, J., dissenting in part and concurring in part).

26. See generally *Alice Corp. Pty.*, 573 U.S. at 208 (rendering an opinion without considering the underlying assumptions of different technology-based industries). As Senator Hatch remarked, “The Supreme Court has applied those exceptions in a way that has caused considerable uncertainty for technology and life sciences companies.” Orrin Hatch, *A Look Forward on Patent Reform*, MEDIUM (Oct. 2, 2017), <https://medium.com/@SenOrrinHatch/a-look-forward-on-patent-reform-288942e634f1>.

27. Lefstin et al., *supra* note 21, at 561.

Justice Gorsuch wrote, in the broader context of linguistic ambiguity, “vague laws . . . can invite the exercise of arbitrary power . . . by leaving the people in the dark about what the law demands and . . . judges to their intuitions.”<sup>28</sup>

I have written elsewhere that the courts have historically been and, indeed, should be, the principal architects of patent jurisprudence.<sup>29</sup> But there have been times when judges trend toward untenable positions that demand a substantive correction from the legislature.<sup>30</sup> We are now in the midst of such a time.<sup>31</sup> For example, in April of 2019, Senators Tillis and Coons and Representatives Collins, Johnson, and Stivers released a draft, bipartisan bill that would eliminate the *Alice/Mayo* two-step test and do away with judicially created exceptions to patentability, including “abstract ideas.”<sup>32</sup> Moreover, the bill makes it improper to consider “the manner in which the claimed invention was made; whether individual limitations of a claim are well known, conventional or routine; the state of the art at the time of the invention; or any other considerations relating to sections 102, 103, or 112” of the patent code.<sup>33</sup> In a statement accompanying the draft bill, the senators wrote:

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28. *Sessions v. Dimaya*, 138 S. Ct. 1204, 1224 (2018) (Gorsuch, J., concurring).

29. See Craig Allen Nard, *Legal Forms and the Common Law of Patents*, 90 B.U. L. REV. 51, 54 (2010).

30. The 1952 Patent Act was a legislative correction in the wake of the perceived anti-patent jurisprudence of the Supreme Court during the 1940s. See *id.* at 58.

31. Although there has been a strong push for the Supreme Court to revisit its eligibility jurisprudence. See, e.g., *supra* note 22 and accompanying text.

32. See *Sens. Tillis and Coons and Reps. Collins, Johnson, and Stivers Release Draft Bill Text to Reform Section 101 of the Patent Act*, THOM TILLIS, U.S. SENATOR FOR N.C. (May 22, 2019) [hereinafter *Tillis et al. Bill*], <https://www.tillis.senate.gov/2019/5/sens-tillis-and-coons-and-reps-collins-johnson-and-stivers-release-draft-bill-text-to-reform-section-101-of-the-patent-act>; see also *Collins, Johnson, Stivers, Tillis, and Coons Release Draft Bill to Reform Section 101 of the Patent Act*, HOUSE OF REPRESENTATIVES JUDICIARY COMMITTEE (May 22, 2019), <https://republicans-judiciary.house.gov/press-release/collins-johnson-stivers-tillis-and-coons-release-draft-bill-to-reform-section-101-of-the-patent-act/> (providing information on the draft bill).

33. See *Tillis et al. Bill*, *supra* note 32. There have been other bills. Representatives Massie and Kaptur introduced House Bill 6264 in 2018, entitled “Restoring America’s Leadership in Innovation Act of 2018.” This bill, derivative of the American Intellectual Property Law Association (AIPLA) and Intellectual Property Owners Association (IPO) legislative proposals, has two noteworthy provisions:

Section 7(a) seeks to alter the influence of *Alice* and *Mayo*. This section derives from the proposals made by the IPO and AIPLA and reads as follows:

AMENDMENT.—Section 101 of title 35, United States Code, is amended to read as follows:

§ 101. Inventions patentable

“[T]he U.S. patent system with regard to patent eligibility is broken and desperately needs to be repaired. The U.S. Supreme Court has confused and narrowed Section 101 of the Patent Act to the point that investors are reluctant to pursue the innovations that propel our country forward.”<sup>34</sup>

### I. MISPLACED AMBIGUITY: BACK TO THE FUTURE

Misplaced ambiguity can be found throughout the history of patent law. But perhaps the most prominent example is the so-called “invention requirement” that formed an important part of the Supreme Court’s patent jurisprudence during the 1930s and 1940s. This doctrine is not only historically significant but has enjoyed a resurgence of sorts in the context of eligibility jurisprudence. And, although not applied in its original form, the doctrine retains all of the

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(a) IN GENERAL.—Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

(b) EXCEPTION.—A claimed invention is ineligible patent subject matter under subsection (a) if the claimed invention as a whole, as understood by a person having ordinary skill in the art, exists in nature independently of and prior to any human activity, or exists solely in the human mind.

(c) ELIGIBILITY STANDARD.—The eligibility of a claimed invention under subsections (a) and (b) shall be determined without regard as to the requirements or conditions of sections 102, 103, and 112 of this title, or the claimed invention’s inventive concept.

Section 7(b)(3) is more explicit:

[T]his amendment effectively abrogates *Alice Corp. v. CLS Bank International*, 134 S. Ct. 2347 (2014) and its predecessors to ensure that life sciences discoveries, computer software, and similar inventions and discoveries are patentable, and that those patents are enforceable.

See H.R. 6264, 115th Cong. (2018), <https://www.congress.gov/bill/115th-congress/house-bill/6264/text>.

For the IPO proposed amendments, see INTELLECTUAL PROP. OWNERS ASS’N, PROPOSED AMENDMENTS TO PATENT ELIGIBLE SUBJECT MATTER UNDER 35 U.S.C. § 101 (2017), [http://www.patents4life.com/wp-content/uploads/2017/05/20170207\\_IPO-101-TF-Proposed-Amendments-and-Report.pdf](http://www.patents4life.com/wp-content/uploads/2017/05/20170207_IPO-101-TF-Proposed-Amendments-and-Report.pdf). For the AIPLA’s proposal, see AM. INTELLECTUAL PROP. LAW ASS’N, AIPLA LEGISLATIVE PROPOSAL AND REPORT ON PATENT ELIGIBLE SUBJECT MATTER (2017), <http://www.patents4life.com/wp-content/uploads/2017/05/AIPLA-Report-on-101-Reform-5-12-17.pdf>.

34. Chris Coons & Thom Tillis, *What Coons and Tillis Learned at Patent Reform Hearings*, LAW360 (June 21, 2019, 8:10 PM) <https://www.law360.com/articles/1171672/what-coons-and-tillis-learned-at-patent-reform-hearings>.

misguided ambiguity that accompanied its application seventy-five years ago.

