

## AMENDING PATENT CLAIMS

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*Patent claims traditionally have been freely amendable to overcome a finding of unpatentability, whether in initial examination or reexamination. For that reason, the Patent Office's restrictive approach in new post-issuance review proceedings created by the America Invents Act provoked strident criticism; generated administrative, statutory, and constitutional challenges; and fractured the Federal Circuit. This Article provides a comprehensive evaluation of the costs and benefits of patent claim amendments that is surprisingly absent from the literature.*

*The results are mixed. Examination claim amendments are less clearly warranted than commonly thought, with the costs – primarily problematic incentives to draft ambiguous or overbroad claims – often overlooked and the benefits often overstated given other tools to protect patentees' legitimate claim scope. Conversely, post-issuance amendments are more justified than commonly thought, as competitors' reliance interests are overstated, patentees' reliance interests understated, and strategic behavior possible on either side. The ultimate optimality of claim amendments is ambiguous and depends on a normative judgment of where the risk of error should lie – hindering protection and incentives for inventors when warranted amendments are denied or hindering competition and follow-on innovation when unwarranted amendments are allowed.*

*This provides important policy insights. First, claim amendments involve the patent system's basic trade-off between incentivizing innovation and protecting competition and therefore offer a promising, but underutilized, tool for Congress to adjust this balance. Second, because of this connection to the patent system's basic balance, as well as the long-standing liberality towards amendments and the Patent Office's historically-limited role, adoption of a more restrictive approach to claim amendments should be left to Congress, either directly or by expressly delegating this question to the Patent Office. Thus, while the Patent Office reasonably could adopt its restrictive approach for post-issuance proceedings in light of current statutory ambiguity, the better approach is to await express direction from Congress. Finally, a discretionary, case-by-case judgment on post-issuance claim amendments may be preferable to a "one-size-fits-all" approach that is likely to generate significant errors.*

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## INTRODUCTION

Patent claim amendments have been a largely uncontroversial part of the patent system since 1836. Amendments allow a patent applicant or patent owner to alter its claims – the short summaries of the invention at the end of the patent that define the exclusive rights – from those first sought from, or issued by, the United States Patent and Trademark Office (“Patent Office”). Courts once struggled with amendments that expanded the patent owner’s exclusive rights after patent issuance before ultimately settling on a restrictive approach to such amendments.<sup>1</sup> But a liberal approach both to claim amendments before patent issuance and to amendments that narrow the patent owner’s exclusive rights (normally due to concern that the patent claimed more than statutorily permitted) have long been assumed to be a desirable part of the patent system.<sup>2</sup>

<sup>1</sup> DONALD S. CHISUM, CHISUM ON PATENTS § 15.02[5]-[8] (describing courts effort strug to reign-in broadening amendments in reissuance proceedings).

<sup>2</sup> See Br. of Biotechnology Innovation Organization as Amicus Curiae 8-9, *Aqua Products, Inc. v. Matal*, 872 F.3d 1290 (Fed. Cir. 2017) (en banc) (hereinafter, “*BIO Aqua Br.*”) (suggesting that “the ability of the patentee to amend its claims” in Patent Office proceedings is assumed to “be a common and otherwise unremarkable procedure that would unfold as a matter of course if not of right”).

Two developments have unsettled this status quo in recent years. First, and most prominently, the Patent Office made claim amendments virtually impossible in the new post-issuance proceedings Congress created in the America Invents Act of 2011 (“AIA”) to review and cancel issued patents that fail the requisite statutory criteria.<sup>3</sup> The Patent Office’s highly restrictive approach fueled both policy<sup>4</sup> and Constitutional<sup>5</sup> challenges to these new proceedings, while a statutory challenge to the Patent Office’s restrictive approach deeply fractured the en banc Federal Circuit in *Aqua Products, Inc. v. Matal*.<sup>6</sup>

Second, many commentators are concerned about the quality of issued patents, which are often seen as claiming too broadly or too vaguely.<sup>7</sup> Searching for leverage to encourage patent owners to draft more responsibly, some commentators have turned to claim amendments. The proposals vary but share the common goal of restricting or penalizing claim amendments, either in examination or post-issuance, so as to discourage patent owners from drafting overbroad or vague claims in the first place.<sup>8</sup>

Even as claim amendments move from background assumption to debated policy issue, little serious work exists evaluating the desirability of claim amendments either during examination or post-issuance – what benefits they provide at what cost and whether and to what extent claim

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<sup>3</sup> *Aqua*, 872 F.3d at 1299-1300 (O’Malley, J., opinion).

<sup>4</sup> Alden Abbott et al., *Crippling the Innovation Economy: Regulatory Overreach at the Patent Office* (Regulatory Transparency Project of the Federalist Society Aug. 14, 2017), <https://regproject.org/wp-content/uploads/RTP-Intellectual-Property-WorkingGroup-Paper.pdf> (“[T]he right to amend is important as a matter of policy. It is a key feature of successful post-issuance review programs . . .”).

<sup>5</sup> See, e.g., Br. of Biotechnology Innovation Organization & Association of University Technology Managers as Amici Curiae 28-29, *Oil States Energy Servs., LLC v. Greene’s Energy Group, LLC*, No. 16-712 (U.S. 2018) (identifying inability to amend as one of reasons inter partes review is constitutionally infirm).

<sup>6</sup> 872 F.3d 1290 (issuing five opinions, none for a majority, and splitting into different majorities for different issues).

<sup>7</sup> R. Polk Wagner, *Understanding Patent-Quality Mechanisms*, 157 U. PENN. L. REV. 2135, 2136-38 (2009) (noting that “the need to improve patent quality is essentially undisputed”).

<sup>8</sup> Tun-Jen Chiang, *Fixing Patent Boundaries*, 108 MICH. L. REV. 523, 575 (2010) (proposing abolishing post-issuance claim amendments and denying examination amendments retroactive effect); Wagner, *supra* note \_\_, at 2167 (proposing that amendments create strong prosecution history estoppel against asserting infringement by equivalents); Stephen Yelderman, *Improving Patent Quality With Applicant Incentives*, 28 HARV. J. L. & TECH. 77,120 (2014) (proposing a bond for each original claim that would be forfeited if the claim is amended or cancelled).

amendments are socially optimal.<sup>9</sup> Given their historical pedigree, examination claim amendments are just assumed to be necessary or inherent to the process of patent examination.<sup>10</sup> Even those who advocate restricting claim amendments to improve patent quality tend to narrowly focus on the benefits for patent quality, without conducting an overall evaluation of social desirability.<sup>11</sup>

Likewise, in five opinions and seventy-seven pages, the en banc Federal Circuit in *Aqua Products* focused on narrow questions of statutory interpretation and administrative deference, with only passing reference to the policy justifications for post-issuance claim amendments.<sup>12</sup> Proponents of post-issuance claim amendments tend to make conclusory assertions of the clear social benefit from preserving the patent owner's rights while narrowing the restrictions on the public.<sup>13</sup> Conversely, opponents tend to make generalized arguments about the undesirability of making ultimate invalidation of a claim more difficult.<sup>14</sup>

This Article provides the comprehensive evaluation of patent claim amendments, both during examination and post-issuance, largely absent from the literature. It weighs the benefits and costs of amendments in each context to evaluate whether, and to what extent, claim amendments are a socially optimal feature of the patent system. The results are mixed and are unlikely to completely satisfy either side of current policy debates over the patent system generally and claim amendments specifically.<sup>15</sup>

Examination claim amendments rest on weaker foundations than their long-standing and widespread acceptance would suggest.<sup>16</sup> Their primary

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<sup>9</sup> For a notable exception, see Chiang, *supra* note \_\_, discussed and distinguished extensively *infra*.

<sup>10</sup> See, e.g., Timothy B. Lee, *Why the roots of patent trolling may be in the patent office*, ARSTECHNICA (Mar. 5, 2018), <https://arstechnica.com/tech-policy/2018/03/why-the-roots-of-patent-trolling-may-be-in-the-patent-office/#p3> (“Patent examiners don’t just decide whether or not to approve a patent. They’re also supposed to narrow a patent’s claims to make sure it only covers what the inventor actually invented.”).

<sup>11</sup> See Wagner, *supra* note \_\_, at 2167-68 (providing one-paragraph consideration of the costs of limiting claim amendments); Yelderman, *supra* note \_\_, at 120-121 (not reaching ultimate social desirability of penalizing claim amendments to improve patent quality).

<sup>12</sup> See generally *Aqua*, 872 F.3d 1290.

<sup>13</sup> See, e.g., Br. of Amicus Curiae Pharmaceutical Research and Manufacturers of America 11, *Aqua*, 872 F.3d 1290 (hereinafter, “PhRMA *Aqua* Br.”)

<sup>14</sup> See, e.g., Br. of Askeladden, L.L.C. as Amicus Curiae 18, *Aqua*, 872 F.3d 1290 (hereinafter, “Askeladden *Aqua* Br.”).

<sup>15</sup> Cf. Lisa Larrimore Ouellette, *Cultural Cognition of Patents*, 4 IP THEORY 28, 28-30 (2014) (describing sharp divide between sides in patent policy debates).

<sup>16</sup> See Part II, *infra*.

benefit is to promote the incentives to innovate at the heart of the patent system by allowing the patent owner to still obtain some patent protection even when the initial claims are rejected as claiming more than allowed.<sup>17</sup> However, this benefit is overstated given the other tools patent owners have to protect their legitimate claim scope, including the ability to file multiple claims; the presumption that issued claims, even if broad, are valid; and the ability to prove infringement by the doctrine of equivalents if claims are too narrow to fully protect the invention.<sup>18</sup> In contrast, the incentives examination amendments provide patent owners to draft the vague and broad claims most beneficial to them and most problematic for patent quality impose definite costs.<sup>19</sup>

Ultimately, examination amendments represent a trade-off between the desire to insure that patent owners receive some reward for their inventions to incentivize innovation in the first place and the concern that patent owner's self-interested incentives lead them to draft low quality claims that hinder competition and follow-on innovation.<sup>20</sup> This, in turn, invokes deep splits within the patent community about whether (and to what extent) patent protection is needed to incentivize innovation, whether strong patent rights that maximize protection for the inventor or weaker patent rights that permit greater competition and follow-on innovation are optimal, and whether the status quo currently favors patent owners or accused infringers.<sup>21</sup> Commentators have spilled significant ink on these questions, but the best conclusion is that the effects of patent protection are uncertain.<sup>22</sup>

The evaluation of post-issuance claim amendments reaches a similar bottom-line conclusion – that the justifications are ambiguous and ultimately a place for Congress to balance the need to protect patent owner incentives with the need to encourage competition and follow-on innovation.<sup>23</sup> On the one hand, the need to protect innovation incentives may be less than with examination amendments because the patent owner already had some exclusivity, while greater concerns exist about notice and the reliance interests of competitors and about strategic amendments designed specifically to capture competitor's products or to prevail in litigation.<sup>24</sup> On

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<sup>17</sup> See Part II.A.1-2, *infra*.

<sup>18</sup> See Part II.C, *infra*.

<sup>19</sup> See Part II.B.4, *infra*.

<sup>20</sup> See Part II.C, *infra*.

<sup>21</sup> See Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1580-81 (2003).

<sup>22</sup> See CRAIG ALLEN NARD, *THE LAW OF PATENTS* 40 (4th ed. 2017).

<sup>23</sup> See Part III.E, *infra*.

<sup>24</sup> See Part III.A-B, D, *infra*.

the other hand, the extent of these concerns is questionable in light of the widespread belief that companies, at least in some industries, do not read or clear patents before launching products and the fact that accused infringers themselves have incentives and opportunities to attack and create problems with even meritorious patents.<sup>25</sup> Moreover, patent owners that have invested or made business decisions based on patent protection have their own legitimate reliance concerns.<sup>26</sup> In sum, the justifications for post-issuance claim amendments are, at most, different in degree, not different in kind, from examination amendments and rest on the same basic question of the proper trade-off between protecting the patent owner's innovation incentives and encouraging competition and follow-on innovation.<sup>27</sup>

Concluding that the social desirability of claim amendments is ambiguous and depends on a particular normative vision about the proper balance between incentivizing innovation and protecting competition that is at the heart of the patent system<sup>28</sup> may appear superficially unsatisfying. But it has important policy implications. Any normative conclusion about claim amendments depends on where the risk of error should lie: denying warranted amendments and undermining innovation incentives through a restrictive approach to amendments or allowing unwarranted amendments and interfering with legitimate competition and follow-on innovation through a liberal approach to claim amendments.<sup>29</sup> In the American patent system, the task of striking this “careful balance between the need to promote innovation and the recognition that imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy” is assigned to Congress.<sup>30</sup>

For this reason, examination amendments are a potentially useful tool for Congress to adjust the fundamental balance of the patent system, even if this tool has been historically ignored.<sup>31</sup> This is not to say that it would be wise for Congress to suddenly abolish examination claim amendments after nearly two hundred years. After all, “a page of history is worth a volume of

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<sup>25</sup> See Part III.B, D, *infra*.

<sup>26</sup> See Part III.B, *infra*.

<sup>27</sup> See Part III.E, *infra*.

<sup>28</sup> This Article follows the consensus that the patent system is driven by utilitarian, economic considerations, not moral rights, distributive considerations, or the desire to reward inventors, and therefore “[w]e grant patents in order to promote innovation, and so we should grant patents only to the extent necessary to encourage such innovation.” Burk & Lemley, *Policy Levers*, supra note \_\_\_, at 1596-99.

<sup>29</sup> See Part IV.A.2, *infra*.

<sup>30</sup> *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989).

<sup>31</sup> See Part IV.A.2, *infra*.

logic.”<sup>32</sup> However, this analysis provides the theoretical foundation for recent suggestions that claim amendments should be restricted or penalized to enhance patent quality. Without reaching a judgment as to whether these proposals are warranted, the analysis in this Article indicates that if Congress deemed patent quality sufficiently serious to require intervention, claim amendment policy is a viable and promising tool for addressing this issue.<sup>33</sup>

Turning to post-issuance amendments, in light of the statutory ambiguity found by the Federal Circuit in *Aqua Products* and the uncertainty about the social desirability of post-issuance claim amendments, any approach adopted by the Patent Office would be reasonable, and therefore entitled to deference.<sup>34</sup> Thus, the Patent Office *could* re-promulgate its restrictive approach but probably *should* not. The ambiguity regarding post-issuance claim amendments provides little reason to depart from the long-standing historical practice in favor of liberal amendments.<sup>35</sup> Moreover, the Patent Office’s role in making patent policy is traditionally limited, and post-issuance proceedings have exceeded Congress’s expectations in terms of their impact in invalidating patents, due in part to the Patent Office’s restrictive approach to claim amendments.<sup>36</sup> All of these considerations suggest that as a matter of democratic legitimacy, Congress should explicitly weigh-in on post-issuance amendments.

Ultimately, Congress reasonably could choose any path. It could expressly extend by statute the traditional liberality to claim amendments into AIA post-issuance proceedings if the Patent Office’s approach has tilted the balance further than Congress intended but also could alternatively codify a restrictive approach if it believes that the effects have been desirable, even if unanticipated.<sup>37</sup> Or it could expressly delegate this decision to the Patent Office if it wants to introduce a greater policy role for the Patent Office, as some have suggested it should.<sup>38</sup>

The best path for Congress may not be to make post-issuance claim amendments either available as of right (as in examination and reexamination) or virtually impossible (as the Patent Office did in AIA proceedings). Instead, Congress could give the Patent Office discretion to

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<sup>32</sup> *Eldred v. Ashcroft*, 537 U.S. 186, 200 (2003) (quotations omitted) (addressing copyright).

<sup>33</sup> See Part IV.A.2, *infra*.

<sup>34</sup> See Part IV.B.2, *infra*.

<sup>35</sup> *Id.*

<sup>36</sup> *Id.*

<sup>37</sup> See Part IV.B.3, *infra*.

<sup>38</sup> *Id.*

allow post-issuance claim amendments on a case-by-case basis in light of the specific context of the individual patent, including: the patent owner's investments in research, development, and commercialization; the opportunities the patent owner had to recoup these investments; the degree of reliance by competitors and the public; and the needs and practices of the specific industry.<sup>39</sup> Many have proposed such tailored and context-specific approaches to patent law that more accurately reflect the diverse situations in which the trade-off between innovation incentives and competition arises.<sup>40</sup> Post-issuance claim amendments are a particularly suitable way of doing so because they can reduce the errors that arise out of a generally-applicable claim amendment policy (whether liberal or restrictive) while minimizing concerns about cost, institutional competence, and capture that often accompany proposals to tailor patent law to the context of individual patents.<sup>41</sup>

The Article proceeds in four parts. Part I provides an overview of the practice of amending patent claims during examination and post-issuance. Part II weighs the benefits of costs of claim amendments during examination, while Part III does the same with regard to post-issuance amendments. Part IV applies the lessons drawn from Parts II and III to current policy debates related to both examination and post-issuance amendments and introduces the possibility discretionary post-issuance claim amendments. A brief conclusion follows.

## I. THE PRACTICE OF AMENDING PATENT CLAIMS

### A. Patent Claiming

A United States patent has two primary parts: “a written description of the invention” and “one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.”<sup>42</sup> The written description, or specification, discloses the technical information that is the “*quid pro quo*” justifying the exclusive rights granted by the patent.<sup>43</sup> Claims are numbered, single sentences—though often long and convoluted—at the end of the patent that summarize the invention for which protection is sought.<sup>44</sup>

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<sup>39</sup> See Part IV.C.1, *infra*.

<sup>40</sup> See Part IV.C.2, *infra*.

<sup>41</sup> See Part IV.C.3, *infra*.