*Hotchkiss v. Greenwood* was the first substantial acknowledgement that more than novelty and utility is required for patentability.<sup>35</sup> In *Hotchkiss*, the invention involved an old method of making doorknobs and the only difference between the patented invention and the prior art was that the inventor substituted a clay or porcelain knob for a metallic knob.<sup>36</sup> Although the invention was novel, the Supreme Court invalidated the patent because “the difference [was] formal, and destitute of ingenuity or invention.”<sup>37</sup> Importantly, this determination was made from the perspective of “an ordinary mechanic acquainted with the business”<sup>38</sup>—a precursor to the person having ordinary skill in the art.<sup>39</sup>

This third patentability requirement has been part of the patent law landscape since the mid-nineteenth century. But its application eventually grew increasingly inconsistent, largely due to the Court abandoning the functional approach of *Hotchkiss* and its objective

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35. See 52 U.S. 248, 266 (1850). The idea, however, of requiring something beyond novelty found expression in the late eighteenth century. For instance, Thomas Jefferson unsuccessfully sought to insert language to amend the 1790 Patent Act that would have denied a patent on an invention that was “so unimportant and obvious that it ought not be the subject of an exclusive right.” Thomas Jefferson, *Draft of a Bill to Promote the Progress of the Useful Arts*, in 5 THE WRITINGS OF THOMAS JEFFERSON 278, 279 (Paul Leicester Ford ed., 1895); see also Friedrich-Karl Beier, *The Inventive Step in Its Historical Development*, 17 INT’L REV. INDUS. PROP. & COPYRIGHT L. 301, 305 (1986) (noting the same). And John Duffy notes that the doctrine of nonobviousness can be traced to the 1793 Patent Act, specifically the language in section 2, “that simply changing the form or the proportions of any machine, or composition of matter, in any degree, shall not be deemed a discovery.” John F. Duffy, *Inventing Invention: A Case Study of Legal Innovation*, 86 TEX. L. REV. 1, 38 (2007) (quoting WILLARD PHILLIPS, THE LAW OF PATENTS FOR INVENTIONS 125–26 (1837)) (discussing the language of Congress’ Act of Feb. 21, 1793, ch. 11, § 2). The 1836 Patent Act repealed this language, but “the concept continued to thrive” thereafter because of the common law’s embrace of section 2’s language in constructing a general doctrine, namely that, in addition to utility and novelty, a “change in principle” over the prior art was a requirement for patentability. *Id.* at 37. *Hotchkiss* was the first significant opinion in this area and departed from the “change in principle” language, but according to Duffy, it is properly viewed as a continuation of the common law’s interpretation of section 2 of the 1793 Patent Act. See *id.* at 37–38; see also *Evans v. Eaton*, 20 U.S. 356, 379, 420 (1822).

36. *Hotchkiss*, 52 U.S. at 251–52.

37. *Id.* at 266.

38. *Id.* at 266–67; see also *Atlantic Works v. Brady*, 107 U.S. 192, 200 (1883) (stating the patent laws were not intended to protect “every trifling device, every shadow of a shade of an idea, which would naturally and spontaneously occur to any skilled mechanic or operator in the ordinary progress of manufactures”).

39. See *Hotchkiss*, 52 U.S. at 267.

anchor, the ordinary mechanic. Unmoored therefrom, the analytical framework of what constituted an “invention” became deeply subjective, particularly during the 1930s and 1940s.<sup>40</sup> This unfettered decision making that accompanied what became known as the “invention requirement” led to a profound patent skepticism, which was fueled by the Great Depression’s concern with anticompetitive effects of monopolies.<sup>41</sup> Representative of this skepticism, the Supreme Court invoked a “flash of genius” test and, additionally, cast doubt on the patentability of “combination” patents by requiring a display of synergism; that is, the combination, to be patentable, had to equal more than the sum of its parts.<sup>42</sup>

The flash of genius test found expression in *Cuno Engineering Corp. v. Automatic Devices Corp.*<sup>43</sup> The patent-in-suit involved an improvement for car lighters “commonly found in automobiles, for cigars, cigarettes and pipes.”<sup>44</sup> In particular, the patented lighter “provided for heating the igniter unit without removing it from the socket, and it eliminated all electrical and mechanical connection of the igniter unit.”<sup>45</sup> The Second Circuit held the patent valid and

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40. George M. Sirilla & Hon. Giles S. Rich, *35 U.S.C. . . . 103: From Hotchkiss to Hand to Rich, the Obvious Patent Law Hall-of-Famers*, 32 J. MARSHALL L. REV. 437, 473 (1999) (“Starting around 1930 the Supreme Court embarked on a period of what can only be termed disfavor of, if not outright hostility toward, patents.”). The anti-patent attitude toward patents was acute in the 1930s and 1940s, but the ambiguity accompanying the invention requirement was recognized in the late nineteenth century. As the Supreme Court articulated in *McClain v. Ortmyer*:

The truth is the word [invention] cannot be defined in such a manner as to afford any substantial aid in determining whether a particular device involves an exercise of the inventive faculty or not. In any given case we may be able to say that there is present invention of a very high order. In another we can see that there is lacking that impalpable something which distinguishes invention from simple mechanical skill. Courts, adopting fixed principles as a guide, have by a process of exclusion determined that certain variations in old devices do or do not involve invention; but whether the variation relied upon in a particular case is anything more than ordinary mechanical skill is a question which cannot be answered by applying the test of any general definition.

141 U.S. 419, 427 (1891).

41. See Edward B. Gregg, *Tracing the Concept of “Patentable Invention,”* 13 VILL. L. REV. 98 (1967); see also *Hearings on S. Res. 92 Before the Subcomm. on Patents, Trademarks, & Copyrights of the S. Comm. on the Judiciary*, 84th Cong. 114 (1955) (statement of then-retired Judge Learned Hand) (“I think a great deal of the odium that has surrounded the subject is because patents are monopolies.”).

42. See *Cuno Eng’g Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 84, 91 (1941).

43. *Id.*

44. *Id.* at 85–86.