<sup>42</sup> 35 U.S.C. § 112(a) & (b).

<sup>43</sup> *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F. 3d 1336, 1345 (Fed. Cir. 2010) (en banc).

<sup>44</sup> ROBERT PATRICK MERGES & JOHN FITZGERALD DUFFY, PATENT LAW & POLICY:

Claims have two closely-related roles. First, they create and substantively define the patent owner's right to exclude, such that the patent owner's rights are limited to the scope of the claims.<sup>45</sup> Second, claims provide public notice of the boundaries of the patent owner's rights to delineate what activities are reserved to the patent owner and what remain open to the public.<sup>46</sup> Patent claims require the translation of complex, technical concepts into brief, legal shorthand, leading to general terminology, incomplete descriptions, and "an amalgam of multiple vocabularies and perspectives," such as ordinary English, conventions of claim drafting (*i.e.*, "patentese"), and scientific or technical words.<sup>47</sup> Patent owners often draft claims with vague and ambiguous terminology that can be read narrowly to avoid the prior art when obtaining the patent and broadly to cover a competitor's product in subsequent licensing negotiations or litigation.<sup>48</sup>

A patent normally includes several claims that vary in scope by including more or fewer limitations or vary in the words or structure used to describe the invention.<sup>49</sup> This helps the patent owner maximize the reach of its patent, reduce the risks arising from the inherent problems of patent claiming, and increase the chances that at least one claim will cover a competitor's product and not encroach on the prior art.<sup>50</sup>

An inventor seeking patent protection must file a draft patent with the Patent Office. A Patent Office examiner reviews the application to determine whether it satisfies the statutory requirements for a patent.<sup>51</sup> The examiner normally issues one or more "Office Actions" finding the invention unpatentable either because the disclosure is insufficient or, more commonly, because it is too close to the existing knowledge in the field ("prior art").<sup>52</sup> The patent prosecutor then normally provides a "Response," which explains

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CASES & MATERIALS 26, 29 (5th ed. 2011).

<sup>45</sup> Christopher A. Cotropia, *Patent Claim Interpretation Methodologies and Their Claim Scope Paradigms*, 47 WM. & MARY L. REV. 49, 65 (2005).

<sup>46</sup> *Id.* at 62-65.

<sup>47</sup> *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 396-397 (Ct. Cl. 1967); Peter S. Menell et al., *Patent Claim Construction: A Modern Synthesis and Structured Framework*, 25 BERKLEY TECH. L.J. 711, 719-720 (2010).

<sup>48</sup> Dan L. Burk & Mark A. Lemley, *Fence Posts or Sign Posts? Rethinking Patent Claim Construction*, 157 U. Penn. L. Rev. 1743, 1753 (2009).

<sup>49</sup> Michael J. Meurer & Craig Allen Nard, *Invention, Refinement and Patent Claim Scope: A New Perspective on the Doctrine of Equivalents*, 93 GEO. L.J. 1947, 1971, 1975 (2005).

<sup>50</sup> *Id.*

<sup>51</sup> Menell et al., *supra* note \_\_, at 720.

<sup>52</sup> F. SCOTT KIEFF ET AL., PRINCIPLES OF PATENT LAW: CASES & MATERIALS 105 (5th ed. 2011).

why the examiner is wrong and the invention is a sufficient advance over the prior art to warrant a patent.<sup>53</sup> Additionally or alternatively, the prosecutor may amend the claims to narrow or clarify them in a way designed to distinguish the prior art identified by the examiner or insure that the claims are supported by the disclosure in the specification.<sup>54</sup>

### *B. Claim Amendments During Patent Examination*

Claim amendments have existed since the Patent Act of 1836 created the current system by which the Patent Office conducts pre-issuance examination for compliance with the statutory criteria of patentability.<sup>55</sup> Since at least 1870, amendments have been an express right of the applicant that the examiner must consider.<sup>56</sup> The right to amend patent claims remains largely the same today.<sup>57</sup> Patent claims generally are freely amendable at the applicant's discretion and the amendments must be considered by the patent examiner if filed before or in response to the examiner's first office action.<sup>58</sup> Even after a second or subsequent rejection by the examiner, the claims remain amendable at the applicant's discretion and must be considered by the examiner, though generally only if the applicant pays an additional fee.<sup>59</sup> Like original claims, a procedurally proper claim amendment is presumptively patentable, with the burden falling on the examiner to prove unpatentability.<sup>60</sup>

Unsurprisingly given this right to amend, amendments are “a common practice in prosecution of patent applications.”<sup>61</sup> Examination amendments tend to fall into three major categories. Most commonly, examination

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<sup>53</sup> *Id.* at 106.

<sup>54</sup> *Id.*

<sup>55</sup> Patent Act of 1836 § 7. The 1836 Act actually provided for specification amendments, but this was functionally equivalent at a time when the specification performed the role of modern claims. *See Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 379 (1996). Congress retained amendments when it officially introduced claims in 1870. Patent Act of 1870 §§ 26, 41. The United States had a brief period of pre-issuance review from 1790-1793 but this differed significantly from modern examination, with high-ranking officials making essentially discretionary decisions. OREN BRACHA, *OWNING IDEAS: THE INTELLECTUAL ORIGINS OF AMERICAN INTELLECTUAL PROPERTY, 1790-1909* 193-194 (Cambridge University Press 2016).

<sup>56</sup> Patent Act of 1870 § 41.

<sup>57</sup> 35 U.S.C. § 132(a).

<sup>58</sup> 37 C.F.R. §§ 1.111(a), 1.115(a)-(b).

<sup>59</sup> *Id.* §§ 1.113(a), 1.114(a), (c).

<sup>60</sup> *See PhRMA Aqua Br.*, *supra* note \_\_, at 8 (Aside from AIA post-issuance proceedings, “neither Congress nor the PTO has ever placed a similar patentability burden on a patent owner or applicant.”).

<sup>61</sup> *Hughes Aircraft Co. v. U.S.*, 717 F.2d 1351, 1363 (Fed. Cir. 1983).

amendments respond to the examiner's rejection of the original claims by narrowing the scope of the claim to distinguish the prior art or make the claim commensurate with the disclosure in the specification (depending on the grounds for the rejection).<sup>62</sup> Indeed, the most common patent prosecution strategy is to first claim broadly and then iteratively narrow the claims in response to examiner rejections.<sup>63</sup> This allows the patent applicant to obtain the broadest claim scope that the examiner will allow.

At the other extreme are broadening claim amendments, which are permitted as long as they are supported by the specification's disclosure and are treated as if filed as part of the original application.<sup>64</sup> Sometimes the applicant or its attorney independently realize a broadening amendment is necessary, whether because they initially had an incomplete understanding of the invention, because of the inherent shortcomings of translating inventions into words, or, less desirably, because they subsequently realized that they can claim more broadly than the actual invention due to the paucity of prior art and the way the disclosure was drafted. Broadening amendments are allowed even not the result of independent realization by the applicant or attorney. "[I]t is not improper for an applicant to broaden his claims during prosecution in order to encompass a competitor's products, as long as the disclosure supports the broadened claims."<sup>65</sup>

Between these extremes, there are examination amendments that clarify or alter claim language without narrowing or broadening claim scope. Whether in response to an examiner rejection or from independent realization, amendments may more clearly specify the invention to distinguish from prior art references or better track the disclosure in the specification.<sup>66</sup> And such amendments may even be made to purposefully

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<sup>62</sup> *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 234 F.3d 558, 592 (Fed. Cir. 2000) (en banc) (Newman, J., concurring-in-part and dissenting-in-part), vacated on other grounds by 535 U.S. 722 (2002) (describing "[i]nformal inquiry" that only 10-15% simple inventions and virtually no complex inventions are granted patents without amendments and noting "[i]t has been routine practice for patent solicitors to initially present broad claims to an invention, in the expectation of honing the claims in interaction with the examiner").

<sup>63</sup> *Festo*, 234 F.3d at 592 (Plager, J., concurring).

<sup>64</sup> *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 909 n.2 (Fed. Cir. 2004). The doctrine of "late claiming" once restricted broadening amendments more than one year after filing, but it has been replaced by the more limited concept of prosecution laches that "applies only in egregious cases of unreasonable and unexplained delay in prosecution." USPTO, MANUAL OF PATENT EXAMINING PROCEDURES § 2190 (9th ed. Rev. 08-2017) (hereinafter, "MPEP"); MOY'S WALKER ON PATENTS § 3:31 (4th ed. Apr. 2017 Update)

<sup>65</sup> *Liebel-Flarsheim*, 358 F.3d at 909 n.2.

<sup>66</sup> *Cf. Slimfold Mfg. Co. v. Kinkead Indus.*, 810 F.2d 1113, 1116-17 (Fed. Cir. 1987) (describing amendment in reissue proceeding that did not change claim scope but instead

cover or better target a competitor's product, even without broadening scope.<sup>67</sup>

### *C. The Development of Post-Issuance Claim Amendments*

This section traces the development of post-issuance claim amendments from their inception pre-dating examination amendments to the six different avenues for post-issuance amendments today.

#### 1. Reissue

The roots of post-issuance claim amendments lie in the reissue practice that developed under the Patent Act of 1793. From 1793-1836, United States patents issued upon compliance with administrative formalities but without substantive examination.<sup>68</sup> When problems were discovered post-issuance, often in litigation, patent owners sought to surrender their original patent and receive a replacement amended to address the problem.<sup>69</sup> Despite a lack of express statutory authority, the Patent Office began granting such requests in the 1810s.<sup>70</sup> The Supreme Court endorsed this practice in 1832,<sup>71</sup> and Congress codified it the same year.<sup>72</sup> The Patent Act of 1836 doubled the opportunities for patent owners to correct problems in original claims by retaining reissue proceedings even as it introduced pre-issuance examination and examination amendments.<sup>73</sup>

The Supreme Court became concerned in the late 19th century that reissue amendments were primarily used to expand claim scope to ensnare competitor's products and therefore introduced a number of limits on broadening reissues that were largely codified by the Patent Act of 1952.<sup>74</sup>

A patent owner today can obtain a reissued patent for the same invention disclosed in the original specification when an error in original prosecution resulted in its original claims being invalid or inoperative due to

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simply removed ambiguity by specifying the antecedent basis for term "on said sleeve").

<sup>67</sup> *Cordis Corp. v. Medtronic AVE, Inc.*, 511 F.3d 1157 (Fed. Cir. 2008) (finding that claim added to covers competitor's product "does not broaden the scope of coverage").

<sup>68</sup> Bracha, *supra* note \_\_, at 201-203.

<sup>69</sup> EDWARD C. WALTERSCHEID, *TO PROMOTE THE PROGRESS OF USEFUL ARTS: AMERICAN PATENT LAW AND ADMINISTRATION 1798-1836*, 266-267 (Fred B. Rothman & Co. 1998).

<sup>70</sup> *Id.* at 266-267.

<sup>71</sup> *Grant v. Raymond*, 31 U.S. 218, 243 (1832).

<sup>72</sup> Patent Act of July 3, 1832 § 3.

<sup>73</sup> Patent Act of 1836 § 13.

<sup>74</sup> Chisum on Patents § 15.02[5], [9]-[10].

a defective specification or, more relevant for present purposes, claiming more or less than the patent owner's invention.<sup>75</sup> As with examination amendments, reissue claim amendments can narrow claims to avoid prior art or ensure adequate support from the specification, expand claims to provide adequate protection against infringement of all embodiments of the invention, or cure ambiguity or vagueness that may render the patent indefinite or otherwise invalid.<sup>76</sup>

Reissue amendments are more limited than examination amendments. First, reissuance amendments require an "error" during original prosecution, although courts have tended (though inconsistently) to interpret this broadly to include errors of fact, errors of law, and even errors of judgment and most commonly to exclude deliberate decisions to forego claim scope in order to secure original issuance.<sup>77</sup> Second, reissuance extinguishes all prior infringement claims unless the reissued claim are substantially identical to the original claims, which requires the same scope but permits clarifying or other minor word changes.<sup>78</sup> Third, broadening amendments are only allowed in the first two years after patent issuance to protect public reliance interests.<sup>79</sup> Finally, a competitor has absolute intervening rights to continue using, selling, or offering to sell specific physical products that did not infringe the original claims and that it made, used, sold, offered to sell, or imported prior to the reissuance.<sup>80</sup> Courts also have discretion to grant equitable intervening rights to permit competitors to continue activities they engaged in or had made substantial preparations for before reissuance that did not infringe the original claims, but only to the extent necessary to protect competitor investments and businesses.<sup>81</sup>

## 2. Continuation

Another means for patent owners to alter their claim scope post-issuance developed beginning in the 1850s – continuation applications.<sup>82</sup> Technically, continuation applications do not amend original claims but instead are new applications filed while the original application is still

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<sup>75</sup> *Id.* § 15.03.

<sup>76</sup> *Id.* § 15.03[1][a].

<sup>77</sup> *Id.* § 15.03[2].

<sup>78</sup> 35 U.S.C. § 252; Chisum on Patents § 15.05[1]; *see also* Slimfold, 810 F.2d at 1115-16 (“[I]t is the scope of the claim that must be identical, not that the identical words must be used.”).

<sup>79</sup> 35 U.S.C. § 251(d); Chisum on Patents § 15.03[4][b].

<sup>80</sup> 35 U.S.C. § 252.

<sup>81</sup> *Id.*

<sup>82</sup> Chisum on Patents § 13.02.

pending that have the same specification and are entitled to the same filing date but have new claims.<sup>83</sup> Functionally, however, continuations operate similar to claim amendments by allowing applicants to alter their claim scope or claim language while retaining the benefit of their original filing date.<sup>84</sup>

Continuation applications sometimes are used to obtain narrowed or clarified claims in response to concerns that the original claims were overbroad or imprecise.<sup>85</sup> More typically, however, patent owners use continuation applications to obtain broader claims. A continuation may allow the patent owner to continue to pursue a broad claim that it sought in examination of the original patent but narrowed in response to an examiner rejection to obtain immediate patent protection.<sup>86</sup> Other times, the patent owner monitors market developments and uses the continuation to obtain new claims designed to capture competitor products and advancements outside the scope of the original claims.<sup>87</sup> This latter use is especially problematic because it allows the patent owner to obtain broadened claims years after original issuance, capture the innovations of others, and surprise mature industries, while benefitting from the original application's filing date.<sup>88</sup>

Broadening continuations therefore function similarly to broadening reissues but without being subject to the restrictions on broadening reissues.<sup>89</sup> Unsurprisingly, "continuations are the method of choice for amending claims postissuance,"<sup>90</sup> even if reforms have addressed some of the worst abuses of continuation applications.<sup>91</sup>

### 3. Reexamination

Congress created reexamination in 1980, allowing the Patent Office

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<sup>83</sup> *Id.* § 13.01; 35 U.S.C. § 120.

<sup>84</sup> Chiang, *supra* note \_\_, at 533-534.

<sup>85</sup> Mark A. Lemley & Kimberly A. Moore, *Ending Abuse of Patent Continuations*, 84 B.U. L. REV. 63, 76 (2004) (describing one use of continuations as when the applicant "drafted the claims poorly in the first instance and want a second chance at drafting claims of appropriate scope").

<sup>86</sup> *Id.* at 68, 76.

<sup>87</sup> *Id.* at 76.

<sup>88</sup> *Id.* at 76, 79.

<sup>89</sup> Chiang, *supra* note \_\_, at 534.

<sup>90</sup> *Id.*

<sup>91</sup> Specifically, patent applications are now published 18 months after filing and have a term of 20 years from the filing of the original application, rather than 17 years from issuance of the continuation application. This make it more difficult both to surprise mature industries and to keep continuation applications pending for decades. Lemley & Moore, *supra* note \_\_, at 80.

to reconsider the validity of an issued patent if there is a “substantial new question of patentability.”<sup>92</sup> Typically, an accused infringer initiates reexamination in response to being accused of, or sued for, infringement.<sup>93</sup> Reexaminations are “conducted according to the procedures established for initial examination.”<sup>94</sup> Therefore, they “take[] place as series of back-and-forth written statements, between the USPTO and the patent owner, about whether the claims undergoing reexamination are patentable,” with “the patent owner . . . able to present the usual array of arguments and [narrowing or clarifying] amendments to overcome any rejections.”<sup>95</sup> In fact, claims are amended in approximately two-thirds of reexaminations, a significantly more common outcome than either complete confirmation or cancellation of claims.<sup>96</sup>

With that said, the applicant’s ability to amend is more limited in reexamination than in initial examination. First, “[n]o proposed amended or new claim enlarging the scope of a claim of the patent will be permitted in a reexamination proceeding.”<sup>97</sup> Second, reexamination amendments are normally limited to those that are “pertinent to the question of patentability raised by the reexamination order.”<sup>98</sup> Third, as with reissue, “the patentee has no right to recover infringement damages for periods prior to the date that the reexamination certificate issued” unless the asserted claim is substantially identical – *i.e.*, identical in scope even if not wording – to the original patent claim.<sup>99</sup> Finally, claims amended in reexamination are subject to the same intervening rights that apply in the reissue context.<sup>100</sup>

#### 4. AIA Proceedings

The America Invents Act of 2011 expanded the Patent Office’s ability to review the validity of issued patents by creating three new adversarial, post-issuance proceedings before three-judge panels of the Patent Trial and

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<sup>92</sup> Walker on Patents § 16:121; 35 U.S.C. §§ 302-303.

<sup>93</sup> 35 U.S.C. § 302; Chisum on Patents § 11.07[4][a][ii].

<sup>94</sup> 35 U.S.C. § 305. Although the procedures of the inter partes reexamination proceeding that existed from 1999-2011 differed somewhat from initial examination, the ability to amend was similar to in ex parte reexamination. 35 U.S.C. § 314(a) (pre-AIA).