45. *Id.* at 86.

infringed, noting that the claimed invention is “beyond the limited imagination of the ordinary skilled person.”<sup>46</sup> The Supreme Court reversed.<sup>47</sup> In an opinion written by Justice Douglas, the Court wrote, “[T]he new device, however useful it may be, must reveal a *flash of creative genius* not merely the skill of the calling.”<sup>48</sup> This subjective probing into the mental workings of the inventor provided a great deal of running room for the jurist and was seemingly inconsistent with the historical understanding that reflected an objective inquiry.<sup>49</sup>

The synergism requirement was the product of *Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp.*<sup>50</sup> The claimed invention related to a “cashier’s counter equipped with a three-sided frame,” which “speeds the customer on his way, reduces checking costs for the merchant, has been widely adopted and successfully used.”<sup>51</sup> The lower court found that each of the limitations in the claim was known in the art, but nonetheless held the arrangement of these known elements was “decidedly novel” and constitutes a “new and useful combination.”<sup>52</sup> The Supreme Court disagreed, noting that combination patents—patents that claim a combination of old or known elements—“must contribute something; only when the whole in some way exceeds the sum of its parts is the accumulation of old devices patentable.”<sup>53</sup>

Both of these doctrines resulted from the indeterminate nature of the “invention requirement,” which became the “plaything of the judges.”<sup>54</sup> This prompted concern among members of the patent bar

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46. *Automatic Devices Corp. v. Cuno Eng'g Corp.*, 117 F.2d 361, 364 (2d Cir. 1941).

47. *Cuno Eng'g Corp.*, 314 U.S. at 92.

48. *Id.* at 91 (emphasis added).

49. *See, e.g.*, *Earle v. Sawyer*, 8 F. Cas. 254, 256 (C.C.D. Mass. 1825) (“It is of no consequence, whether the thing be simple or complicated; whether it be by accident, or by long, laborious thought, or by an instantaneous flash of mind, that it is first done. The law looks to the fact, and not to the process by which it is accomplished.”).

50. 340 U.S. 147 (1950).

51. *Id.* at 149.

52. *Id.*

53. *Id.* at 152.

54. Giles S. Rich, *Principles of Patentability*, 28 GEO. WASH. L. REV. 393, 404 (1960). As the Supreme Court noted in *Sinclair & Carroll Co. v. Interchemical Corp.*:

A long line of cases has held it to be an essential requirement for the validity of a patent that the subject-matter display ‘invention’, ‘more ingenuity than the work of a mechanic skilled in the art.’ This test is often difficult to apply; but its purpose is clear. Under this test, some substantial innovation is necessary, an innovation for which society is truly indebted to the efforts of the patentee.

325 U.S. 327, 330 (1945) (internal citations omitted).

and technologic communities, who understood that the flash of genius test did not reflect the fact that inventions are brought to life in myriad ways, sometimes through deliberate plodding, sometimes accidental, and oftentimes a combination of both. In addition, why should patent law care about the mode or method of creation, given the law's utilitarian justification?<sup>55</sup> It was for this reason that Justice Story, arguably patent law's most influential nineteenth-century jurist, wrote, the law "gives the first inventor, or discoverer of the thing, the exclusive right, and asks nothing as to the mode or extent of the application of his genius to conceive or execute it."<sup>56</sup> As for the synergy requirement, "virtually every claimed invention is a combination of old elements," and "virtually every patent can be described as a 'combination patent.'"<sup>57</sup> In other words, there is nothing new under the sun; patentability resides in how known elements are combined and interrelate. Accordingly, what these doctrines revealed, and what became the principal concern of patent players, was that the invention requirement provided a blank canvas for judges to determine patentability. According to one prominent patent lawyer, the invention requirement "left every judge practically scot-free to decide this often controlling factor according to his personal philosophy of what invention *should* be patented, whether or not he had any competence to do so or any knowledge of the patent system as an operative socioeconomic force."<sup>58</sup>

The above view gathered consensus, resulting in the creation of section 103, designed to promote consistency and stability and establish parameters for determining obviousness.<sup>59</sup> Section 103, therefore, was not a codification of the "invention requirement." Rather, the "first policy decision underlying Section 103 was to cut loose altogether the century-old term 'invention.'"<sup>60</sup> It took legislative

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55. See Alan Devlin & Neel Sukatme, *Self-Realizing Inventions and the Utilitarian Foundation of Patent Law*, 51 WM. & MARY L. REV. 897, 910–16 (2009) ("[A]cademic commentators have resoundingly embraced the position that patent law exists to promote purely utilitarian concerns. More importantly, the U.S. Supreme Court has consistently reaffirmed the same view on multiple occasions.").

56. *Earle v. Sawyer*, 8 F. Cas. 254, 256 (C.C.D. Mass. 1825).

57. *Medtronic, Inc. v. Cardiac Pacemakers, Inc.*, 721 F.2d 1563, 1566 (Fed. Cir. 1983); see also *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1540 (Fed. Cir. 1983) (discussing synergism and combination patents).

58. Giles S. Rich, *The Vague Concept of "Invention" as Replaced by Sec. 103 of the 1952 Patent Act*, 46 J. PAT. OFF. SOC'Y 855, 865 (1964); see also *supra* note 40 and accompanying text.

59. See 35 U.S.C. § 103 (2018).

60. Giles S. Rich, *Laying the Ghost of the "Invention" Requirement*, in NONOBVIOUSNESS: THE ULTIMATE CONDITION OF PATENTABILITY 1:501, 1:508 (J.

action to pull (or push) this patentability requirement toward the center of the ex ante-ex post continuum, reflecting purposeful ambiguity. This correction can also be seen as positioning patent law within the familiar confines of the law more broadly. As Justice Clark wrote in *Graham v. John Deere Co.*,<sup>61</sup> the first Supreme Court case to review section 103:

What is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context. The difficulties, however, are comparable to those encountered daily by the courts in such frames of reference as negligence and scienter, and should be amenable to a case-by-case development. We believe that strict observance of the requirements laid down here will result in that uniformity and definiteness which Congress called for in the 1952 Act.<sup>62</sup>

## II. PURPOSEFUL AMBIGUITY AND PATENT LAW'S INCENTIVE DYNAMIC

Patent law and copyright law have much in common, each finding a shared constitutional home authorizing congressional action<sup>63</sup> and demanding those who toil in their respective policy and doctrinal fields to continuously wrestle with striking the right balance on the ex ante-ex post continuum. Efforts at achieving an optimal balance are hampered by high information costs.<sup>64</sup> Therefore, as only one

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Witherspoon ed., 1980). See generally Sirilla & Rich, *supra* note 40 (discussing the “invention requirement” and the creation of section 103).

61. 383 U.S. 1 (1966).

62. *Id.* at 18.