<sup>95</sup> Walker on Patents § 16:123.

<sup>96</sup> USPTO, Reexamination Statistics, <https://www.uspto.gov/learning-and-resources/statistics/reexamination-information> (showing amended claims in 67% of ex parte reexaminations and 60% of inter partes reexaminations).

<sup>97</sup> 35 U.S.C. § 305.

<sup>98</sup> Chisum on Patents § 11.07[4][d][iv].

<sup>99</sup> Tennant Co. v. Hako Minuteman, 878 F.2d 1413, 1417 (Fed. Cir. 1989).

<sup>100</sup> 35 U.S.C. § 307.

Appeals Board (PTAB).<sup>101</sup> Inter partes review allows any party to challenge an issued patent based on printed prior art from nine months after the patent issues through the life of the patent if it is “more likely than not that at least 1 of the claims challenged in the petition is unpatentable.”<sup>102</sup> Post grant review allows any party to challenge a patent on any basis within nine months of issuance.<sup>103</sup> Covered business method patent review – a temporary program lasting until 2020 – allows a party accused of patent infringement to challenge an issued patent on any basis, but only for patents on non-“technological inventions” related to data processing in the financial industry.<sup>104</sup>

On first glance, the AIA extends the traditional liberal approach to claim amendments into these new proceedings, allowing patent owner to make at least one motion to amend to cancel claims and propose a reasonable number of non-broadening substitute claims.<sup>105</sup> However, departing from the normal rule that amendments are like original claims and must be proven unpatentable by the Patent Office, the PTAB required that the patent owner prove that the amended claim is patentable on all grounds in light of all prior art known to the patent owner.<sup>106</sup> The practical consequence of this burden shift was that amended claims have almost never been allowed in the new AIA post-issuance proceedings.<sup>107</sup>

The en banc Federal Circuit sharply divided without a single majority when the PTAB’s restrictive approach to claim amendments was challenged on statutory and administrative deference grounds.<sup>108</sup> A majority of the Federal Circuit reversed the PTAB’s restrictive approach, but the majority split as to whether this was because the statute foreclosed it or because the Patent Office had not adopted it through the proper channels to obtain administrative deference.<sup>109</sup> A separate majority of the en banc Federal Circuit held that the statute was ambiguous, and the Patent Office’s determination of the proper burden for claim amendments in the new AIA post-issuance proceedings would be entitled to administrative deference if

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<sup>101</sup> Sarah Tran, *Patent Powers*, 25 HARV. J. L. & TECH. 609, 631 (2012)

<sup>102</sup> *Id.* at 634; 35 U.S.C. § 311 (2013).

<sup>103</sup> Tran, *supra* note \_\_, at 631-634.

<sup>104</sup> *Id.* at 636-37.

<sup>105</sup> 35 U.S.C. § 316(d) (inter partes review); 35 U.S.C. § 326(d) (post-grant review); AIA § 18(a)(1) (uncodified) (adopting post-grant review procedures for covered business method review).

<sup>106</sup> *Aqua*, 872 F.3d at 1300-1301 (O’Malley, J., opinion)

<sup>107</sup> *Id.* (demonstrating amendments were only allow in a handful of new post-issuance proceedings).

<sup>108</sup> *Id.*

<sup>109</sup> *Id.* at 1335 (Reyna, J., opinion).

properly promulgated.<sup>110</sup> The PTAB subsequently decided that it “will not place the burden of persuasion on a patent owner with respect to the patentability of substitute claims” and would limit the inquiry to “the prior art of record.”<sup>111</sup>

#### *D. Claim Amendments As An Optional Design Choice*

Because of their long-standing liberal allowance, claim amendments may seem like a necessary or inherent feature of the patent system or patent examination. Indeed, the strong criticism that the new post-issuance review procedures have received results in part from their departure from the status quo on claim amendments.<sup>112</sup> Yet, the patent system certainly *could* operate without, or with limited, claim amendments.

In a patent examination system without (or with limited) claim amendments, the patent applicant would draft its original claims knowing that those claims would either be accepted or rejected by the Patent Office, with no opportunity to alter them.<sup>113</sup> The applicant could still hedge against mistakes in understanding the invention, claim drafting, or judgment of what the Patent Office will allow by including multiple claims of varying scope.<sup>114</sup> The examiner would then evaluate the claims presented and either approve or reject them. If the examiner rejected the claim, the applicant would still have an opportunity to argue to the examiner and on appeal why the examiner misunderstood the claim, the cited prior art references, or the relationship between the prior art references and the original claims. The applicant, however, could not alter its claims to overcome the examiner’s rejection. The effect would be similar for post-issuance challenges, as was the effective result of the PTAB’s restrictive approach.

Some have suggested that claim amendments are necessary because the Patent Office gives claims their “broadest reasonable construction” in examination and post-issuance proceedings, rendering the claims more likely to implicate the prior art or be inadequately supported by the disclosure than

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<sup>110</sup> *Id.*

<sup>111</sup> Chief Administrative Patent Judge David Ruschke, *PTAB Issues Guidance for Motions to Amend After Aqua Products*, USPTO DIRECTOR’S FORUM (Dec. 28, 2017), [https://www.uspto.gov/blog/director/entry/ptab\\_issues\\_guidance\\_for\\_motions](https://www.uspto.gov/blog/director/entry/ptab_issues_guidance_for_motions).

<sup>112</sup> See, e.g., Br. of J. Kenneth Blackwell et al. as Amici Curiae 16-17, *Oil States* (objecting to AIA procedures as “upset[ing] this fundamental tenet of American patent law” by not “provid[ing] patentees with a fair opportunity to defend or amend their claims”).

<sup>113</sup> *Cf. Meurer & Nard, supra note \_\_*, at 1952 (“A good patent agent or attorney predicts the embodiments that could be chosen by infringers and finds appropriate language to draft a suitably broad claim.”).

<sup>114</sup> *See id.* at 1975.

if they were given their best interpretation.<sup>115</sup> This has it backwards – the liberal availability of claim amendments is a justification for use of the “broadest reasonable construction,” not the other way around.<sup>116</sup> Eliminating or restricting claim amendments might require reconsideration of the “broadest reasonable construction” standard<sup>117</sup> but that standard is not itself a barrier to limiting claim amendments.

Nor are arguments that eliminating or restricting claim amendments would be “unfair” to patent owners<sup>118</sup> persuasive. The difficulties of predicting what claims will satisfy the statutory criteria and effectively protect the invention requires a task “familiar to transactional lawyers – identifying relevant contingencies” and is “no more vexing than similar problems facing attorneys who deal with other complex legal problems.”<sup>119</sup> Eliminating or restricting claim amendments would be detrimental to patent owners but must be evaluated in the larger context, including patent owners’ other tools to protect their legitimate claim scope.<sup>120</sup> Moreover, the negative effects for patent owners should not be conflated with the social optimality of limiting or restricting claim amendments. “[T]he primary purpose of our patent law is not the creation of private fortunes for the owners of patents but is ‘to promote the progress of science and useful arts.’”<sup>121</sup>

In sum, despite the “competing” and “self-serving appeals to fairness” on both sides regarding claim amendments,<sup>122</sup> the consensus justifications for the American patent system are economic and utilitarian considerations, not moral.<sup>123</sup> Thus, the proper approach to claim amendments depends on what will best achieve the underlying goals of incentivizing innovation without unduly restricting competition and follow-on innovation.<sup>124</sup> Parts II and III take up the question of whether Congress *should* eliminate or restrict claim

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<sup>115</sup> *Aqua*, 872 F.3d at 1299 (O’Malley, J., opinion).

<sup>116</sup> *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989) (justifying broadest reasonable interpretation standard based on ability to amend).

<sup>117</sup> *Compare* *Cuozzo Speed Techs., LLC v. Lee*, 136 S.Ct. 2131, 2145 (2016) (explaining that the opportunity to amend in post-issuance proceedings was one reason why the “use of the broadest reasonable construction standard [in inter partes review] is . . . not unfair to the patent holder”).

<sup>118</sup> *See* Blackwell, *supra* note \_\_, at 16 (describing inter partes review as “unfair to patentees” because it does not provide “a fair opportunity to defend or amend their claims”).

<sup>119</sup> Meurer & Nard, *supra* note \_\_, at 1952.

<sup>120</sup> *See* Part II.C, *infra*.

<sup>121</sup> *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502, 511 (1917) (quoting U.S. Const., Art. I, § 8).

<sup>122</sup> Chiang, *supra* note \_\_, at 554.

<sup>123</sup> Burk & Lemley, *Policy Levers*, *supra* note \_\_, at 1596-99.

<sup>124</sup> *Bonito Boats*, 489 U.S. at 146 (describing basic trade-offs of patent system).

amendments. This section's more limited point is that Congress *could* do so.

## II. EVALUATING CLAIM AMENDMENTS DURING PATENT EXAMINATION

Putting aside the relevance of long-standing practice for the time being,<sup>125</sup> this Part evaluates from first principles whether, and to what extent, allowing claim amendments during examination is socially optimal under the utilitarian framework that underlies the American patent system. Section A explores the benefits of examination amendments, Section B the costs, and Section C weighs the costs and benefits to determine the desirability of examination claim amendments.

### A. *The Benefits of Claim Amendments During Examination*

#### 1. Provides Positive Incentives for Patent Owners

The primary justification for permitting claim amendments in Patent Office proceedings is to protect the patent owner by “ensur[ing] its patentable subject matter remains properly protected.”<sup>126</sup> When an original claim covers both matter to which the patent owner is entitled and matter to which it is not, claim amendments offer a middle ground that allows the patent owner to receive only the protection that is warranted, rather than being denied any protection whatsoever.<sup>127</sup> Amendments insure the patent owner receives some protection for its invention and may create stronger rights by increasing the chances that the issued claim satisfies the statutory criteria of patentability and will be upheld in later proceedings.<sup>128</sup>

Protecting patent owners is not itself a justification for allowing claim amendments. “[T]he primary purpose of our patent law is not the creation of private fortunes for the owners of patents but is ‘to promote the progress of science and useful arts.’”<sup>129</sup> However, the benefits to the patent owner further the public objective of the patent system: granting inventors exclusive rights that allow super-competitive pricing, so that they can recoup their research and development costs and are therefore incentivized in the first place to undertake costly and risky research and development and disclose that research to the public.<sup>130</sup> “Scrapping patent claims wholesale, rather than

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<sup>125</sup> This issue is addressed in Part IV.A.1, *infra*.

<sup>126</sup> Aqua, 872 F.3d at 1309 (O’Malley, J. opinion).

<sup>127</sup> *Id.* at 1312.

<sup>128</sup> *Id.*

<sup>129</sup> *Motion Picture*, 243 U.S. at 511 (quoting U.S. Const., Art. I, § 8).

<sup>130</sup> Andres Sawicki, *Better Mistakes in Patent Law*, 39 FLA. ST. L. REV. 735, 740-741 (2012). The minority prospect theory favors broad patent rights to incentivize expenditures

providing a meaningful opportunity to address prior art and preserve claims to the extent possible, [could] squander[] the financial and intellectual capital the inventive community devotes to new discoveries.”<sup>131</sup> If a sufficient number of innovators were unable to obtain patent protection, or patent protection that fully covers their invention, because their initial claims were faulty and there was no opportunity to amend, the advantages offered by patent protection could become illusory, potentially deterring innovators from undertaking the necessary research and development or disclosing their invention to the public.

The opportunity to amend protects the innovation-incentive function of the patent system from being undermined by inherent shortcomings in patent law: the need to express intangible inventions in words, the breadth of potential prior art, and the imprecision of legal doctrines. The opportunity to amend claims mitigates some of the problems created by the notoriously difficult requirement that the patent owner translate a technical concept into words by allowing correction of the inaccuracies and flaws that will inevitably arise in even carefully drafted initial claims.<sup>132</sup> Moreover, the patent owner faces challenges comparing the invention to the prior art because “the universe of prior art is extraordinarily vast” and “the legal doctrines regarding the prior-art limitation are also inherently vague.”<sup>133</sup>

Professor T.J. Chiang contends that there will only be reduced innovation incentives without claims amendments in the relatively uncommon situation where the patent owner could have foreseen the later development – a competitor’s product or a later-identified piece of prior art – at filing and inadvertently did not account for it in the claim language.<sup>134</sup> He believes that unforeseen subsequent developments, by contrast would only marginally effect innovation incentives because they are too uncertain for reasonable reliance by the patent owner.<sup>135</sup> However, it is not clear why the focus should be on the foreseeability of the specific development that will undermine a specific claim. If patent owners as a class know that subsequent developments – whether unexpected prior art or unforeseen products of competitors – can destroy patent value and there will be no opportunity to

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on commercialization and allow the coordination necessary to take an invention to market. *Id.* at 758-759. This theory would generally favor a liberal amendment policy to protect the patent owner’s ability to coordinate commercialization.

<sup>131</sup> PhRMA *Aqua Br.*, *supra* note \_\_, at 17-18.

<sup>132</sup> *Autogiro Co. of Am. v. United States*, 384 F.2d 391, 397 (Ct. Cl. 1967) (describing problems that arise in translating inventions into words).

<sup>133</sup> Chiang, *supra* note \_\_, at 537.

<sup>134</sup> *Id.* at 553-554.

<sup>135</sup> *Id.* at 544-549.

adjust their claims to account for these developments, the expected value of patenting will be reduced and corresponding innovation incentives diminished.<sup>136</sup> For example, if patent owners know that 20% of patents will be rendered worthless by subsequent developments, they will discount the expected value of patent rights accordingly, regardless of whether they can foresee an exact prior art reference or competitor development that will affect them specifically.<sup>137</sup>

## 2. Promotes Optimal Claim Scope

Relatedly, claim amendments allow patent owners to “obtain protection commensurate with [their] actual contribution to the art.”<sup>138</sup> The process of initial claiming, rejection, and amendment to narrow the claims and avoid the prior art “bring[s] claims more in line with what the applicant actually invented,” rather than being too broad or too narrow<sup>139</sup> Permitting patent owners to obtain rights that reflect their contribution but nothing more furthers the patent system’s “careful balance between the need to promote innovation and the recognition that imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy.”<sup>140</sup>

However, though frequently mentioned, commensurability is probably not a benefit of claim amendments distinct from protecting innovation incentives. The public interest would better served by no patent protection – and therefore free competition – than commensurable patent protection, *but for* the negative effect that denying patent protection would have on patent owners’ incentives to innovate and disclose inventions.<sup>141</sup> Thus, justifying claim amendments based on commensurability is duplicative of justifying them based on protection of innovation incentives.

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<sup>136</sup> Cf. Sawicki, *supra* note \_\_, at 759-760 (arguing that evaluating the impact of mistakes in patent protection should focus not just on the effect on the specific inventor but also on the effects on inventors as a class).

<sup>137</sup> See David L. Schwartz, *Retroactivity at the Federal Circuit*, 89 IND. L.J. 1547, 1554 (2014) (noting that ex post developments that undermine patent value will undermine innovation incentives “[e]ven though the investors and companies cannot predict whether their patents will be affected” because “they understand that their patents are more probabilistic”).

<sup>138</sup> *In re Yamamoto*, 740 F.2d 1569, 1571 (Fed. Cir. 1984).

<sup>139</sup> Dawn-Marie Bey & Christopher A. Cotropia, *The Unreasonableness of the Patent Office’s ‘Broadest Reasonable Interpretation’ Standard*, 37 AIPLA Q.J. 285, 293 (2009).

<sup>140</sup> *Bonito*, 489 U.S. at 146.

<sup>141</sup> See Cotropia, *supra* note \_\_, at 117-119.

### 3. Enhances Public Notice

The iterative process of initial claim, rejection, and narrowing amendment also could promote public notice by allowing “ambiguities [to] be recognized, scope and breadth of language explored, and clarification imposed,” while creating a public record about the meaning of claim language.<sup>142</sup> Claim amendments therefore can reduce uncertainty about the patent owner’s claim scope that could undermine the patent owner’s own efforts to license or commercialize the invention, deter competition, and hinder follow-on innovation.<sup>143</sup> Therefore, according to at least some Federal Circuit judges, “the ‘worst’ possible outcome [from claim amendments] is that a patent issues in which the previously-examined claims have been narrowed and clarified in such a way that . . . the public is put on notice of exactly how to innovate around those claims in the future.”<sup>144</sup>

### 4. Reduces Administrative Costs

Finally, amendments may reduce the administrative costs of patent examination. Absent the opportunity to amend, a patent applicant facing an all-or-nothing scenario where a claim is either accepted or rejected would have the incentive to fight any rejection through any means possible.<sup>145</sup> Patent applicants have a variety of tools by which to challenge a rejection and extend examination, including seeking an interview with the examiner, requesting continuing examination, filing a continuation application, appealing within the Patent Office and to the Federal Circuit, or filing a new district court action challenging the rejection.<sup>146</sup> All of these tools increase delay and costs for the applicant and the Patent Office,<sup>147</sup> and only some allow the Patent Office to recoup costs by charging additional fees.<sup>148</sup>

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<sup>142</sup> Zletz, 893 F.2d at 321; Michael Risch, *The Failure of Public Notice in Patent Prosecution*, 21 HARV. J. LAW & TECH. 179, 190 (2007).

<sup>143</sup> See *General Elec. Co. v. Wabash Appliance Corp.*, 304 U.S. 364, 369 (1938) (“The limits of a patent must be known for the protection of the patentee, the encouragement of the inventive genius of others and the assurance that the subject of the patent will be dedicated ultimately to the public.”).

<sup>144</sup> *Aqua*, 872 F.3d at 1315 (O’Malley, J. opinion).