63. See U.S. CONST. art. I, § 8, cl. 8.

64. Information costs here is used to highlight unavoidable ignorance. But information costs theory has been applied in more specific contexts, such as claim interpretation, see Christopher A. Cotropia, *Patent Claim Interpretation and Information Costs*, 9 LEWIS & CLARK L. REV. 57, 82–91 (2005); innovation theory, see Shubha Ghosh, *Patents and the Regulatory State: Rethinking the Patent Bargain Metaphor After Eldred*, 19 BERKELEY TECH. L.J. 1315, 1358–59 (2004); and to explore the comparative dynamics between patents and copyrights, see Clarisa Long, *Information Costs in Patent and Copyright*, 90 VA. L. REV. 465 (2004). Of course, information costs theory is a staple in the law and economics literature. See, e.g., Alan Schwartz & Louis L. Wilde, *Intervening in Markets on the Bases of Imperfect Information: A Legal and Economic Analysis*, 127 U. PA. L. REV. 630, 630–32 (1979); George J. Stigler, *The Economics of Information*, 69 J. POL. ECON. 213, 213 (1961). For a discussion of information costs in the context of property, see Thomas W. Merrill &

balance point can exist at a given time, patent and copyright players, instead of pretending optimality is achievable, should seek to avoid either extreme of the spectrum. As Judge Easterbrook candidly acknowledged, “Neither Congress nor the courts has the information that would allow it to determine which is best.”<sup>65</sup> Accordingly, “[b]oth institutions must muddle through, using not a fixed rule but a sense of the consequences of moving dramatically in either direction.”<sup>66</sup> In the presence of unavoidable ignorance, the middle ground offers comparative safety. As Wendell Berry admonished us, the best approach to ignorance is “to be careful, to know the limits and the efficacy of our knowledge. It is to be humble and to work on an appropriate scale.”<sup>67</sup>

The tools by which the middle ground is occupied can be found in two of patent law’s esteemed doctrines: enablement and definiteness. The purposeful ambiguity and linguistic flexibility embodied in these doctrines recognize that during the creative enterprise every inventor is simultaneously both a “creator in part and a borrower in part,” and prior to the act of invention, “broad protection of intellectual property seems best; after it is published, narrow protection seems best.”<sup>68</sup> The challenge is that only a single rule can be established that “must achieve as much as possible of these inconsistent demands.”<sup>69</sup>

In route to arriving at “a single rule,” the purposeful ambiguity embodied in these well-traveled doctrines provides license for patent actors to engage underlying assumptions—established norms and customs—of the various technologic communities that operate within patent law.<sup>70</sup> More specifically, this ambiguity forms an operating

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Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1 (2000).

65. *Nash v. CBS, Inc.*, 899 F.2d 1537, 1541 (7th Cir. 1990).

66. *Id.*

67. WENDELL BERRY, *THE WAY OF IGNORANCE AND OTHER ESSAYS*, at ix–x (2006). Nobel Laureate Richard Feynman’s view of ignorance is also informative: “[I]t is of great value to acknowledge ignorance. It is a fact that when we make decisions in our life, we don’t necessarily know that we are making them correctly; we only think that we are doing the best we can—and that is what we should do.” Richard P. Feynman, Address at the Caltech University YMCA Lunch Forum: The Relation of Science and Religion (May 2, 1956).

68. *Nash*, 899 F.2d at 1541.

69. *Id.*

70. See Frank H. Easterbrook, *Statutes’ Domain*, 50 U. CHI. L. REV. 533, 533 n.2 (1983); see also *Cont’l Can Co. v. Chi. Truck Drivers Pension Fund, Helpers & Warehouse Workers Union (Indep.) Pension Fund*, 916 F.2d 1154, 1157 (7th Cir. 1990) (“You don’t have to be Ludwig Wittgenstein or Hans-Georg Gadamer to know that successful communication depends on meanings shared by interpretive communities.”); *In re Sinclair*, 870 F.2d 1340, 1342 (7th Cir. 1989) (“An unadorned

principle that is neither unrealistically demanding of the inventor, nor overly permissive. Built therein is an appreciation of the blunt nature of language,<sup>71</sup> which is a common denominator among all industries; yet the flexibility allows for industries to map their norms onto the patent system with the person having ordinary skill in the art acting as cartographer.<sup>72</sup>

### III. ENABLEMENT AND “UNDUE EXPERIMENTATION”

Patent law’s enablement requirement can be viewed as serving two functions.<sup>73</sup> The first function is facilitating information

‘plain meaning’ approach to interpretation supposes that words have meanings divorced from their contexts—linguistic, structural, functional, social, historical. Language is a process of communication that works only when authors and readers share a set of rules and meanings.”).

71. As the *Festo* Court recognized, “Unfortunately, the nature of language makes it impossible to capture the essence of a thing in a patent application.” *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 731 (2002). Thirty-five years earlier, the U.S. Court of Claims expressed a similar sentiment:

An invention exists most importantly as a tangible structure or a series of drawings. A verbal portrayal is usually an afterthought written to satisfy the requirements of patent law. This conversion of machine to words allows for unintended idea gaps which cannot be satisfactorily filled. Often the invention is novel and words do not exist to describe it. The dictionary does not always keep abreast of the inventor. It cannot. Things are not made for the sake of words, but words for things.

*Autogiro Co. of Am. v. United States*, 384 F.2d 391, 397 (Ct. Cl. 1967).

72. The person having ordinary skill in art is one of the cynosures of the American patent system and is valued for his or her technical knowledge and the underlying assumptions and problems present in his or her technological community. Several key issues in patent law are determined through the eyes of this hypothetical artisan, including claim scope, obviousness, enablement, and definiteness.

73. The enablement requirement is a common feature in patent systems. *See, e.g.*, 35 U.S.C § 112 (2018) (“The specification shall contain a written description of the invention, and the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art . . . to make and use the same . . . .”); Convention on the Grant of European Patents (European Patent Convention) art. 83, Oct. 5, 1973 (amended Nov. 29, 2000), <https://www.epo.org/law-practice/legal-texts/html/epc/2016/e/ar83.html> (“The European patent application shall disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.”); W.T.O. Agreement on Trade-Related Aspects of Intellectual Property Rights art. 29, Apr. 15, 1994, 33 I.L.M. 1144, 1197, 1869 U.N.T.S. 299 (1994), [https://www.wto.org/english/docs\\_e/legal\\_e/31bis\\_trips\\_04c\\_e.htm](https://www.wto.org/english/docs_e/legal_e/31bis_trips_04c_e.htm) (“Members shall require that an applicant for a patent shall disclose the invention in a manner sufficiently clear and complete for the invention to be carried out by a person skilled in the art . . . .”); *see also* Sivaramjani Thambisetty, *The Evolution of Sufficiency in Common Law* 6–9 (Law Soc’y Econ., Working Paper, 2013), [http://www.lse.ac.uk/collections/law/wps/WPS2013-06\\_Thambisetty.pdf](http://www.lse.ac.uk/collections/law/wps/WPS2013-06_Thambisetty.pdf) (comparing

dissemination.<sup>74</sup> Technical information disclosed in the patent, particularly the specification, has potential to create immediate value for follow-on researchers keen on improving the patented invention and for the public who would be the beneficiaries of these improvements. This view of the specification was embraced by the British House of Lords in *Kirin-Amgen, Inc. v. Hoechst Marion Roussel Ltd.*,<sup>75</sup> wherein Lord Hoffmann wrote:

[D]isclosure is not only to enable other people to perform the invention after the patent has expired. If that were all, the inventor might as well be allowed to keep it secret during the life of the patent. It is also to enable anyone to make immediate use of the information for any purpose which does not infringe the claims. The specifications of valid and subsisting patents are an important source of information for further research, as is abundantly shown by a reading of the sources cited in the specification for the patent in suit.<sup>76</sup>

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the enablement requirement under United States law with analogous requirements in common law jurisdictions).

74. *But see, e.g.*, Jeanne C. Fromer, *Patent Disclosure*, 94 IOWA L. REV. 539, 560 (2009) (“Notwithstanding the primacy of the patent document as a publicly available repository of information about a patented invention, a good deal of evidence suggests that technologists do not find that it contains pertinent information for their research.”). *See generally* Lisa Larrimore Ouellette, *Do Patents Disclose Useful Information?*, 25 HARV. J.L. & TECH. 545 (2012) (discussing the dissemination function of patent law’s disclosure requirements); Sean B. Seymore, *Making Patents Useful*, 98 MINN. L. REV. 1046 (2014) (same); Sean B. Seymore, *The Teaching Function of Patents*, 85 NOTRE DAME L. REV. 621 (2010) (discussing the teaching and disseminative functions of patent law’s disclosure requirements, including noteworthy critiques).

75. *Kirin-Amgen, Inc. v. Hoechst Marion Roussel Ltd.* [2004] UKHL 46, [2005] R.P.C. 9 (appeal taken from Eng.).

76. *Id.* at [77]. Consistent with this theme, William Robinson, the prominent nineteenth-century patent law treatise author, wrote in 1890 that “[w]ith very few exceptions, every invention is the result of the inventive genius of the age, working under the demand of its immediate wants, rather than the product of the individual mind.” 1 WILLIAM C. ROBINSON, *THE LAW OF PATENTS FOR USEFUL INVENTIONS* § 29 (1890); *see also* Mark A. Lemley, *The Economics of Improvement in Intellectual Property Law*, 75 TEX. L. REV. 989, 997 (1997) (“Creation does not occur in a vacuum. Rather, knowledge is cumulative—authors and inventors must necessarily build on what came before them. Indeed, if they did not do so, the societal costs in terms of reinvention would be enormous.” (internal citations omitted)).

Indeed, the importance of access to and dissemination of technical information as it relates to the pace of innovation has been appreciated by economic historians for some time.<sup>77</sup>

The second function requires the specification to enable subject matter commensurate with the scope of the claims, serving to restrict the claim scope.<sup>78</sup> To satisfy the commensurability requirement, claim scope must be less than or equal to the scope of enablement; in short, a patentee cannot claim more than he or she discloses.<sup>79</sup> Accordingly, the specification must enable a person having ordinary skill in the art to make and use the claimed invention without “undue experimentation.”<sup>80</sup> The adjective “undue” is noteworthy because it

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77. See, e.g., WILLIAM J. BAUMOL, *THE FREE-MARKET INNOVATION MACHINE: ANALYZING THE GROWTH MIRACLE OF CAPITALISM* 73–92 (2002); JOEL MOKYR, *THE GIFTS OF ATHENA: HISTORICAL ORIGINS OF THE KNOWLEDGE ECONOMY* 28–77 (2002). For a discussion on the gradual nature of innovation, see generally GEORGE BASALLA, *THE EVOLUTION OF TECHNOLOGY* (1988).

78. See *In re Johnson*, 558 F.2d 1008, 1017 (C.C.P.A. 1977) (“[W]e note that the specification as a whole must be considered in determining whether the scope of enablement provided by the specification is commensurate with the scope of the claims.”); see also *Nat’l Recovery Techs., Inc. v. Magnetic Separation Sys., Inc.*, 166 F.3d 1190, 1195–96 (Fed. Cir. 1999) (“The enablement requirement ensures that the public knowledge is enriched by the patent specification to a degree at least commensurate with the scope of the claims. The scope of the claims must be less than or equal to the scope of the enablement.”).

79. It would be difficult to overstate the importance of the patent claim. Patent claims are the touchstone of patent protection, what is often referred to as the “metes and bounds” of the patentee’s protected interest. Therefore, how claim language is interpreted is quite important. For works on the interpretive methodology of claim construction, see generally Christopher A. Cotropia, *Patent Claim Interpretation and Information Costs*, 9 LEWIS & CLARK L. REV. 57 (2005); Christopher A. Cotropia, *Patent Claim Interpretation Methodologies and Their Claim Scope Paradigms*, 47 WM. & MARY L. REV. 49 (2005); Peter S. Menell et al., *Patent Claim Construction: A Modern Synthesis and Structured Framework*, 25 BERKELEY TECH. L.J. 711 (2010); Craig Allen Nard, *A Theory of Claim Interpretation*, 14 HARV. J.L. TECH. 1 (2000); and R. Polk Wagner & Lee Petherbridge, *Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance?*, 152 U. PA. L. REV. 1105 (2004).

80. See *Cedarapids, Inc. v. Nordberg, Inc.*, 1997 WL 452801, at \*3 (Fed. Cir. Aug. 11, 1997); see also *Streck, Inc. v. Research & Diagnostic Sys., Inc.*, 665 F.3d 1269, 1288 (Fed. Cir. 2012) (“The enablement requirement is met where one skilled in the art, having read the specification, could practice the invention without ‘undue experimentation.’” (quoting *In re Wands*, 858 F.2d 731, 736–37 (Fed. Cir. 1988))). Under well-established case law of the Board of Appeal of the European Patent Office, the:

[D]isclosure must be reproducible without undue burden. A reasonable amount of trial and error is permissible provided that the skilled person has at his disposal, either in the specification or on the basis of common general knowledge, adequate information leading necessarily and directly towards success through the evaluation of initial failures.

implies that the enablement requirement will be satisfied even though some experimentation is needed to “make and use” the claimed invention. Herein resides purposeful ambiguity. Without the word “undue,” a party challenging the validity of a patent could more easily present a plausible case of insufficient disclosure as the smallest amount of experimentation would lead to invalidity. Thus, “undue” reflects a calculated judgment that is both demanding of the inventor to teach others to make and use what is being claimed and also forgiving in that the inventor does not need to hold the skilled artisan’s hand every step of the way, armed only with the blunt nature of language.