<sup>145</sup> See Yelderman, *supra* note \_\_, at 121 (noting that a consequence of restricting claim amendments “might be that applicants will persist in arguing for debatable claims longer than they [otherwise] would”).

<sup>146</sup> Lemley & Moore, *supra* note \_\_, at 67-68 & n.14.

<sup>147</sup> Wagner, *supra* note \_\_, at 2167 (noting that restricting amendments “is likely to extend the time and cost of the prosecution phase, and thereby increase the workload at the Patent Office”).

<sup>148</sup> USPTO, *Table of Patent Fees - Current, Proposed and Unit Cost*, [https://www.uspto.gov/sites/default/files/documents/Table\\_of\\_Patent\\_Fees-Current\\_Proposed\\_and\\_Unit\\_Cost.pdf](https://www.uspto.gov/sites/default/files/documents/Table_of_Patent_Fees-Current_Proposed_and_Unit_Cost.pdf) (listing additional fees only for request for continued

Claim amendments thus can serve as a cost-savings device in the same way that settlement in litigation reduces litigation costs.<sup>149</sup> The applicant and the examiner can essentially reach mutual agreement on claim scope that the examiner is willing to allow and the applicant is willing to accept. This avoids the costs that a persistent applicant can impose by using the various means of challenging a rejection.<sup>150</sup>

### *B. The Costs of Claim Amendments During Examination*

Courts and commentators often assume there is no downside to claim amendments. Several Federal Circuit judges described the supposed “‘worst’ possible outcome” from claim amendments as being “that a patent issues in which the previously-examined claims have been narrowed and clarified in such a way” as to limit the patentee’s ability to assert infringement and provide notice to the public about “exactly how to innovate around those claims in the future.”<sup>151</sup> Similarly, a leading industry group contended that the process of claim amendments “strikes a careful balance between the rights of the inventive community and the rights of the general public.”<sup>152</sup> However, there are significant costs to claim amendments that must be weighed against the benefits described in the previous section.

#### 1. Stifles Competition and Follow-On Innovation

The flip-side of the increased innovation incentives that claim amendments provide is that they restrict competition and follow-on innovation by increasing the chances that the patent owner will obtain exclusive rights.<sup>153</sup> With that said, these costs are probably not properly attributable to claim amendments. To the extent that claim amendments result in the patent owner receiving exclusive rights commensurate with its contribution, the costs to competition and follow-on innovation are not so much a cost of claim amendments as a cost of patent protection generally and the innovation incentives it generates.

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examination, continuation applications, and appeals within the Patent Office).

<sup>149</sup> See J.J. Prescott & Kathryn E. Spier, *A Comprehensive Theory of Civil Settlement*, 91 N.Y.U. L. REV. 59, 61-62 (2016) (describing elimination or reduction of litigation costs as a primary benefit of settlement).

<sup>150</sup> These costs may not be avoided if the applicant files a continuation application to further pursue the original claims. See Part I.C.2, *supra*.

<sup>151</sup> *Aqua*, 872 F.3d at 1315 (O’Malley, J., opinion); see also *Yamamoto*, 740 F.2d at 1572 (suggesting that the process of claim amendments during patent examination “serves the public interest” while not impairing the interests of patent applicants).

<sup>152</sup> PhRMA *Aqua* Br., *supra* note \_\_, at 11.

<sup>153</sup> See Chiang, *supra* note \_\_, at 545 (“[I]ncreasing the patentee’s return on a patent also increases the monopoly cost on society and reduces the reward to legitimate competitors.”).

Restrictions on competition are only properly attributed to claim amendments, as opposed to patent protection itself, when amendments allow patent owners to obtain broader claim scope than is warranted by their contribution. In such circumstances, the increased monopoly costs of decreased competition and follow-on innovation are disproportionate to the innovation incentives provided by patent protection. The question of whether claim amendments allow patent owners to obtain greater than warranted protection is taken up below.<sup>154</sup>

## 2. Undermines Public Notice and Reliance Interests?

Claim amendments threaten the public notice function of claim amendments<sup>155</sup> because they allow the boundaries of the patentee's rights to be shifted, undermining the public's ability to rely on the original claim language as delineating what is protected and what remains open.<sup>156</sup> However, reliance and public notice costs are fairly minimal when claims are amended during initial examination.

Since patent applications generally are confidential and not publicly available until eighteen months after filing,<sup>157</sup> amendments during this period do not raise any notice or reliance concerns. Even after publication, patent applications are only assertions of right that might ultimately be rejected by the Patent Office, and the public is therefore less likely to rely on application claims as delineating the line between permissible and impermissible conduct and is less warranted in doing so. Moreover, competitors do not always monitor published patent applications.<sup>158</sup> They are likely to do so in industries where the number of patents and competitors is low and per-patent value is high. But in industries where the number of competitors or patents is high and patent value comes from large portfolios rather than individual patents, there is less likely to be much monitoring of, and therefore reliance on, the claims of pre-issuance patent applications. In sum, there is likely

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<sup>154</sup> See Part II.B.4, *infra*. Professor Chiang suggests that amendments that address any subsequent development that was unforeseeable at the time of filing necessarily impose increased monopoly costs without corresponding benefits for innovation incentives. Chiang, *supra* note \_\_, at 545. I addressed this argument above. See Part II.A.1, *supra*.

<sup>155</sup> See Part I.A, *supra*.

<sup>156</sup> Chiang, *supra* note \_\_, at 525.

<sup>157</sup> 35 U.S.C. § 122(a)-(b). Applications that benefit from the filing date of an earlier application, such as continuations, are published eighteen months after the filing of the earlier application, meaning that continuations and other such applications may sometimes be published when they are filed. *Id.* at (b)(1)(A).

<sup>158</sup> See Lemley & Moore, *supra* note \_\_, at 90 (“[I]t does not necessarily follow that competitors will take advantage of that opportunity” to monitor published patent applications.).

some public notice costs from claim amendments during initial patent examination for some patents in some industries, but the significance of such costs is uncertain.

### 3. Increases Administrative Costs

Patent claim amendments may increase costs by requiring additional work by the attorney and the patent examiner to prepare, review, and evaluate the claim amendment.<sup>159</sup> It is an uncertain and difficult empirical question whether these additional amendment costs are more or less than the additional costs that would be imposed if amendments were restricted and applicants incentivized to vigorously challenge every rejection.<sup>160</sup>

Assuming the original claims were properly rejected as unpatentable,<sup>161</sup> the additional costs to the applicant are not socially problematic because the applicant is in the best position to avoid the costs by drafting narrower or clearer original claims, as well as to determine whether the benefits of amending the claim outweigh its costs.<sup>162</sup> In theory, the Patent Office could shift some of the costs it incurs from amendments to the applicant by charging additional fees for amendments. But the Patent Office's current policy requires no additional fee for amendments, unless the applicant is adding claims without cancelling other claims such that the number of claims in the amended application exceeds twenty total or exceeds three independent claims.<sup>163</sup>

### 4. Provides Negative Drafting and Examination Incentives

The most significant, and often overlooked, cost of examination amendments is the negative incentive they provide to draft low quality original claims. "Patent applicants have an incentive to allow claims to remain vague so that they can mold the claims to fit the future product of a currently unknown, potential infringer or to avoid invalidation if previously undiscovered prior art comes to light."<sup>164</sup> Patent applicants also have incentives to draft broad claims because they increase the value of the patent

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<sup>159</sup> Bey & Cotropia, *supra* note \_\_, at 307.

<sup>160</sup> See Part I.A.4, *supra*.

<sup>161</sup> *But see* Bey & Cotropia, *supra* note \_\_, at 304-309 (suggesting that the broadest reasonable interpretation standard used during patent examination leads to erroneous rejections that impose unnecessary amendment costs on the applicant).

<sup>162</sup> See Risch, *supra* note \_\_, at 191 (suggesting that the costs of claim amendments could make applicants draft clearer claims).

<sup>163</sup> MPEP § 714.10.

<sup>164</sup> *Id.* at 188.

by increasing the number of infringing products, while the downsides of broad claims that might read on more prior art are minimized by the presumption of validity that applies in litigation.<sup>165</sup> Thus, vague and/or broad claiming “offers a number of critical advantages to the patentee. It allows the patentee to capture some value for an invention at a very early stage simply by receiving a grant. And it hedges against the patent being undermined by the passage of time and technology, allowing patents to change their scope to fit later circumstances.”<sup>166</sup>

The ability to amend claims makes broad and/or vague claiming a viable strategy.<sup>167</sup> If the examiner allows the claim, the applicant gets the benefits offered by a vague and/or broad claim protected by the presumption of validity.<sup>168</sup> Even if the examiner rejects the claim, the applicant can simply amend to clarify or narrow it.<sup>169</sup> The significant benefits of broad and/or vague claiming often will outweigh the limited monetary costs that amendments impose on applicants. In fact, patent prosecutors dislike first-action allowances – where the patent examiner allows a claim without rejection and amendment – because it suggests that they did not draft the original claims broad enough.<sup>170</sup>

The broad and/vague claiming strategy facilitated by examination amendments imposes significant social costs. Patent examiners do not effectively police against such claims because of limited resources, heavy workloads, and incentives and biases in favor of patent issuance.<sup>171</sup> Moreover, overbroad and vague claiming creates feedback effects, as examiners have to expend time and effort evaluating and rejecting clearly unpatentable claims, diverting resources from other applications and thereby increasing the chances that other overbroad or vague claims will slip through the cracks.<sup>172</sup> This in turn increases the expected value of, and therefore

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<sup>165</sup> Oskar Liivak, *Overclaiming Is Criminal* (working paper Sept. 8, 2016), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2836165](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2836165) (“Without a doubt patent applicants aim to get as much technological real estate as the PTO will grant.”); Yelderman, *supra* note \_\_, at 97-102.

<sup>166</sup> Wagner, *supra* note \_\_, at 2151.

<sup>167</sup> *Id.* at 2167 (noting that the ability to amend claims contributes to the incentives patentees have to draft vague claims); Chiang, *supra* note \_\_, at 557 (noting that “patentees have little incentive to draft good claims in the first place” because of the ability to amend).

<sup>168</sup> Yelderman, *supra* note \_\_, at 101 (noting that broad claims that cover a large swath of potentially infringing commerce are most benefited by the presumption of validity).

<sup>169</sup> *See id.* at 120 (suggesting that the ability to amend means that the only cost to filing overbroad claims are limited prosecution and filing costs).

<sup>170</sup> Lemley & Moore, *supra* note \_\_, at 67 & n.8.

<sup>171</sup> Wagner, *supra* note \_\_, at 2151-53.

<sup>172</sup> *Cf.* Yelderman, *supra* note \_\_, at 121 (“Reduced incentives to file broad claims means

incentivizes, overbroad and vague original claims.

The incentives created by liberal allowance of examination claim amendments therefore contribute to the widely-acknowledged problem of patent quality – an excess number of claims that are either too vague, too broad, or both.<sup>173</sup> Vague claims makes evaluation of scope and validity challenging (undermining public notice), allow patentees to obtain a patent under a narrower understanding of claim scope and then assert it later based on a broader understanding of claim scope, and make it more likely that claims fail to satisfy the statutory requirements of patentability.<sup>174</sup> Overly broad claims allow the patentee to control more than what it invented and disclosed in the patent,<sup>175</sup> giving the patentee a windfall while stifling competition and follow-on innovators.<sup>176</sup>

Patent quality problems are normally blamed on the quality of Patent Office examination.<sup>177</sup> Recently, however, Professors Liivak, Wagner, and Yelderman have recognized that low-quality patents result, in significant part, because applicants have incentives to draft broad and/or vague claims.<sup>178</sup> As Professor Yelderman notes, applicants seek overbroad claims “because current prosecution and litigation rules cause the expected value of these claims to exceed their expected cost.”<sup>179</sup> The liberal availability of claim amendments is a significant reason that the expected value of overbroad claims exceed their expected costs.<sup>180</sup>

### *C. Weighing the Costs and Benefits of Claim Amendments During Examination*

The limited existing analysis of examination amendments suggests that their supposed low costs make them cost-benefit justified regardless of

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fewer examiner resources spent challenging plainly unpatentable claims.”).

<sup>173</sup> *Id.* at 78 (“Everyone, it seems, wants to improve the quality of issued patents.”); Wagner, *supra* note \_\_ at 2136 (“[T]he need to improve patent quality is essentially undisputed.”); *id.* at 2149-51 (describing “substantial vagueness” as a significant patent quality problem); Liivak, *supra* note \_\_, at 2 (describing “overly broad claims” as a patent quality problem).

<sup>174</sup> Wagner, *supra* note \_\_ at 2149-50.

<sup>175</sup> Liivak, *supra* note \_\_, at 15.

<sup>176</sup> See Cotropia, *supra* note \_\_, at 117-119.

<sup>177</sup> Yelderman, *supra* note \_\_, at 83-84; Wagner, *supra* note \_\_ at 2137.

<sup>178</sup> Liivak, *supra* note \_\_, at 3; Wagner, *supra* note \_\_ at 2138; Yelderman, *supra* note \_\_, at 80-81.

<sup>179</sup> Yelderman, *supra* note \_\_, at 80.

<sup>180</sup> Chiang, *supra* note \_\_, at 557; Wagner, *supra* note \_\_ at 2167.

the extent of their impact on innovation incentives.<sup>181</sup> This conventional wisdom underestimates the costs of examination amendments and overstates the benefits. Examination claim amendments are less clearly warranted than their historical pedigree and widespread acceptance would suggest.

**First**, commentators often overlook or downplay how examination amendments encourage patent owners to draft the type of overbroad and vague claims that are most problematic for patent quality. For example, even though Professor Chiang recognizes the negative drafting incentives created by liberal allowance of claim amendments, he does not appear to weigh these incentives as a reason to be skeptical of examination amendments.<sup>182</sup>

Yet, as Professor Yelderman recognizes, “improving patent quality could simply be a matter of increasing the costs and reducing the benefits of low quality claims, so that applicants will on average file fewer of such claims in the first instance.”<sup>183</sup> Likewise, Professor Wagner notes that “[u]ntil patentees have strong, unequivocal incentives to seek patents that clearly meet the standards of patentability, that are explained in the context of the prior art, and that draw clear and unambiguous lines around their subject matter, we will not succeed [in improving patent quality].”<sup>184</sup> Restricting claim amendments would increase the costs of drafting vague and overbroad claims and “provide important incentives for patentees to draft clear, coherent, and appropriate claims.”<sup>185</sup>

**Second**, the primary benefit of claim amendments during examination is that they preserve inventors’ incentives to innovate and disclose their inventions by insuring some patent protection even if the initial claims are unpatentable.<sup>186</sup> The need for claim amendments to achieve this goal is less clear when considered in the full context of the patent system.

But this benefit appears less valuable when considered in light of the other tools patent owners have to hedge against errors in claim drafting and

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<sup>181</sup> See, e.g., Chiang, *supra* note \_\_, at 526 (“Before the issuance of a patent, amending claims to fix mistakes is useful, since before issuance such mistakes are harmless.”); see also *Zletz*, 893 F.2d at 321-322 (suggesting that the result of claim amendments during examination are “claims that are precise, clear, correct, and unambiguous” without “uncertainties of claim scope”).

<sup>182</sup> Compare Chiang, *supra* note \_\_, at 557 (recognizing that claim amendments provide patentees with negative drafting incentives), with *id.* at 561-562 (focusing solely on amendments to cover after developed technology as a cost of examination amendments).

<sup>183</sup> Yelderman, *supra* note \_\_, at 80-81.

<sup>184</sup> Wagner, *supra* note \_\_, at 2138.

<sup>185</sup> *Id.* at 2167.

<sup>186</sup> See Part II.A.1-2, *supra*.

potential future developments.<sup>187</sup> To mitigate the problems resulting from the inherent shortcomings of language, the difficulty translating technical concepts into words, and the inventor's potential uncertainty about the precise invention, the patent applicant can draft up to three independent claims (claims that stand by themselves) and seventeen dependent claims (claims that include all of the limitations of an independent claim by add an additional feature) for the basic filing fee (and can pay extra for more).<sup>188</sup> By filing multiple claims with varying language and scope, the patent applicant can mitigate the risk of some claims being found unpatentable or some original claims being imperfectly drafted.<sup>189</sup>

Additional tools exist to protect the patent owner against unforeseen developments after the patent issues. If previously unknown prior art appears in litigation that threatens the validity of the patent, the patent owner is protected by the presumption of validity and the clear and convincing evidence standard.<sup>190</sup> Conversely, if the original claims were drafted too narrowly, "the doctrine of equivalents exists to prevent a patent owner from losing effective protection because she did not draft claims that effectively cover what she invented."<sup>191</sup> Under this doctrine, the patent owner can establish infringement against products that do not fall precisely within the claim scope but are close enough.<sup>192</sup>

These other tools available to the patent owner undermine the assumption that claim amendments are necessary to protect the patent owner's legitimate claim scope and innovation incentives. Rather, claim amendments combined with these other tools may unduly tilt the scales in favor of patent owners, at the expense of competitors, follow-on innovators, and the public. Put another way, the only reason that the iterative process of initial claim, rejection, and amendment is necessary to insure that the patent owner receives patent protection commensurate with its contribution may be that the patent owner is underinvesting in drafting appropriate claims in the first instance. Rather, the patent owner can draft as broadly as possible,

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<sup>187</sup> Meurer & Nard, *supra* note \_\_, at 1975 ("Patent prosecutors have access to a range of claim-drafting techniques that mitigate problems with language and later-developed technology.").