The key question of optimal claim scope is considered within the information dissemination and commensurability functions of the enablement requirement—“that is, the legal and policy determination relating to the breadth of the patentee’s property right that affects both ex-ante and ex-post incentives.”<sup>81</sup> Positioning a patentee’s “claim scope on the narrow-broad continuum has implications for not only the patentee, but also for follow-on innovators who seek to improve upon the patented technology and for consumers who are the ultimate beneficiaries of innovation.”<sup>82</sup>

This dynamic is illustrated by the famous case of *O’Reilly v. Morse*.<sup>83</sup> Here, Samuel Morse—a well-regarded portrait painter turned inventor—developed a method and apparatus of “transmitting intelligence between distant points by means of electro-magnetism.”<sup>84</sup> The patent described and claimed “the instruments” and “mode” of transmission, including the famed “Code.”<sup>85</sup> But Morse’s last claim (Claim 8) was notably ambitious:

I do not propose to limit myself to the specific machinery or parts of machinery described in the foregoing specifications and claims; the essence of my invention being the use of the motive power of the electric or galvanic current, which I call electro-magnetism, *however developed* for making or printing intelligible characters, signs, or letters, at any

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*See* Hitachi, Ltd. v. DaimlerChrysler AG, No. T0063/06, at 7, Decision, Board of Appeal of the European Patent Office (June 24, 2008).

81. CRAIG ALLEN NARD, *THE LAW OF PATENTS* 96 (5th ed. 2019).

82. *Id.*

83. 56 U.S. 62 (1853).

84. *Id.* at 84.

85. *See id.* at 88–96 (reproducing the relevant descriptions of the telegraph and code).

distances, being a new application of that power of which I claim to be the first inventor or discoverer.<sup>86</sup>

The majority opinion, authored by Chief Justice Taney, identified several concerns with this claim. First, the Court understood that the breadth of Claim 8, if left undisturbed, would leave too little room for follow-on improvement activity.<sup>87</sup> Justice Taney wrote:

For aught that we now know some future inventor, in the onward march of science, may discover a mode of writing or printing at a distance by means of the electric or galvanic current, without using any part of the process or combination set forth in the plaintiff's specification. . . . But yet if it is covered by the patent the inventor could not use it, nor the public have the benefit of it without the permission of this patentee.

. . . And when his patent expires, the public must apply to [the patentee] to learn what it is. In fine he claims an exclusive right to use a manner and process which he has not described and indeed had not invented, and therefore could not describe when he obtained his patent. The court is of opinion that the claim is too broad, and not warranted by law.<sup>88</sup>

Second, Morse's claim was not commensurate with what he disclosed. While there was sufficient disclosure in Morse's specification to support his first seven claims (to the apparatus and

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86. *Id.* at 112 (emphasis added) (quoting Claim 8).

87. *Id.* at 113.

88. *Id.* Implicit here is an understanding of inefficiencies involved in a "patent holdup" situation, specifically in the context of improvement activity. According to Tom Cotter, a patent holdup occurs when:

(1) when a competent patent owner (2) is able to exploit its bargaining power vis-à-vis downstream users (3) due to the possibility that the patent owner will be able to enjoin the manufacture, use, or sale of an end product that incorporates the patented invention, (4) in such a way as to threaten either (a) static deadweight loss far out of proportion to any likely increases in dynamic efficiency, or (b) dynamic efficiency losses due to downstream users' reduced incentives to invest in standard-specific technology or to engage in follow-up innovation.

Thomas F. Cotter, *Patent Holdup, Patent Remedies, and Antitrust Responses*, 34 J. CORP. L. 1151, 1153–54 (2009) (internal citations omitted).

code), his “however developed” language in Claim 8 would have extended the boundaries of his property right beyond his contribution to society.<sup>89</sup>

Finally, underlying the majority opinion was the fact Morse was one of many talented individuals who was working on telegraphy. For instance, the British had been operating a Wheatstone-designed electric telegraph since 1838, and there were others who added important pieces to the telegraph development prior to Morse.<sup>90</sup>

In *Morse*, both Justice Taney and Justice Grier engaged intellectual property’s incentive dynamic and struggled to identify the optimal balance between incentivizing creation while leaving enough room for others to operate without a plausible threat of litigation, with the understanding that the implicit beneficiary of properly aligned incentives is the public.<sup>91</sup>

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89. See *Morse*, 56 U.S. at 113 (“In fine he claims an exclusive right to use a manner and process which he has not described and indeed had not invented, and therefore could not describe when he obtained his patent.”). Similar issues were at play in *Nash v. CBS, Inc.*, 899 F.2d 1537 (7th Cir. 1990), but instead of telegraphy, the subject matter was literature and television production. Facts and ideas are not subject to copyright protection, as they are best left to the public to use, including for CBS, the alleged infringer. With this articulation of the fact/expression dichotomy in copyright law, Judge Easterbrook wrote from a more policy-oriented perspective, noting that during the creative enterprise every author “is simultaneously a creator in part and a borrower in part.” *Id.* at 1541. The same applies to every inventor as well, as a “borrower” of prior inventions. In this context, “[b]efore the first work is published, broad protection of intellectual property seems best; after it is published, narrow protection seems best.” *Id.* Nonetheless, “only one rule can be in force” and “[t]his single rule must achieve as much as possible of these inconsistent demands.” *Id.*

90. History remembers Morse more prominently than these other inventors, however, and for good reason:

Morse’s telegraph worked better, and the British would soon make the transition to Morse’s system. As Kenneth Silverman wrote, Morse was not the first to employ the powers of electromagnetism, but compared to his competitors, his telegraph was “the cheapest, the most rugged, the most reliable, and the simplest to operate.” KENNETH SILVERMAN, *LIGHTING MAN: THE ACCURSED LIFE OF SAMUEL F. B. MORSE* 322 (2003). Moreover, the famous Morse Code greatly influenced the use of language. According to historian Maury Klein, the “leisurely, flowery flow of Victorian prose found itself challenged by the terse, snappy vignettes of the telegram, where more words meant higher costs.” MAURY KLEIN, *THE GENESIS OF INDUSTRIAL AMERICA, 1870-1920*, at 77 (2007).

NARD, *supra* note 81, at 110.