<sup>188</sup> USPTO, *Table of Patent Fees - Current, Proposed and Unit Cost*, [https://www.uspto.gov/sites/default/files/documents/Table\\_of\\_Patent\\_Fees-Current\\_Proposed\\_and\\_Unit\\_Cost.pdf](https://www.uspto.gov/sites/default/files/documents/Table_of_Patent_Fees-Current_Proposed_and_Unit_Cost.pdf).

<sup>189</sup> Meurer & Nard, *supra* note \_\_, at 1975.

<sup>190</sup> Yelderman, *supra* note \_\_, at 96 ("A]t least some claims have their likelihood of validity improved by the presumption.").

<sup>191</sup> Lemley & Moore, *supra* note \_\_, at 78.

<sup>192</sup> *Id.*

shifting the cost and the burden to the Patent Office, and therefore the public, to determine if this claim is commensurate with the patent owner's contribution.

To be clear, the objective of this Section is not to reach a definite conclusion that examination claim amendments are undesirable. The empirical evidence to support such a conclusion is absent and the anecdotal evidence too ambiguous. For example, the negative drafting incentives and related patent quality concerns may not be strong enough to weigh against claim amendments. Other factors beyond claim amendments contribute both to poor patent quality generally – *e.g.*, deficiencies in patent examination, market incentives, and cognitive biases – and negative drafting incentives specifically – *e.g.*, the presumption of validity and flaws in patent claim construction.<sup>193</sup> Other means of improving patent quality, including other ways of reducing applicants' incentives to draft vague and/or overbroad claims, may be preferable to eliminating or restricting examination amendments.<sup>194</sup>

On the other hand, claim amendments may be more effective or socially optimal than the other tools patent owners have to protect their legitimate claim scope. Hedging against future problems by drafting a variety of claims is limited by the difficulty of foreseeing future developments. Continuations can avoid this difficulty because the patent owner can obtain claims *after* future developments but may be more socially problematic than examination amendments because they create greater delay, uncertainty, and potential for strategic behavior.<sup>195</sup> In litigation, the presumption of validity “hardly renders issued patents immune to invalidity challenges”<sup>196</sup> and is inapplicable in the AIA post-issuance proceedings. And the doctrine of equivalents only protects against competitor alterations that result in “insubstantial differences” from the claim and that perform the same function in the same way to achieve the same result as the claimed invention.<sup>197</sup>

The only conclusion to properly draw from this Section is that the

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<sup>193</sup> Wagner, *supra* note \_\_, at 2150-58.

<sup>194</sup> See Yelderman, *supra* note \_\_, at 113-128 (suggesting changing the Patent Office fee structure, replacing the presumption of validity with a presumption of infringement, and monetary penalties for claims found invalid post-examination); Wagner, *supra* note \_\_, at 2166-71 (suggesting possibility of claim construction during examination to lock-in claim scope, weakening or eliminating the presumption of validity, and imposing penalties on owners of invalid patents).

<sup>195</sup> Lemley & Moore, *supra* note \_\_, at 65.

<sup>196</sup> Yelderman, *supra* note \_\_, at 96.

<sup>197</sup> See *AquaTex Indus., Inc. v. Techniche Solutions*, 479 F.3d 1320, 1326 (Fed. Cir. 2007).

justifications for claim amendments during examination are more disputable and complex than their historical pedigree and widespread acceptance would suggest. Rather than being a necessary or crucial part of patent examination, claim amendments reflect a trade-off between insuring adequate protection for inventors' legitimate claim scope, and therefore innovation incentives, and insuring adequate patent quality to protect competitors, follow-on innovators, and the public. The proper approach to claim amendments thus depends on underlying normative views about how to strike the "careful balance between the need to promote innovation and the recognition that imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy."<sup>198</sup> I return to this question in Part IV.A, *infra*.

### III. EVALUATING POST-ISSUANCE CLAIM AMENDMENTS

Moving beyond examination claim amendments, this Section evaluates claim amendments allowed after patent issuance. Post-issuance amendments have been the subject of significant debate recently, but the debate has focused largely on questions of statutory interpretation and administrative deference. Once again, this Section returns to first principles and evaluates the costs and benefits of post-issuance amendments.

#### A. *The Trade-Off Between Innovation Incentives and Monopoly Costs*

For similar reasons as examination amendments, post-issuance amendments may enhance incentives to innovate by ensuring that the patentee's legitimate scope of protection remains even if the original claim is struck down as overbroad. But allowing the patentee to retain patent protection imposes the monopoly costs of reduced competition and follow-on innovation, though these costs really result from patent protection itself, rather than amendments, if amendments merely allow the patent owner to retain its legitimate claim scope.<sup>199</sup> However, effects of examination amendments and post-issuance amendments in this regard may diverge because of the context in which post-issuance amendments arise.

First, timing effects may reduce the need for post-issuance amendments to preserve the patent owner's innovation incentives. Because post-issuance amendments necessarily occur after the patent owner has obtained patent protection, the patent owner has had at least some period of

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<sup>198</sup> Bonito, 489 U.S. at 146.

<sup>199</sup> See Parts II.A.1-2 & B.1, *supra*, for more discussion of the issues in this paragraph.

exclusivity to recoup its research and development costs through monopoly pricing.<sup>200</sup> Therefore, post-issuance amendments are more necessary to protect innovation incentives when they occur closer in time to patent issuance – before the patent owner has had significant opportunity to recoup its research and development costs – than when they occur further in time from patent issuance. Moreover, post-issuance amendments are more necessary to protect innovation incentives for technology areas and industries where there is a larger gap between patent issuance and commercialization that reduces the patent owner’s opportunity to recoup research and development costs before the need for amendment arises. For example, there is likely greater need for post-issuance amendments in the pharmaceutical industry, where the regulatory process often makes commercialization impossible until well into the life of the patent, than in the information technology area, where commercialization often occurs before patent issuance and the invention becomes outdated early in the patent term.<sup>201</sup>

The later timing of post-issuance amendments compared to examination amendments also provides greater opportunities for the patent owner to use other tools to protect their legitimate claim scope. Beyond the tools discussed in the context of examination amendments,<sup>202</sup> the patent owner already had the chance in examination to claim broadly, face a rejection, and amend its claim. If overbroad claims were issued that subsequently pose invalidity problems, the patent owner can narrow them via a reissuance proceeding.<sup>203</sup> And if the patent owner originally sought too narrow of claims to protect is legitimate invention, it can broaden its claims through reissuance (within two years of issuance) or by filing a continuation application.<sup>204</sup> Thus, these additional tools may mitigate the need for amendments in post-issuance validity proceedings – or the need for the multiple different ways that claims can presently be amended post-issuance.

On the other hand, a liberal opportunity to amend post-issuance may be warranted by the greater risk to a patent owner’s legitimate claim scope in that context. Post-issuance validity challenges normally arise in the context of litigation against a highly motivated, and often well-financed, adversary.

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<sup>200</sup> See Sawicki, *supra* note \_\_, at 761 (noting that invalidity decisions later in a patent’s life means that “the inventor will have had at least some period of exclusivity in which to appropriate returns”).

<sup>201</sup> See Benjamin N. Roin, *The Case for Tailoring Patent Awards Based on Time-to-Market*, 61 UCLA L. REV. 672, 719 (2014) (showing that software products have an average time-to-market of 5-14 months compared to 12-16 years for pharmaceuticals).

<sup>202</sup> See Part II.C, *supra*.

<sup>203</sup> See Part I.C.1, *supra*.

<sup>204</sup> See Part I.C.1-2, *supra*.

“Even if the patentee is not being deliberately ambiguous,” litigators representing the accused infringer are paid to “create, identify, and exploit ambiguities in language” to allow them to assert invalidity or non-infringement.<sup>205</sup> And litigators will often be able to create, identify, and exploit ambiguities and vagueness in claim language, whether because of the inherent imprecision of language, the difficulties of converting complex, technical ideas into legal shorthand, or the patentee’s incentives to use vague or ambiguous claim language.<sup>206</sup>

Thus, accused infringers post-issuance can exploit the inherent malleability of patent claims to limit “the scope and strength of a patent, even if the teachings of the patent reflect an important advancement in the art.”<sup>207</sup> By contrast, the examiner in *ex parte* patent examination is independent, lacking the accused infringer’s incentives to manipulate or exploit the ambiguity of claim language, and has incentives to give fair (or even liberal) treatment to the patentee’s invention and claims.<sup>208</sup> Post-issuance claim amendments therefore offer a unique benefit not present in examination to close loopholes or clarify ambiguities in claim language that are being exploited by self-interested accused infringers.

In sum, post-issuance amendments may be less important to protecting inventors’ innovation and disclosure incentives than examination amendments because of the period of exclusivity that the patent owner will have already had to recoup its research and development costs and the additional opportunities it already had to protect its legitimate claim scope. But this possibility should not be overstated. The extent to which the patentee has been able to recoup its investment will vary with the circumstances. And the other tools to protect legitimate claim scope may be insufficient protection against a motivated accused infringer exploiting the inherent malleability of patent claims.

### *B. Public Notice and Reliance Interests*

The most common concern with post-issuance claim amendments is that they undermine public notice and interfere with the reasonable reliance interests of competitors and the public.<sup>209</sup> A competitor that relied on the

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<sup>205</sup> See Burk & Lemley, *Fence Posts*, *supra* note \_\_, at 1752-53.

<sup>206</sup> Greg Reilly, *Judicial Capacities and Patent Claim Construction: An Ordinary Reader Standard*, 20 MICH. TEL. & TECH. L. REV. 243, 256 (2014).

<sup>207</sup> Jason Rantanen, *How Malleability Matters*, 6 IP THEORY 1, 3 (2016).

<sup>208</sup> See Greg Reilly, *Decoupling Patent Law*, 97 B.U. L. REV. 551, 560 (2017) (describing factors that may bias patent examiners in favor of the patentee).

<sup>209</sup> Chiang, *supra* note \_\_, at 529.

original claim language in making design and investment decisions may find that its product falls within the scope of the amended claim and that it now infringes the patent.<sup>210</sup> Likewise, a competitor that relied on the original claim language to determine that it was free to operate in the space because the claim was likely invalid may face a narrower amended claim that still covers its product but now is legally effective.<sup>211</sup>

The competitor faces a choice of two socially-undesirable options: (1) abandon or redesign the product, thereby incurring losses it would not have incurred if it had known of the post-amendment claim language *ex ante* and could have designed or invested differently;<sup>212</sup> or (2) pay the patentee a licensing fee that reflects costs already incurred in reliance on the original claim language, not the actual value of the claimed invention.<sup>213</sup> Perhaps it is unreasonable for competitors and the public to make investments in reliance on the originally issued claims, given that they know (or should know) about the possibility of post-issuance claim amendments. But if competitors cannot reasonably rely on original claim language, the result is uncertainty and the stifling of the legitimate, socially-desirable conduct – competition and follow-on innovation – resulting from that uncertainty.<sup>214</sup>

However, reliance interests do not run one way. Many patent owners, at least those that commercialize their invention, may have incurred costs in reliance on patent protection, above and beyond the costs of research and development discussed above: patenting costs, design and manufacturing costs for commercial embodiments of the patented invention, distribution costs, marketing costs, etc. These costs may have been incurred in reliance on the expected returns from the exclusivity provided by the patent.<sup>215</sup> When a patent claim is entirely invalidated, the patent owner suffers losses that it

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<sup>210</sup> *Id.* at 529-530.

<sup>211</sup> *Id.* at 550-551.

<sup>212</sup> See Harry Surden, *Efficient Uncertainty in Patent Interpretation*, 68 WASH. & LEE L. REV. 1737, 1752 (2011) (noting that uncertainty of claim scope undermines efforts to “reduc[e] risk by reorienting production activities, or attempting to ‘invent around’ a particular claim by creating products that do not infringe”).

<sup>213</sup> See Chiang, *supra* note \_\_, at 534 (recognizing this problem in the context of continuation applications).

<sup>214</sup> *Id.* at 553 (“If the patentee is permitted to amend [its] claim . . . then the competitor who relied on the patent claim will be made to bear the loss by paying royalties, reducing competitor incentive to rely on claims and create noninfringing designs.”).

<sup>215</sup> See Michael J. Burstein, *Rules for Patents*, 52 WM. & MARY L. REV. 1747, 1781 (2011) (“[I]nventors and entrepreneurs will make investment decisions in reliance upon those settled expectations” created by issued patent rights.); Oral Argument Tr., *Oil States* at 54:2-11 (recognizing that “people invest in their patents to the tunes of billions of dollars in [for example] building the plant that’s going to make the product”).

would never have incurred if had known *ex ante* that it would not have the exclusivity benefits provided by patent protection.<sup>216</sup> Post-issuance claim amendments help preserve the patentee's settled expectations and reliance interests in the issued patent by "providing a meaningful opportunity to address prior art and preserve claims to the extent possible."<sup>217</sup>

The relative weight of these competing reliance interests will vary based on the circumstances. Concerns about interference with competitor reliance interests may be overstated for two reasons. First, competitors may not actually rely on original claim language, with evidence suggesting that companies tend not to search for, read, or evaluate patents before undertaking a business course, at least in some industries.<sup>218</sup> Second, even when there is reliance on the original claim language, competitors are protected to some extent by intervening rights, which allow them to continue selling and using products they made, purchased, or imported before the post-issuance amendments and potentially (at the court's discretion) to continue engaging in activities undertaken, or for which there was substantial preparation, before amendment.<sup>219</sup> To be fair, courts sparingly allow intervening rights and limit them to the extent necessary to recover direct expenditures, often leaving competitors' long-term investments and lost alternative business opportunities unrecouped.<sup>220</sup>

Patent owners' reliance interests will also vary with the circumstances. Patent owners that engage in significant commercialization activities are likely to have greater reliance interests than those that do not, and different patent owners will have different abilities to protect their market position even without patent rights. Moreover, patent owners' other tools for hedging against the risk of outright invalidation and the period of exclusivity that will exist before the need for post-issuance amendments arises may offer similar protections for patent owners' reliance interests as they do for patent

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<sup>216</sup> See *PhRMA Aqua Br.*, *supra* note \_\_, at 17 ("Scrapping patent claims wholesale . . . squanders the financial and intellectual capital the inventive community devotes to new discoveries.").

<sup>217</sup> See *id.*

<sup>218</sup> Mark A. Lemley, *Ignoring Patents*, 2008 Mich. St. L. Rev. 19, 21-22; *but see id.* at 29 (suggesting patents are not ignored in the pharmaceutical industry); Lisa Larrimore Ouellette, *Do Patents Disclose Useful Information?*, 25 HARV. J. L. & TECH. 531, 556 (2012) (finding that 64% of nanotechnology researchers have read a patent).

<sup>219</sup> See Part I.C.1, *supra*; see also Meurer & Nard, *supra* note \_\_, at 1995 (noting that intervening rights "mitigate[] potential problems related to notice" to competitors). Intervening rights do not apply when the post-issuance amendments occur via continuation applications. Part I.C.2.

<sup>220</sup> See Part I.C.1, *supra*; Chiang, *supra* note \_\_, at 571.

owners' innovation incentives.<sup>221</sup>

### C. Administrative Costs and Complications

Post-issuance claim amendments introduce additional layers of administrative costs and complications. Most obviously, the Patent Office must expend time and effort on a second round of examination to insure that the amended claims comply with the statutory requirements, time and effort that otherwise could be spent on examining original patent applications or evaluating originally issued claims in post-issuance review proceeding. In theory, the Patent Office could recoup some of these costs by charging additional fees for amendments in post-issuance proceedings but, with the exception of reissuance, it does not do so.<sup>222</sup>

When claim amendments occur in post-issuance invalidity proceedings, like inter partes review, they can increase the cost, scope, complexity, and time of such proceedings and delay any parallel litigations that is stayed pending the outcome of the post-issuance proceeding.<sup>223</sup> Relatedly, claim amendments generate greater uncertainty of outcomes for post-issuance review proceedings and accompanying litigation, as the potential outcomes become valid, invalid, or valid but changed, instead of just valid or invalid.<sup>224</sup> This increases the difficulty of making rational settlement decisions that reflect the expected value of post-issuance review and litigation, as well as general business planning.

Finally, an amended claim must be examined for compliance with all of the statutory requirements of patentability, included eligible subject matter, novelty and non-obviousness over the prior art, and adequate disclosure. This creates administrative complications for post-issuance proceedings like reexamination and inter partes review, which are limited to the novelty and non-obviousness of the invention in light of printed publications.<sup>225</sup> These administrative complications are surmountable in reexamination which is conducted by patent examiners in the same way as

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<sup>221</sup> See Part III.A, *supra*.

<sup>222</sup> USPTO, *Table of Patent Fees - Current, Proposed and Unit Cost*, [https://www.uspto.gov/sites/default/files/documents/Table\\_of\\_Patent\\_Fees-Current\\_Proposed\\_and\\_Unit\\_Cost.pdf](https://www.uspto.gov/sites/default/files/documents/Table_of_Patent_Fees-Current_Proposed_and_Unit_Cost.pdf).

<sup>223</sup> *Askeladden Aqua Br.*, *supra* note \_\_, at 14 (noting with amendments “the patent owner could, at the expense of the petitioner, engage the Board in a prolonged back-and-forth to successively amend the claims that avoid the prior art of record”).

<sup>224</sup> *Id.* at 16 (“[P]etitioners would face uncertainty about the possibility that new unknown substitute claims will survive inter partes review and about the possible scope of such claims.”).