91. See *Morse*, 56 U.S. at 113.

## IV. DEFINITENESS AND “REASONABLE CERTAINTY”

As has been established countless times, the most prominent and important part of the patent document is the claim.<sup>92</sup> Indeed, the claim is the touchstone of patent protection, what is often referred to, evoking the general Blackacre description, as the “metes and bounds” of the patentee’s protected interest.<sup>93</sup> But unlike real property where dirt and fences collaborate to confidently signal clearly defined boundaries, patent claims are comprised of words; and these words, oftentimes lacking conspicuous clarity, must be given meaning. Accordingly, the process and tools relating to interpreting claims is a fundamental feature of the patent system, one that is relevant to not only patent validity and infringement, but also private transactions. These transactions can be conducted either in the shadow of litigation, such as licensing, or outside the litigation context, “due diligence investigations that typically accompany the purchase of patent rights, which sometimes form an important component of a larger corporate merger or acquisition.”<sup>94</sup>

Relatedly, “knowing with reasonable certainty the boundaries of the patentee’s property rights helps competitors navigate follow-on improvement or design-around activity and decide with greater confidence whether a license is needed,” how to “calculate a royalty

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92. The claim is an early nineteenth-century innovation of patent attorneys that was developed to assist clients in proving validity and infringement. See John F. Duffy, *The Festo Decision and the Return of the Supreme Court to the Bar of Patents*, 2002 SUP. CT. REV. 273, 308 (“The legal construct now known as the patent claim . . . arose not from any administrative, judicial, or legislative requirement. Instead, it was an innovation of patent attorneys, and it was formulated to protect and to expand the rights of patentees.”). See generally Karl B. Lutz, *Evolution of the Claims of U.S. Patents*, 20 J. PAT. OFF. SOC’Y 377, 379 (1938) (“[A]fter the practice of making a technical ‘claim’ had become universal, the courts had developed some of the basic doctrines of patent law . . . and the problem of breadth of protection began to receive more adequate attention.”); William Redin Woodward, *Definiteness and Particularity in Patent Claims*, 46 MICH. L. REV. 755, 756 (1948) (“The problem of the validity of patent claims, both as to form and scope, has a peculiar acuteness in American law, because of the special status that the claims have in the American patent law . . .”).

93. See, e.g., *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 1000 (Fed. Cir. 1995) (Newman, J., dissenting) (“The legal effect of the patent claim is to establish the metes and bounds of the patent right to exclude.”); *Interdent Corp. v. United States*, 531 F.2d 547, 550 (Ct. Cl. 1976) (“It is axiomatic that the metes and bounds of an invention are defined by the claims and not by the drawings or specification of a patent.”).

94. NARD, *supra* note 81, at 64.

rate, or whether they are free to operate.”<sup>95</sup> Therefore, it is essential that claim interpretation rules are clear and predictive in nature.<sup>96</sup>

To aid in this interpretive task, patent law demands that inventors “particularly point[] out and distinctly claim[]” what they regard as their invention, in what has come to be known as the “definiteness requirement,” codified in 35 U.S.C. § 112(b).<sup>97</sup> The definiteness requirement and the policies underlying the requirement have been a component of the patent law jurisprudence at least since the late nineteenth century.<sup>98</sup> In *Merrill v. Yeomans*,<sup>99</sup> Justice Miller wrote that the “growth of the patent system in the last quarter of a century in this country has reached a stage in its progress where the variety and magnitude of the interests involved require accuracy, precision, and care in the preparation of all the papers on which the patent is founded.”<sup>100</sup> After *Merrill*, the Supreme Court provided three policy reasons for providing accurate and clear claim descriptions:

Accurate description of the invention is required by law, for several important purposes: 1. That the government may know what is granted, and what will become public property when the term of the monopoly expires. 2. That licensed persons desiring to practice the invention may know during the term how to make, construct, and use the invention. 3. That other

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95. *Id.* at 64; see *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 732 (2002) (“If competitors cannot be certain about a patent’s extent, they may be deterred from engaging in legitimate manufactures outside its limits, or they may invest by mistake in competing products that the patent secures.”).

96. See John M. Golden, *Construing Patent Claims According to Their “Interpretive Community”: A Call for an Attorney-Plus-Artisan Perspective*, 21 HARV. J.L. & TECH. 321, 323 (2008) (stating that certainty in patent rights may “facilitate licensing that promotes efficient levels of inventive and productive activity”); Joseph Scott Miller, *Enhancing Patent Disclosure for Faithful Claim Construction*, 9 LEWIS & CLARK L. REV. 177, 196 (2005) (“[I]t is well-accepted that clearer property boundaries promote efficiency by lowering transaction costs associated with bargaining over rights.”).

97. 35 U.S.C. § 112(b) (2018). The European Patent Convention counterpart is embodied in Article 84: “The claims shall define the matter for which protection is sought. They shall be clear and concise and be supported by the description.” Convention on the Grant of European Patents (European Patent Convention) art. 84, Oct. 5, 1973 (amended Nov. 29, 2000), <https://www.epo.org/law-practice/legal-texts/html/epc/2016/e/ar84.html>.

98. NARD, *supra* note 81, at 156.

99. 94 U.S. 568 (1876).

100. *Id.* at 573.

inventors may know what part of the field of invention is unoccupied.<sup>101</sup>

It is one thing to require certainty; quite another executing on it. To appreciate the difficulty in describing an innovation, imagine how you would describe a pencil to someone who has never seen one before. This deceptively difficult task reveals the challenge patent actors face when describing and, more importantly, claiming an invention. As the Court of Claims wrote in *Autogiro*, “The dictionary does not always keep abreast of the inventor. It cannot. Things are not made for the sake of words, but words for things.”<sup>102</sup>

Patent law’s definiteness requirement, as interpreted by the Supreme Court, reflects this challenge:

Section 112, we have said entails a “delicate balance.” On the one hand, the definiteness requirement must take into account the inherent limitations of language. Some modicum of uncertainty, the Court has recognized, is the “price of ensuring the appropriate incentives for innovation.” . . . At the same time, a patent must be precise enough to afford clear notice of what is claimed, thereby “appris[ing] the public of what is still open to them” . . . .

. . . .

To determine the proper office of the definiteness command, therefore, we must reconcile concerns that tug in opposite directions. Cognizant of the competing concerns, we read § 112, ¶ 2 to require that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with *reasonable* certainty. The definiteness requirement, so

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101. *Bates v. Coe*, 98 U.S. 31, 39 (1878) (citing *Gill v. Wells*, 89 U.S. 1, 27 (1874)).