<sup>225</sup> 35 U.S.C. §§ 302, 311(b).

initial examination.<sup>226</sup> But amendments raise a host of difficult questions in inter partes review, where the decision makers are Administrative Patent Judges, only a minority of whom have examination experience, and the process is adversarial and adjudicative.<sup>227</sup> Should the Administrative Patent Judges evaluate the patentability of amended claims even though they are not trained examiners and, *e.g.*, may not be familiar with conducting prior art searches?<sup>228</sup> Or should the APJs refer the amendments to patent examiners? Is the latter permitted by the statute?<sup>229</sup>

The additional administrative costs of post-issuance amendments may be a feature, not a bug. Because only a tiny fraction of issued patents are litigated, licensed, or otherwise become relevant, it might be rational – at least as a matter of administrative costs and putting aside for now the potential negative effects on reliance interests – to only expend a moderate amount of resources in initial examination to get a rough approximation of claim scope and then expend more resources on post-issuance review proceedings and amendments to get the “correct” claim scope for those patents that do become relevant.<sup>230</sup>

#### *D. Drafting Incentives, Enforcement Incentives, and Strategic Behavior*

A primary concern with post-issuance claim amendments is that a patent owner could purposefully modify a claim to cover a competitor’s product developed subsequent to the patent owner’s filing and not originally contemplated by the patent owner.<sup>231</sup> This undermines opportunities and incentives for legitimate competition, design-around, and follow-on innovation.<sup>232</sup> The amended claim must be supported by the originally-filed

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<sup>226</sup> 35 U.S.C. § 305.

<sup>227</sup> Jennifer R. Bush, Administrative Patent Judges: Not Your Typical Federal Judge, FENWICK & WEST LLP (July 10, 2014), [https://www.fenwick.com/FenwickDocuments/Administrative\\_Patent\\_Judges.pdf](https://www.fenwick.com/FenwickDocuments/Administrative_Patent_Judges.pdf)

<sup>228</sup> Askeladden *Aqua Br.*, *supra* note \_\_, at 14 (noting that the PTAB “is ill-equipped to examine new claims” because it does not normally “search for prior art” or “reject claims”).

<sup>229</sup> Compare STRONGER Patents Act, S. 1390 at 18-19 (115th Cong., introduced June 21, 2017) (proposing amendments to AIA to allow PTAB to “order an expedited patentability report from a patent examiner on a substitute claim”).

<sup>230</sup> See Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 NW. U. L. REV. 1495, 1497 (2001) (“[I]t is much cheaper for society to make detailed validity determinations in those few cases than to invest additional resources examining patents that will never be heard from again.”).

<sup>231</sup> See Lemley & Moore, *supra* note \_\_, at 76 (discussing this problem in the context of continuation applications).

<sup>232</sup> *Id.* at 77-78.

specification but a patent owner will often be able to find a hook for the modified claims in the dense, often-broadly framed, and frequently ambiguous written description of the invention.<sup>233</sup> This risk is most acute in the limited situations in which post-issuance broadening amendments are allowed.<sup>234</sup> But even non-broadening amendments could clarify ambiguous claim language in a way that makes it more clearly applicable to a competitor's product or tailor overbroad claim language to avoid invalidating prior art while still covering the competitor's product.<sup>235</sup>

Post-issuance amendments, including narrowing amendments, also further incentivize patent owners to originally draft low-quality, vague and/or overbroad claims and/or to amend claims in examination to be the broadest or vaguest that the examiner will allow. If the examiner fails to reject these claims during examination but an accused infringer mounts a successful invalidity challenge post-issuance, post-issuance amendments allow the patent owner to narrow the claims and retain the amount of patent protection that it was entitled to in the first place.<sup>236</sup>

Beyond negative drafting incentives, post-issuance claim amendments also create incentives for strategic and undesirable behavior in patent enforcement. They provide patent owners greater ability and incentive to assert low-quality patents with overbroad and/or vague claims to obtain a cost-motivated settlements. The patent owner will often be able to narrow the claim in a post-issuance proceeding in a way that still allows a viable infringement claim,<sup>237</sup> requiring the accused infringer to incur the full costs of litigation to fully invalidate the claim. Accused infringers also will have less incentive to challenge weak patents in post-issuance proceedings if the patent owner may be able to amend the claim to still assert infringement while avoiding invalidation.<sup>238</sup> And when competitors do initiate post-issuance proceedings, but the claims are amended to exclude the competitor's product, the competitor may not have an incentive to challenge those claims, increasing the chances that amended claims that are unwarranted will issue from the post-issuance proceeding.<sup>239</sup>

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<sup>233</sup> *Cf. id.* at 77 (suggesting that finding some support in the specification for strategically drafted claims is not a substantial barrier).

<sup>234</sup> See Part I.C.1-2, *supra*.

<sup>235</sup> See *Cordis*, 511 F.3d at 1157 (finding that claim added to cover competitor's product "does not broaden the scope of coverage").

<sup>236</sup> See En Banc Brief of the Internet Association et al. As Amici Curiae in Support of Intervenor 15-16, *Aqua* (hereinafter, "Internet Ass'n *Aqua* Br.").

<sup>237</sup> *Askeladden Aqua Br.*, *supra* note \_\_, at 18.

<sup>238</sup> *Id.* at 16.

<sup>239</sup> *Internet Ass'n Aqua Br.*, *supra* note \_\_, at 16-17.

The negative incentives, however, do not run one way. A patent owner asserting its patent today faces a reasonable probability that the accused infringer will initiate a post-issuance proceeding where the burden of proof is only a preponderance of the evidence and the Patent Office applies a “broadest reasonable construction” standard that is more likely to implicate prior art and therefore invalidate the patent.<sup>240</sup> Without the ability to amend its claim in these proceedings, the patent owner may lose effective patent protection all together, a risk that is could chill assertion of even meritorious patent claims. This would be socially problematic because “[a] patentee’s assertion of reasonable claims of infringement is the mechanism whereby patent systems provide an innovation incentive” and ought to be encouraged.<sup>241</sup>

Relatedly, prohibiting or restricting post-issuance claim amendments increases the incentives for competitors to ignore even meritorious patent assertions, challenge even strong patent rights, and exploit the inherent uncertainties of patent claims, rather than giving claims fair readings. If the patent owner sues, the competitor can initiate relatively cheap post-issuance proceedings, benefit from the more favorable burden of proof and claim construction standards, and avoid any risk that the patent owner could better tailor its claims. These negative incentives from restricting claim amendments would undermine the value patent owners can expect from patent protection and therefore their incentives to innovate.

#### *E. Weighing the Costs and Benefits of Post-Issuance Claim Amendments*

Post-issuance claim amendments look problematic on first glance. They undermine public notice and pose a threat to competitors who have relied on the original claim language in making investment and business decisions.<sup>242</sup> They protect patent owners who draft overbroad and vague original claims or assert weak patents against competitors and may even allow patent owners to lay in wait and strategically amend claims to capture competitors’ independently-developed products.<sup>243</sup> And they impose the additional costs required to engage in a second round of examination.<sup>244</sup> All of these costs come with questionable benefits, as patent owners already will have had a period of exclusivity to recover their research and development

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<sup>240</sup> *Cuozzo*, 136 S. Ct. at 2144-45.

<sup>241</sup> See *Checkpoint Sys., Inc. v. All-Tag Security S.A.*, 858 F.3d 1371, 1375 (Fed. Cir. 2017).

<sup>242</sup> See Part III.B, *supra*.

<sup>243</sup> See Part III.D, *supra*.

<sup>244</sup> See Part III.C, *supra*.

costs and plenty of other opportunities to protect their legitimate claim scope as a hedge against invalidation.<sup>245</sup> For example, it is unclear that patent owners need amendments in post-issuance invalidity proceedings to protect their legitimate claim scope when reissuance allows them to mitigate the inherent problems with translating inventions into words and account for unforeseen developments.<sup>246</sup> Unsurprisingly, perhaps, many commentators treat post-issuance amendments with deep skepticism even as they embrace examination amendments as clearly warranted.<sup>247</sup>

But this differential reaction overstates the costs of post-issuance amendments and underestimates the benefits. Patent owners have their own reliance interests in making investment and business decisions that will be disturbed if they lose effective patent protection all together.<sup>248</sup> These reliance interests might actually be stronger than those of competitors, since competitors have the benefits of intervening rights and may not be reading original claims or engaging in patent clearance, at least in some industries.<sup>249</sup> Eliminating post-issuance amendments would give competitors less incentive to license or settle even in the face of a strong patent assertion and greater incentive to try to manufacture some defect in the original claims.<sup>250</sup> In light of these negative incentives for competitors, post-issuance amendments may be necessary to protect innovation incentives, especially in industries with a prolonged time from invention to commercialization.<sup>251</sup> And using post-issuance amendments to achieve the proper calibration of patent protection may be a wise allocation of resources as compared to investing more in making this precise determination during examination.<sup>252</sup>

Professor Chiang suggests that we should have less concern for the costs to patent owners than to competitors and the public in this context because patent owners draft the original claims and are therefore the “lowest cost avoiders” when an original claim does not accurately reflect their legitimately protectable subject matter.<sup>253</sup> Professor Chiang’s conclusion

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<sup>245</sup> See Part III.A, *supra*.

<sup>246</sup> *Internet Ass’n Aqua Br.*, *supra* note \_\_, at 23-24 (“[T]he reissue process obviates any need for patent owners to rely on a motion to amend in inter partes review to save their patents.”).

<sup>247</sup> See, e.g., Chiang, *supra* note \_\_, at 526 (arguing for abolishing post-issuance claim amendments while arguing that pre-issuance “amending claims to fix mistakes is useful”).

<sup>248</sup> See Part III.B, *supra*.

<sup>249</sup> See *id.*

<sup>250</sup> See Part III.D, *supra*.

<sup>251</sup> See Part III.A, *supra*.

<sup>252</sup> See Part III.C, *supra*.

<sup>253</sup> Chiang, *supra* note \_\_, at 554.

largely rests on his assumption disputed above<sup>254</sup> that the patent system has no interest in allowing a patent owner to capture developments unforeseen at the time of filing. To him, claim amendments are only needed due to the patent owner's negligent or strategic drafting that could be avoided with greater care or less self-interested behavior, other than a small number of "unavoidable mistakes" where avoiding draft mistakes would be too costly.<sup>255</sup> Professor Chiang unduly discounts the inherent problems of translating a technical innovation into legal words<sup>256</sup> and the ability of self-interested accused infringers (and their skilled litigators) to manufacture ambiguity and shortcomings in even well-written claims.<sup>257</sup>

But even if he did credit these problems, Professor Chiang would still conclude that between two faultless parties, the risk of loss should remain where it lies (with the patent owner) absent a compelling justification.<sup>258</sup> However, where to apportion loss between two faultless parties is a policy choice properly entrusted to the legislature. One could imagine a rational Congress concluding that a "compelling justification" exists to permit post-issuance amendments (and therefore shift the risk of loss to accused infringers) because of importance of patent protection in promoting innovation and the importance of innovation to economic well-being. I take up these issues further in the next section.

Ultimately, there is no strong reason to differentiate between examination and post-issuance amendments in evaluating their social optimality. At most, the cost and benefits of post-issuance proceedings are different in degree, not different in kind, from examination amendments. As with examination amendments, the optimality of post-issuance amendments comes down to the trade-off between protecting patent owner incentives to innovate by maximizing patent owners' opportunities to recoup their investments and protecting competition and follow-on innovation by maximizing protections for competitor reliance interests and incentives for good patent quality.

#### IV. THE POLICY OF CLAIM AMENDMENTS

Most evaluations of the patent system tend to reach a strong normative conclusion that one approach or another is clearly optimal, often based on the author's priors about the proper role of patent protection in the

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<sup>254</sup> See Part II.A.1, *supra*.

<sup>255</sup> Chiang, *supra* note \_\_, at 554-559.

<sup>256</sup> See Part II.A.1, *supra*.

<sup>257</sup> See Part III.A, *supra*.

<sup>258</sup> Chiang, *supra* note \_\_, at 558-559.

modern economy.<sup>259</sup> In comparison, it may seem unsatisfying to conclude that the proper approach to claim amendments is ambiguous and reasonably could be resolved either in favor of a liberal approach to amendments or a more restrictive approach depending on one's feeling about the basic trade-off between incentivizing innovation and protecting competition.<sup>260</sup> Yet, this conclusion offers important insights into current policy debates, discussed in the following sections.

#### A. Examination Claim Amendments As a Policy Lever

The justifications for permitting claims amendments during original patent examination are at least somewhat ambiguous and perhaps significantly so.<sup>261</sup> Surprisingly, however, claim amendments have been widely assumed to be desirable and liberally available in examination as a statutory right of the patent owner since the 19th century.<sup>262</sup> This section explores the consequences of this significant disconnect between actual historical practice and the theoretical justifications for that practice.

##### 1. The Relevance of the Long-Standing Liberal Approach to Examination Amendments

The well-established practice of liberal examination claim amendments may point to the proper resolution of their theoretical ambiguity. The Supreme Court has recognized that in intellectual property law, like other areas of law, “a page of history is worth a volume of logic.”<sup>263</sup> The theoretical uncertainty has been resolved in favor of liberal examination amendments by Congress after Congress and Patent Office after Patent Office. When Congress has consistently “continued [a] policy through many years,” one can “assume that experience has demonstrated its wisdom and beneficial effect upon the arts and sciences.”<sup>264</sup>

Strong reasons reasonably could be required to depart from such a long-standing, consistent practice of examination claim amendments. Indeed, the Supreme Court has emphasized the need to “be cautious before adopting changes that disrupt the settled expectations of the inventing

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<sup>259</sup> Cf. Ouellette, *Cultural Cognition*, *supra* note \_\_\_, at 28-32 (connecting the strong views and hard conclusions often reached by patent commentators to confirmation bias).

<sup>260</sup> See Parts II.C, III.E, *supra*.

<sup>261</sup> See Part II, *supra*.

<sup>262</sup> See Part I.B, *supra*.

<sup>263</sup> *Eldred*, 537 U.S. at 200 (quotations omitted) (addressing copyright).

<sup>264</sup> *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U.S. 405, 429-430 (1908).

community.”<sup>265</sup> Even restricting or eliminating claim amendments prospectively could undermine these expectations, given the sometimes significant lag time between activities undertaken in reliance on a certain level of patent protection (research and development, investing in a certain industry, creating the infrastructure for commercialization, etc.) and the filing of a patent application. Entire technologies, industries, or business models may have developed based on a general expectation of a certain level of patent protection.<sup>266</sup>

But this does not mean that the policy of liberal claim amendments must, or even should, be maintained. Long-standing practice, settled expectations, and reliance interests are relevant considerations but are not dispositive if outweighed by other considerations. Regardless of “the lengthy history” of a patent law doctrine or practice, “Congress can legislate [it] out of existence any time it chooses,” with the wisdom of doing so a policy question within Congress’s discretion.<sup>267</sup> Specifically, the task of weighing reliance interests and settled expectations that have developed based on a well-established practice against other considerations suggesting the need for change is entrusted to Congress, which has “the constitutional authority and the institutional ability to accommodate fully the varied permutations of competing interests that are inevitably implicated”<sup>268</sup>

In sum, the fact that examination amendments have been liberally allowed since 1836 counsels that Congress should act cautiously in restricting or eliminating such amendments and should only do so in light of strong countervailing factors. Ultimately, however, historical practice does not bind Congress to a liberal examination claim amendment policy.

## 2. Claim Amendments As a Tool for Addressing Patent Quality Concerns

This Article does not provide a definitive answer as to how Congress should use its discretion with regards to examination claim amendments. Because of the ambiguity in the justifications for examination amendments,

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<sup>265</sup> *Festo*, 535 U.S. at 739.

<sup>266</sup> See *Ass’n for Molecular Pathology v. U.S.P.T.O.*, 689 F. 3d 1303, 1347 (Fed. Cir. 2012) (Moore, J., concurring in part), rev’d sub nom *Ass’n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107 (2013) (“This long-term policy of protecting isolated DNA molecules has resulted in an explosion of innovation in the biotechnology industry, an industry which, unlike the financial services industry or even the software industry, depends on patents to survive.”).

<sup>267</sup> *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 28 (1997) (addressing doctrine of equivalents).

<sup>268</sup> See *Ass’n for Molecular Pathology*, 689 F. 3d at 1344-46 (Moore, J., concurring in part)

the policy choice comes down to where the risk of error should lie – overprotecting innovation incentives at the expense of competition and follow-innovation if a liberal amendment policy is sub-optimal or vice-versa if a restrictive amendment policy is adopted. This question implicates underlying views about the importance of patent protection in innovation, the proper scope of patent protection to balance innovation and competition, and the current state of patent protection in the United States. The patent community is largely divided into two polarized camps on these questions.<sup>269</sup> In truth, the best conclusion today is probably the same as that two leading economists reached in the 1950s: “[i]f national patent laws did not exist, it would be difficult to make a conclusive case for introducing them; but the fact that they do exist shifts the burden of proof and it is equally difficult to make a really conclusive case for abolishing them.”<sup>270</sup>

With that said, the weighing of the costs and benefits of examination amendments suggests that they are not as defensible as their historical pedigree and widespread acceptance would suggest. Restricting, or even eliminating, claim amendments would not have the dire consequences that many assume and might actually have beneficial effects. Examination claim amendment policy is a reasonable tool for Congress to use to adjust the basic trade-offs at the heart of the patent system between innovation incentives and competition. If there were strong enough reasons to think that this balance had tilted too far in favor of initial inventors to overcome the presumption that arises from long-standing practice, abandoning the liberal approach to examination amendments in favor of a more restrictive approach would be a proper means of recalibrating this balance.

This conclusion provides the theoretical justifications for recent proposals to address patent quality problems by imposing burdens on examination claim amendments. Poor patent quality is widely seen as one of the most significant problems in the modern patent system, and the liberal approach to examination claim amendments contributes to patent quality problems.<sup>271</sup> Given this relationship, a few commentators have proposed limits on examination amendments as one reform that could contribute to

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<sup>269</sup> Ouellette, *Cultural Cognition*, *supra* note \_\_, at 28-30.

<sup>270</sup> Heidi L. Williams, *How Do Patents Affect Research Investments?*, 9 ANNUAL REV. OF ECON. 441, \_\_ (2017) (reciting quote); *id.* at \_\_ (“[W]e still have essentially no credible empirical evidence on the seemingly simple question of whether stronger patent rights – either longer patent terms or broader patent rights – encourage research investments into developing new technologies.”); Ouellette, *Cultural Cognition*, *supra* note \_\_, at 30 (“I have recently reviewed the evidence on whether patents promote innovation and concluded that it is more ambiguous, and other reviews agree.”).

<sup>271</sup> See Part II.B.4, *supra*.

improved patent quality. For example, Professor Yelderman proposed requiring the applicant to post a bond for each original claim filed that would be returned when the claim issues but forfeited if the claim is cancelled or amended.<sup>272</sup> Similarly, Professor Wagner suggested imposing penalties when claims are amended, such as vigorous application of the doctrine of prosecution history estoppel to prevent or limit proof of infringement by equivalents when claims are amended during prosecution.<sup>273</sup>

This Article provides the theoretical work that justifies commentators' reliance on claim amendment policy as a means of addressing the patent quality problem. Because the commentators themselves are focused on patent quality generally, not claim amendments specifically, they focus primarily on the benefits restrictions on claim amendments would offer for patent quality, without purporting to conduct a full analysis of the optimality of restricting claim amendments.<sup>274</sup> If one believes patent quality is as significant a problem as many do – and that restricting claim amendments can help improve it, as is suggested in Part II.B.4, *supra* – this provides the type of strong reason for Congress to depart from the long-standing liberal approach to claim amendments and adopt a more restrictive approach.

This is not meant to endorse the proposals of Professor Yelderman or Wagner. The patent quality issue is complex – some have questioned the severity of the problem,<sup>275</sup> there may be other or more significant causes than applicant drafting incentives,<sup>276</sup> and it is not clear that Yelderman's bond proposal or Wagner's vigorous prosecution history estoppel approach are the best way to address applicant incentives or restrict amendments.<sup>277</sup> The point is more limited. In light of the ambiguity in the justifications for claim amendments and the connection to the basic trade-off at the heart of the patent system, commentators are justified in looking to alterations in claim amendment policy to address significant problems in the patent system, like patent quality.

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<sup>272</sup> Yelderman, *supra* note \_\_, at 120-121.

<sup>273</sup> Wagner, *supra* note \_\_, at 2167.

<sup>274</sup> Yelderman, *supra* note \_\_, at 120-121 (acknowledging the incentives his proposal may create to prolong debate over claim rejections but otherwise not discussing other consequences of restricting claim amendments); Wagner, *supra* note \_\_, at 2167-68 (providing a brief, one paragraph discussion of the costs of his proposed penalties on claim amendments before summarily concluding that the benefits of improved applicant incentives are likely to outweigh these costs).

<sup>275</sup> See, e.g., James E. Malackowski & Jonathan A. Barney, *What Is Patent Quality? A Merchant Banc's Perspective*, LES NOUVELLES 123, 134 (June 2008).

<sup>276</sup> Wagner, *supra* note \_\_, at 2147-58 (describing multiple cause of low patent quality).

<sup>277</sup> Cf. Liivak, *supra* note \_\_ (proposing criminal penalties for intentional overclaiming).

*B. Reconsidering the Debate Over Post-Issuance Claim Amendments*

This Section turns to the insights that this Article offers for the polarized debate that has developed over post-issuance claim amendments in light of the Patent Office’s restrictive approach to such amendments in the new AIA post-issuance proceedings.<sup>278</sup> It suggests that the Patent Office *could* continue its restrictive approach but that the Patent Office *should* await further direction from Congress.

1. The Polarized Debate Over Claim Amendments in AIA Proceedings.

The Patent Office’s restrictive approach to claim amendments in AIA proceedings, which made them virtually impossible, sparked considerable opposition and debate, largely focused on narrow questions of statutory interpretation and administrative deference specific to the AIA proceedings. However, the competing sides on these questions have also taken competing absolutist positions on the wisdom of post-issuance claim amendments more generally. These absolutist positions are currently influencing debates at the administrative and legislative levels, as discussed in the following sections.

Proponents of the Patent Office’s restrictive approach contend, for example, that liberally allowing post-issuance amendments “would lead to an increase in the survival of weak patents,” undermine Congress’s efforts to provide a low-cost means of invalidating low-quality patents, and incentivize abusive litigation that relies on high costs to “extort[]” legitimate competitors and innovators.<sup>279</sup> To these stakeholders, a restrictive approach to post-issuance claim amendments is indisputably correct and vital to the proper functioning of the patent system.<sup>280</sup>

Opponents of the Patent Office’s restrictive approach describe “the inability to amend claims” post-issuance as part of the “procedures that have been stacked against patent owners” that undermine “stable and effective property rights for inventors” and the “innovation economy.”<sup>281</sup> Likewise,

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<sup>278</sup> See Part I.C.4, *supra*.

<sup>279</sup> *Askeladden Aqua Br.*, *supra* note \_\_, at 6-7, 19-20; *Internet Ass’n Aqua Br.*, *supra* note \_\_, at 14 (arguing that restricting claim amendments “would . . . frustrate Congress’s goal of ‘improving patent quality’”).

<sup>280</sup> *Askeladden Aqua Br.*, *supra* note \_\_, at 2 (arguing that “[p]ermitting patent owners to sidestep the probable invalidation of a weak patent . . . by substituting new claims” would undermine “the reforms contemplated by the America Invents Act to check patent abuse” and threaten the “health of that [patent] system”).

<sup>281</sup> See David Lund, *The STRONGER Patents Act: Important Legislation to Protect Our Innovation Economy* (Antonin Scalia Law School, George Mason University, Center for the

they suggest that the absence of amendments post-issuance and lack of an “iterative process” of rejection, response, and amendment is part of a “slanted design” that “cause[s] harm to all patentholders, making it far more difficult for product-producers to get to market.”<sup>282</sup> To these stakeholders, liberally permitting post-issuance proceedings is indisputably correct and vital to the proper functioning of the patent system.<sup>283</sup>

## 2. Reconsidering the Administrative Debate Over Post-Issuance Claim Amendments.

The Federal Circuit’s en banc *Aqua Products* decision reversed the Patent Office’s restrictive approach that placed the burden of persuasion in AIA proceedings on the patent owner to prove the patentability of amended claims.<sup>284</sup> Importantly, however, that majority agreed only “that the PTO has not made that assignment [of the burden of proof] through action that warrants deference under *Chevron*.”<sup>285</sup> A different majority of the en banc Federal Circuit found the AIA ambiguous as to the proper procedure for claim amendments in inter partes review<sup>286</sup> and held that “[s]hould the Patent Office present a fully considered interpretation of the governing statute and properly promulgate such a rule through APA compliant rulemaking, *Chevron* deference would be on the table.”<sup>287</sup> Under the *Chevron* framework, because the AIA is ambiguous in relevant part, courts would have to “defer at [*Chevron*] step two to the agency’s interpretation so long as the construction is a reasonable policy choice for the agency to make.”<sup>288</sup>

For the time being, the PTAB has chosen not to re-promulgate its restrictive approach to post-issuance claim amendments in AIA proceedings.<sup>289</sup> However, given that some stakeholders believe that a

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Protection of Intellectual Property June 21, 2017), <https://cpip.gmu.edu/2017/06/21/the-stronger-patents-act-important-legislation-to-protect-our-innovation-economy/>.

<sup>282</sup> Br. of Amici Curiae Gary Lauder et al. Supporting Petitioner 18-20, *Oil States*.

<sup>283</sup> Lund, *supra* note \_\_ (arguing that by liberalizing amendments and other reforms PTAB “proceedings will move closer to a fair fight to truly examine patent validity” and “protect our innovation economy by restoring stable and effective property rights for inventors”).

<sup>284</sup> *Aqua*, 872 F.3d at 1328 (O’Malley, J., opinion).

<sup>285</sup> *Id.* at 1342 (Taranto, J., opinion) (describing majority holding); *id.* at 1296 (O’Malley, J., opinion).

<sup>286</sup> *Id.* at 1328 (Moore, J., opinion).

<sup>287</sup> *Id.* at 1341-42 (Reyna, J., opinion).

<sup>288</sup> *Nat’l Cable & Telecomms. Ass’n v. Brand X Internet Servs.*, 545 U.S. 967, 986 (2005); *see also Aqua*, 872 F.3d at 1343 (Taranto, J., opinion) (“[T]he patent owner may be assigned the burden of persuasion [by the Patent Office] as long as doing so is reasonable.”).

<sup>289</sup> Ruschke, *supra* note \_\_.

restrictive approach to claim amendments is crucial to achieving the AIA's goal of "ferreting out and invalidating weak . . . patents that should not have issued,"<sup>290</sup> the Patent Office may in the future use proper procedures under the *Chevron* framework to restrict claim amendments in AIA proceedings. The Patent Office could again assign the burden of persuasion to the patent owner again or adopt other restrictive "standards and procedures for allowing the patent owner to move to amend the patent" under its rulemaking power,<sup>291</sup> such as imposing a fee on patent owners for amending claims or requiring patent owners to show that they did not foresee, and could not have reasonably foreseen, pre-issuance the problem that requires amendment.

If the Patent Office does restrict post-issuance amendments, some stakeholders will undoubtedly contend that this approach is unreasonable and not entitled to *Chevron* deference, relying on arguments similar to those described above about slanted and stacked procedures that harm legitimate patent owners and the innovation economy.<sup>292</sup> However, the ambiguity in the justifications for post-issuance amendments confirm that the Patent Office could properly promulgate a restrictive approach to claim amendments and be entitled to *Chevron* deference. With the arguments for and against post-issuance claim amendments essentially in equipoise, either a liberal or restrictive approach to post-issuance claim amendments would be "a reasonable policy choice for the agency to make."

That the Patent Office *could* readopt a restrictive approach and receive deference does not mean that it *should* do so. The Patent Office operates not just in the context of an ambiguous statute but also in the context of an approaching two-hundred year background of liberal allowance of claim amendments – at least for the non-broadening amendments at issue in AIA proceedings – in both initial examination and in the various post-issuance proceedings Congress has from time-to-time created (reissuance, continuation practice, *ex parte* reexamination, and *inter partes* reexamination). This historical precedent does not make amendments a necessary or inherent feature of the patent system, but it does counsel caution in adopting a restrictive approach absent strong reasons to do so.<sup>293</sup>

Congress has the institutional authority and competence to weigh the trade-offs that arise from departing from long-standing practice generally and

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<sup>290</sup> *Askeladden Aqua Br.*, *supra* note \_\_\_, at 18-19; *Internet Ass'n Aqua Br.*, *supra* note \_\_\_, at 16.

<sup>291</sup> 35 U.S.C. § 316(a)(9).

<sup>292</sup> See Part IV.B.1, *supra*.

<sup>293</sup> See Part IV.A.1, *supra*.

restricting claim amendments specifically.<sup>294</sup> In the modern administrative state, one could imagine Congress entrusting and empowering the Patent Office to make these trade-offs between competing policy interests.<sup>295</sup> But that is not the present structure of American patent system. The Patent Office is a comparatively weak administrative agency with the comparatively routine task of fact-specific evaluations of specific patent applications (or now issued patents) for compliance with the statutory criteria established by Congress.<sup>296</sup> Congress has given the Patent Office little role in making policy decisions or developing the substantive legal criteria for patent protection.<sup>297</sup> Thus, the Patent Office would be overstepping its institutional role to alter such an entrenched part of the patent system as liberal allowance of claim amendments, absent either clear direction from Congress or especially compelling justifications.

No clear direction from Congress exists that warrants departing from the long-standing liberal allowance of claim amendments. To the contrary, the statute provides that “the patent owner may file 1 motion to amend the patent,” though, according to the Federal Circuit, is ambiguous on the implementation of this provision.<sup>298</sup> The statute does direct the Patent Office to “prescribe regulations” that “set[] forth standards and procedures for allowing the patent owner to move to amend the patent,”<sup>299</sup> which arguably constitutes a delegation by Congress to the Patent Office of policy-making authority over claim amendments.<sup>300</sup> To be sure, this provision is what indicates that the Patent Office *could* adopt a restrictive approach to claim amendments. But the power to “set[] forth standards and procedures” for amendment motions seems an insufficient basis for concluding that the Patent Office *should* use its discretion to depart from the long-standing liberal approach to claim amendments. Indeed, a majority of the Federal Circuit seems to have concluded that the best reading of the AIA (though not the only reasonable reading) was contrary to the Patent Office’s restrictive approach to amendments.<sup>301</sup> Likewise, the relevant legislative history, though sparse,

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<sup>294</sup> See Part IV.A.1, *supra*.

<sup>295</sup> See Melissa F. Wasserman, *The Changing Guard of Patent Law: Chevron Deference for the PTO*, 54 WM. & MARY L. REV. 1959, 1962 (2013).

<sup>296</sup> Burstein, *supra* note \_\_, at 1755.

<sup>297</sup> *Id.* at 1755, 1757; *but see* Wasserman, *supra* note \_\_, at 1965-66 (contending that the AIA changed this traditional role).

<sup>298</sup> 35 U.S.C. § 316(d).

<sup>299</sup> 35 U.S.C. § 316(a)(9).

<sup>300</sup> See Wasserman, *supra* note \_\_, at 1965 (“[T]he AIA rejects over two hundred years of court dominance in patent policy by anointing the PTO as the chief expositor of substantive patent law standards.”).

<sup>301</sup> *Aqua*, 872 F.3d at 1324-25 (O’Malley, J., opinion) (reaching this conclusion explicitly on behalf of five judges total and indicating that two other judges agree with the

indicates that Congress assumed that AIA proceedings would not significantly break with past practices regarding amendments.<sup>302</sup>

Nor are there compelling justifications for adopting a restrictive approach to claim amendments. The arguments for and against post-issuance claim amendments are near equipoise and come down to a debatable question of the proper balance between maximizing protections and incentives for innovators and protecting competition and follow-on innovation. Because this reflects the basic trade-off at the heart of the patent system that is for Congress, not the Patent Office, under the traditional institutional structure of the patent system, the Patent Office probably should not use its power to set “standards and procedures” for post-issuance amendments in AIA proceedings to alter such a long-standing and fundamental part of the patent system as liberal allowance of claim amendments.

### 3. Reconsidering the Legislative Debate Over Post-Issuance Claim Amendments.

The conclusion so far is that the proper role of claim amendments in AIA proceedings is properly left to Congress. To be sure, relying on Congressional action has well-recognized downsides: structural barriers to passing legislation (so-called “vetogates”); the negative effects of political expediency; and the risk of capture by well-organized and well-financed minority interests.<sup>303</sup> However, some form of Congressional intervention seems to be necessary as a matter of democratic legitimacy, since post-issuance amendment policy depends on the basic trade-off between innovation and competition that is Congress’s responsibility within the American patent system.

In fact, legislation is before Congress to address post-issuance claim amendments. The STRONGER Patents Act would allow more liberal claim amendments in AIA proceedings, including by placing the ultimate burden on the challenger to prove unpatentability of the amended claim.<sup>304</sup> The

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conclusion); *id.* at 1340 (Reyna, J., opinion) (appearing to suggest on behalf of two judges total that the statute is best read as placing a burden of production but not persuasion on the patent owner).

<sup>302</sup> *Id.* at 1299 (O’Malley, J., opinion) (summarizing legislative history).

<sup>303</sup> Arti K. Rai, *Patent Validity Across the Executive Branch: Ex Ante Foundations for Policy Development*, 61 DUKE L.J. 1237, 1266-67 (2012).

<sup>304</sup> STRONGER Patents Act at 15-17, 32-35. The patent owner would have to make a prima facie showing that the amendment responds to the grounds of unpatentability raised in the AIA proceeding, satisfies the disclosure requirements, and does not broaden claim scope, but then the burden would shift to the challenger to rebut this showing or otherwise prove unpatentability. *Id.* The proposal would also allow the PTAB to seek an advisory

express aim of doing so is to “strengthen the hand of patent owners in AIA review,”<sup>305</sup> motivated by concerns that PTAB has unduly tilted the balance against patent owners in a way that undermines “stable and effective property rights for inventors.”<sup>306</sup>

Supporters of the STRONGER Patents Act go too far in suggesting that the PTAB’s restrictive amendments policy was an “abuse[.]” and “stacked” procedure unfair to patent owners that *must* be corrected,<sup>307</sup> since the ambiguity in the optimality of post-issuance claim amendments makes a restrictive approach a perfectly reasonable policy choice.<sup>308</sup> However, Congress could reasonably conclude that PTAB proceedings have tilted the patent system’s balance too far against patent owners, given widespread agreement that the PTAB has been much more significant and effective at invalidating issued patents than Congress or stakeholders expected when debating and passing the AIA.<sup>309</sup> If so, the STRONGER Patent Act’s more liberal approach to claim amendments would be warranted to better protect inventors and therefore better achieve the balance that Congress sought in enacting the AIA.