102. *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 397 (1967). As Margaret Radin wrote, “[N]otice communicated by fences is not analogous enough to notice communicated by language. . . . Patent claims raise the question—in a way that fences do not—of how words ‘read on’ objects in, or states of, or events in the world.” Margaret Jane Radin, *Patent Notice and the Trouble with Plain Meaning*, 96 B.U. L. REV. 1093, 1096 (2016).

understood, mandates clarity, while recognizing that absolute precision is unattainable.<sup>103</sup>

The standard of “reasonable certainty” is another example of purposeful ambiguity. Allowing for some uncertainty, as opposed to a standard that is more exacting, reflects the reality of language and its prominent role in a property-rights, innovation-based system. As the Supreme Court recognized in *Festo*, uncertainty “[is] the price of ensuring the appropriate incentives for innovation.”<sup>104</sup>

But industry norms as reflected in the person having ordinary skill in the art can aid in cabining ambiguity. For example, words of degree such as “substantial” or “about” are commonly used in patent claims; as the Federal Circuit has noted, “Claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention.”<sup>105</sup> This notion of context can be seen as an implicit

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103. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 909–10 (2014) (emphasis added) (citations omitted) (quoting *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 731–32 (2002); *Markham v. Westview Instruments, Inc.*, 517 U.S. 370, 373 (1996)). Relatedly, the European Patent Office’s Guidelines for Examination state:

Relative or similar terms such as “*thin*”, “*wide*” or “*strong*” constitute a potentially unclear element due to the fact that their meaning may change depending on the context. For these terms to be allowed, their meaning must be clear in the context of the whole disclosure of the application or patent.

However, if a relative or similar term is used by the applicant as the only feature to distinguish the subject-matter of a claim from the prior art, the use of this term is objected to under Art. 84 unless the term has a well-recognised meaning in the particular art, e.g. “high-frequency” in relation to an amplifier, and this is the meaning intended.

Where the relative term has no well-recognised meaning the division invites the applicant to replace it, if possible, by a more precise wording found elsewhere in the disclosure as originally filed. Where there is no basis in the disclosure for a clear definition and the term is no longer the only distinguishing feature, it may be retained in the claim, because excising it would generally lead to an extension of the subject-matter beyond the content of the application as filed—in contravention of Art.123(2).

*Guidelines for Examination*, EUR. PATENT OFF., [https://www.epo.org/law-practice/legal-texts/html/guidelines2018/e/f\\_iv\\_4\\_6\\_1.htm](https://www.epo.org/law-practice/legal-texts/html/guidelines2018/e/f_iv_4_6_1.htm) (last updated Sept. 17, 2018).

104. *Festo*, 535 U.S. at 732.

105. *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014). Are words such as “substantial” or “about” more susceptible to a finding of indefiniteness? According to the Federal Circuit, no. The court stated that, “We do not

delegation (with a nod to the administrative law community)<sup>106</sup> to the relevant person(s) having ordinary skill in the art (PHOSITA) to fill in the interstices of claim language, a substantive gap-filler imported into the patent document from the technological community. Indeed, the Federal Circuit in *Phillips v. AWH Corp.* stressed the prominent role that context plays in claim interpretation:

“It is the person of ordinary skill in the field of the invention through whose eyes the claims are construed. Such person is deemed to read the words used in the patent documents with an understanding of their meaning in the field, and to have knowledge of any special meaning and usage in the field.”<sup>107</sup>

The skilled artisan is someone who understands custom, trade usage, and “undisputed contexts,” a Corbin devotee, allowing purposeful ambiguity to flourish without sacrificing too much certainty.<sup>108</sup> This emphasis on context in textual interpretation has

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understand the Supreme Court to have implied . . . , and we do not hold today, that terms of degree are inherently indefinite.” *Id.*

106. See generally Jonathan H. Adler & Christopher J. Walker, *Delegation and Time*, 105 IOWA L. REV. (forthcoming 2020).

107. 415 F.3d 1303, 1313 (Fed. Cir. 2005) (quoting *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998)).

108. “A contextual interpretation suggests that claim language is not determined in a vacuum, but should be harmonized with the intrinsic record, as understood within the technological field of the invention. In this regard, the *Phillips* Court affirmed the specification’s important role in claim interpretation.” NARD, *supra* note 81, at 77. According to the circuit court in *Sun Pharmaceutical Industries, Ltd. v. Eli Lilly & Co.*:

*Phillips* as well as the rest of our claim construction precedent, expounds that a “person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.”

611 F.3d 1381, 1388 (Fed. Cir. 2010) (quoting *ICU Med., Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1374 (Fed. Cir. 2009)). The court similarly stated in *Decisioning.com, Inc. v. Federated Department Stores, Inc.*:

We must read the specification in light of its purposes in order to determine “whether the patentee is setting out specific examples of the invention to accomplish those goals, or whether the patentee instead intends for the claims and the embodiments in the specification to be strictly coextensive. The manner in which the patentee uses a term within the specification and claims usually will make the distinction apparent.” *Ultimately, our “focus remains on understanding how a person of ordinary skill in the art would understand the claim terms.”*

attracted several notable thinkers such as Karl Llewellyn,<sup>109</sup> Pierre Bourdieu,<sup>110</sup> and John Searle.<sup>111</sup> But within patent law itself, perhaps Lord Hoffman expressed it best when he wrote that “[t]he meaning of words is . . . highly sensitive to context of and background to the particular utterance”; and not only the words chosen by the author matter, but so does “the identity of the audience he is taken to have been addressing and the knowledge and assumptions which one attributes to that audience.”<sup>112</sup> Or, as Wittgenstein stated in *Philosophical Investigations*, “the meaning of a word is its use in the language.”<sup>113</sup>

### CONCLUSION

Patent law is complex, replete with careful balancing acts and institutional actors who vie for prominence. Throughout patent law’s history, Congress has deferred to the judiciary to strike the appropriate balance on the ex ante-ex post continuum, but there have been moments in history that called for a legislative intervention. Much like the late 1940s, we are currently in the midst of such a moment.

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527 F.3d 1300, 1308 (Fed. Cir. 2008) (emphasis added) (quoting *Philips*, 415 F.3d at 1323–24).

109. KARL N. LLEWELLYN, *THE COMMON LAW TRADITION: DECIDING APPEALS* 268–85 (1960) (discussing what he referred to as “situation sense”).

110. PIERRE BOURDIEU, *OUTLINE OF A THEORY OF PRACTICE* 72–95 (Richard Nice trans., 1977) (discussing the “habitus”).

111. JOHN R. SEARLE, *THE CONSTRUCTION OF SOCIAL REALITY* 130 (1995) (referring to the “Background”).

112. *Kirin-Amgen, Inc. v. Hoechst Marion Roussel Ltd.* [2004] UKHL 46 [32] (appeal taken from Eng.).

113. LUDWIG WITTGENSTEIN, *PHILOSOPHICAL INVESTIGATIONS* § 43 (G.E.M. Anscombe trans., 2d ed. 1958).