But one could favor Congressional resolution of the post-issuance amendments question without supporting the STRONGER Patents Act or an equivalent measure to liberalize post-issuance claim amendments. Even if the AIA proceedings have exceeded expectations, many view them as a beneficial reform that has brought the patent system closer to the proper trade-off in terms of patent protection.<sup>310</sup> Thus, regardless of Congressional intent at the time of passage of the AIA, Congress could enshrine the balance between patent owners and competitors that the PTAB proceedings have actually achieved by expressly codifying the Patent Office’s assignment of the burden of persuasion to the patent owner, enacting some other restrictive approach to post-issuance claim amendments, or even prohibiting outright claim amendments in post-issuance invalidity proceedings. For all of the reasons discussed, this would be a reasonable policy choice for Congress

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patentability opinion from a patent examiner. *Id.*

<sup>305</sup> Doug Pearson, *Senate Bill for STRONGER Patents Act Aims to Address Key PTAB Patent Owner Woes*, PTABLITIGATIONBLOG (July 3, 2017), [www.ptablitigationblog.com/senates-stronger-patents-act-aims-address-key-ptab-patent-owner-woes/](http://www.ptablitigationblog.com/senates-stronger-patents-act-aims-address-key-ptab-patent-owner-woes/)

<sup>306</sup> Lund, *supra* note \_\_.

<sup>307</sup> *Id.*

<sup>308</sup> See Part IV.B.2, *supra*.

<sup>309</sup> Congressional Research Service 1, *Inter Partes Review of Patents: Innovation Issues*, R44905 (July 27, 2017).

<sup>310</sup> *Id.* at 19-20.

(even if not the only reasonable policy choice) and would not suffer from the institutional legitimacy concerns that arise from the Patent Office doing so.

Finally, perhaps to mitigate problems that arise from “vetogates” or competing interest group politics or from a general desire to shift more policy-making authority to the Patent Office,<sup>311</sup> Congress could expressly delegate to the Patent Office the discretion to determine whether, and on what terms, to allow post-issuance claim amendments. The AIA itself shifted significant patent policy discretion to the Patent Office.<sup>312</sup> However, Congress’s intention to do so for post-issuance amendments is insufficiently clear to leave this question to the Patent Office’s discretion, given the long-standing liberal allowance of claim amendments, the traditionally limited institutional role of the Patent Office, and the significance of the amendments question to the basic trade-off at the core of the Patent Office. Although the AIA gives the Patent Office the authority to “prescribe regulations . . . setting forth standards and procedures for allowing the patent owner to move to amend the patent,” it also expressly dictates that “the patent owner may file 1 motion to amend the patent.”<sup>313</sup>

Thus, it is unclear whether Congress delegated to the Patent Office ultimate policy discretion over post-issuance amendments in AIA proceedings or only discretion to implement the long-standing liberal policy in the next context of adversarial, trial-like AIA proceedings. To effectively do the former, Congress could amend the relevant statutory provisions to provide that “the Patent Office may make rules and regulations to determine whether, on what terms, and pursuant to what procedures an applicant can amend its claims.”

Although not providing a clear as to what course Congress should take with regards to post-issuance claim amendments, this Article offers two key insights. First, as a matter of process, institutional competency, and democratic legitimacy, Congress should expressly address the post-issuance claim amendments question. Second, in doing so, Congress should be guided by how post-issuance claim amendment policy can further the balance that it deems proper between patent owners and competitors.

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<sup>311</sup> Cf. Sarah Tran, *Policy Tailors and the Patent Office*, 46 U.C. DAVIS L. REV. 487, 489 (2012) (“For almost eighty years, broad congressional delegations of authority have empowered administrative agencies and other institutions to craft flexible policy measures for their constituents.”).

<sup>312</sup> Wasserman, *supra* note \_\_, at 1965.

<sup>313</sup> 35 U.S.C. § 316(a)(9), (d)(1).

### *C. Discretionary Post-Issuance Claim Amendments*

The prior sections concluded that Congress should determine the proper policy with regards to post-issuance claim amendments but that there is no clearly correct answer because of the ambiguity of the justifications for post-issuance claim amendments and their connection to the core trade-offs of the patent system. This section suggests that much of the ambiguity with regards to post-issuance claim amendments comes from trying to determine their optimality at a wholesale level for all patents, rather than individually on a case-by-case basis. It suggests that creating a system of individualized determinations by the Patent Office ultimately is the best approach to resolving the ambiguity in the optimality of post-issuance claim amendments.

#### 1. The Appeal of Discretionary Post-Issuance Claim Amendments

The ambiguity in the justifications for post-issuance claim amendments results from the interaction of a number of factors that will vary from patent to patent. Some competitors may have relied on the original claim scope of some patents when making investment and business decisions, whereas other competitors may not have even been aware of other patents at the time of their investment and business decisions. Some patent owners may commercialize the invention and have made their own investments and business decisions in reliance on effective patent protection, whereas other patent owners may not commercialize the invention and therefore not have any of their own reliance interests. Some patent owners may have recouped their research and development costs through the period of exclusivity they had before the post-issuance claim amendment issue arose, whereas other patent owners may not yet have had an adequate opportunity to do so.<sup>314</sup>

Likewise, some patent owners may be acting strategically to capture competitor innovations and advancements, whereas other patent owners may be acting to protect their legitimate invention that was imperfectly claimed during the original examination. And some patent owners may be to blame for the need for post-issuance claim amendments because they purposefully drafted their claims vaguely or ambiguously, whereas other patent owners with legitimately important inventions may be the victims of the inherent imprecision of language, the difficulties translating technical concepts into words, and the motivated exploitation of these difficulties by accused infringers and their lawyers.<sup>315</sup>

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<sup>314</sup> See generally Part III.E, *supra*.

<sup>315</sup> See generally Part III.E, *supra*.

It is difficult to determine as a general matter which of these considerations are most likely to be present, which way they are likely to point with regards to claim amendments, and how they should be relatively weighted. There are simply too many considerations and too much variance to make an accurate “one-size-fits-all” determination for all patents. For that reason, a wholesale policy on post-issuance claim amendments, whether liberal or restrictive, is likely to generate a significant number of errors, either allowing amendments even where they are unwarranted or denying amendments even where they are warranted. The basic conclusion of the prior sections is that to make a general policy on claim amendments Congress needs to decide where it wants to place the risk of error based on a determination about the basic trade-off between innovation and competition at the heart of the patent system, either minimizing the risk that inventors will be denied patent protection and thereby maximizing incentives to innovate or minimizing the risk that legitimate competition and follow-on innovation will be stifled.

If any general policy on claim amendments is likely to generate significant errors, a better approach may be to abandon the effort to craft a general, “one-size-fits-all” approach to claim amendments in favor of an approach that allows a case-by-case evaluation of the various relevant considerations discussed above to determine, on the facts of a particular patent, what considerations are present and in what significance to determine whether the optimality of a claim amendment for that particular patent. For that reason, the best Congressional intervention for addressing the issue of post-issuance claim amendments may be to revise the AIA (and potentially the reexamination statute) to eliminate any patent owner right to amend in favor of empowering the PTAB, or some other component of the Patent Office, to make a discretionary decision as to whether to allow amendment on a case-by-case basis. Congress could directly determine the criteria for the Patent Office to use in making this evaluation. Alternatively, and consistent with recent proposals to give the Patent Office a greater policy-making role in the patent system, Congress could delegate to the Patent Office the authority to specify the relevant criteria.

A discretionary, case-by-case evaluation of claim amendments raises questions about cost, delay, and institutional competence. For these reasons, discretionary claim amendments are not appropriate for initial patent examination, where a general approach is necessary even if significant errors are likely to result. However, the benefits of this discretionary approach for post-issuance claim amendments likely outweigh these concerns. These

questions are taken up further below.<sup>316</sup>

Giving the Patent Office discretion over claim amendments on a case-by-case basis may seem foreign in the modern patent system. The Patent Office's primarily serves a ministerial function of evaluating specific patent applications for compliance with general criteria of patentability set by Congress with no case-by-case discretion to weigh the desirability of patent protection or depart from the general patentability requirements.<sup>317</sup> However, there are historical analogs. The Patent Act of 1836 created a process in the Patent Office for a discretionary, case-by-case evaluation of whether to extend the term of a patent beyond the then-standard seventeen year term.<sup>318</sup> To obtain an extension, the patent owner had to demonstrate the value of the invention, the expenses it had incurred as a result of the invention, and that it had failed to obtain "a reasonable remuneration for the time, ingenuity, and expense" of the invention "without neglect or fault" on its part.<sup>319</sup> A board consisting of the Commissioner of Patents, Secretary of State, and Secretary of the Treasury then weighed this evidence against any evidence offered by adverse parties as to why an extension should not be granted and general considerations of the public interest to determine whether "it is just and proper that the term of the patent should be extended."<sup>320</sup>

The 19<sup>th</sup> century practice of patent term extensions certainly involved different considerations than the claim amendments question, but both implicate the core trade-off between insuring adequate innovation incentives and leaving sufficient room for competition and follow-on innovation. This historical practice of discretionary patent term extensions provides evidence that discretionary post-issuance claim amendments would not be exceptional when evaluated in the full history of the patent system, even if foreign to the Patent Office's modern role.

## 2. The Movement for Greater Discretion in the Patent System

A discretionary, case-by-case approach to post-issuance claim amendments would fit within a larger trend in the academic literature and policy proposals that seek to tailor the patent system to specific contexts and reduce the dominant one-size-fits-all nature of the patent system.<sup>321</sup> Indeed,

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<sup>316</sup> See Part IV.C.3, *infra*.

<sup>317</sup> Tran, *supra* note \_\_, at 491-492.

<sup>318</sup> Patent Act of 1836 § 18. Congress abolished the general practice of patent term extensions in 1861. Patent Amendments of 1861 § 16.

<sup>319</sup> Patent Act of 1836 § 18.

<sup>320</sup> *Id.*

<sup>321</sup> See, e.g., Peter Lee, *Substantive Claim Construction as a Patent Scope Lever*, 1 *IP*

the theoretically ideal economic approach to patent protection would only grant a patent if the invention (or its disclosure or commercialization) would not have occurred “but for” the expectation of receiving a patent.<sup>322</sup> Although an individual evaluation of this “but for” question for each patent application would not be administrable, patent policy should try to develop tools that approximate it as closely as is feasible.<sup>323</sup>

For that reason, “commentators have increasingly lamented the patent system’s lack of an institution that is willing and able to tailor innovation policy to the needs of different types of inventors and industries.”<sup>324</sup> Professors Dan Burk and Mark Lemley (as well as many academics building on their work) recognized that the relationship between innovation and patent protection is industry-specific and therefore advocated greater use of “discretion . . . to tailor patent law to individualized circumstances in different industries.”<sup>325</sup> Relatedly, Professor Peter Lee proposed greater patent-by-patent tailoring in claim construction – the process of determining the meaning and scope of the patent claims – by “consider[ing] the technological contributions of a patented invention and the competitive dynamics of a particular industry when construing claims.”<sup>326</sup> And Professor Lemley and Daralyn Durie have commended the Supreme Court’s recent reforms to the doctrine of obviousness (whether an invention is a sufficient advance to warrant patent protection) for putting “greater focus on the characteristics of individual cases” and “put[ting] more weight on the factual determination of what scientists would actually think and do about a particular invention.”<sup>327</sup>

Congress too has shown at least some interest in departing from rules of general applicability in the patent system in favor of more tailored, contextual, or individualized determinations. The AIA allows the Patent Office to prioritize for review applications for inventions that are deemed particularly important to the national economy or national competitiveness

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*Theory* 100, 111 (2010) (noting that while the “United States employs a “unitary” patent system that, at least nominally, applies the same standards of patentability and confers the same bundle of rights to all inventions . . . there is much wisdom to tailoring patent law to particular inventions and industries”).

<sup>322</sup> Federal Trade Commission, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy* 10-11 (Oct. 2013).

<sup>323</sup> FTC, *supra* note \_\_, at 11.

<sup>324</sup> Tran, *Policy Tailors*, *supra* note \_\_, at 490-491.

<sup>325</sup> Burk & Lemley, *Policy Levers*, *supra* note \_\_, at 1589, 1658 (focusing on courts’ discretion).

<sup>326</sup> Lee, *supra* note \_\_, at 101.

<sup>327</sup> Daralyn J. Durie & Mark A. Lemley, *A Realistic Approach to the Obviousness of Inventions*, 50 WM. & MARY L. REV. 989, 991 (2008).

without charging applicants a premium for this prioritization.<sup>328</sup> And a proposal in the pending STRONGER Patent Act would allow the PTAB to convert an AIA post-issuance proceeding into a special reexamination proceeding upon a showing of good cause based on criteria like the level of investment in research leading to the invention, the secondary considerations of non-obviousness, and any intervening changes of law in substantive patentability criteria.<sup>329</sup>

### 3. The Advantages of Post-Issuance Claim Amendments As a Discretionary Tool in the Patent System.

Proposals for more discretionary, case-by-case tailoring within the patent system face three primary objections: cost, institutional competence, and capture. Post-issuance claim amendments are well-positioned to mitigate these concerns and therefore offer a promising route to achieving greater contextual sensitivity in patent protection.

Requiring greater consideration of the specific context of individual patents or patent applications will generally increase decision costs as compared to general, “one-size-fits-all” approaches.<sup>330</sup> These increased decision costs make case-by-case contextual analysis undesirable if they outweigh the benefits gained in terms of reduced error costs.<sup>331</sup> Increasing decision costs in patent examination normally is undesirable because the Patent Office must examine hundreds of thousands of patents a year,<sup>332</sup> but only a small number of those patents will ever be used against competitors in a way that make potential error costs significant.<sup>333</sup> These increased decision costs from contextual, case-by-case analysis in patent examination are generally thought to outweigh the benefits of reduced error costs from more tailored decisions.<sup>334</sup>

A contextual, case-by-case analysis of claim amendments in post-issuance proceedings is not subject to the same degree of criticism on cost grounds as it would be if implemented during examination. The number of patents subject to post-issuance proceedings is only a small fraction of the number of patent applications the Patent Office must examine.<sup>335</sup> Thus, the

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<sup>328</sup> Tran, *Policy Tailors*, *supra* note \_\_, at 497.

<sup>329</sup> STRONGER Patents Act at 18-19.

<sup>330</sup> FTC, *supra* note \_\_, at 11 & n.76.

<sup>331</sup> *Id.* at 11 n.76.

<sup>332</sup> Burstein, *supra* note \_\_, at 1756.

<sup>333</sup> See Lemley, *Rational Ignorance*, *supra* note \_\_, at 1497.

<sup>334</sup> FTC, *supra* note \_\_, at 11 n.76.

<sup>335</sup> Compare USPTO, U.S. Patent Statistics Chart Calendar Years 1963 – 2015,

absolute costs of implementing a contextual, case-by-case analysis of amendments in post-issuance proceedings would be significantly less than doing so in examination (or than any other similar effort at individualized evaluations of worth in examination). Moreover, these lower costs would be more wisely spent. Rather than increasing the precision of decision-making for a large swath of patents that will never prove relevant, as in examination, the increased costs will be targeted at those patents where obtaining precision and reducing errors is most desirable – patents that are affecting and disputed by competitors.

The second major objection to proposals for more discretionary or individualized determinations regarding patent rights is whether the relevant decision makers are competent to make the necessary context-sensitive decisions. This objection arises whether the contextual decisions are to be made in examination or litigation. In examination, patent examiners tend to have scientific but not legal training, are often fairly young and inexperienced, tend to turn-over quickly, and have less than 20 hours to spend on each patent application.<sup>336</sup> Examination therefore is not amenable to the type of fact-finding, consideration of patent economics, and nuanced evaluation required for contextual, case-by-case determinations about the proper scope of patent protection. Moreover, because examination occurs before patent issuance, and often before commercialization of the invention, the information may not yet be available to, for example, evaluate the value of the invention or the impact on competitors and the public.<sup>337</sup>

Similarly, in litigation, courts are ill-suited to make the type of express policy decisions necessary to make individualized, contextual determinations on the need and proper scope of patent protection.<sup>338</sup> Courts “have difficulty gathering and processing economic and technological information” needed for contextual determinations of patent protection and instead tend to “rel[y] on arguments from statutory language, precedent, and logic” not particularly useful to these determinations.<sup>339</sup> Courts also are limited by their role of resolving specific controversies, limited to the specific

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[https://www.uspto.gov/web/offices/ac/ido/oeip/taf/us\\_stat.htm](https://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm) (showing that the Patent Office receives offer 500,000 utility patent applications per year), with USPTO, Patent Trial and Appeal Board Statistics (Oct. 31, 2016), [https://www.uspto.gov/sites/default/files/documents/aia\\_statistics\\_october2016.pdf](https://www.uspto.gov/sites/default/files/documents/aia_statistics_october2016.pdf) (showing that the Patent Office handles less than 2000 AIA post-issuance proceedings per year).

<sup>336</sup> Burstein, *supra* note \_\_, at 1756; Reilly, *Decoupling*, *supra* note \_\_, at 566-567.

<sup>337</sup> Lee, *supra* note \_\_, at 112.

<sup>338</sup> Burstein, *supra* note \_\_, at 1789.

<sup>339</sup> Burstein, *supra* note \_\_, at 1789.

arguments and evidence presented by the parties and focused on resolving the specific dispute rather than addressing broader policy questions.<sup>340</sup>

Post-issuance proceedings may offer greater institutional competence than either examination or litigation for implementing discretionary, context-specific elements within the patent system. Like litigation, post-issuance proceedings involve far fewer patents than examination, making the costs of individualized determinations of patent protection more viable. Of current decision makers in the patent system, PTAB judges may be best situated for making these type of determinations. They have the legal training lacking among patent examiners and the technical training lacking among judges.<sup>341</sup> They are also experienced patent practitioners, normally with at least 10 years of experience within the patent system.<sup>342</sup> They therefore are better positioned than either examiners or federal judges to make determinations about the significance of inventions, the needs of various industries, and the effects on competition and follow-on innovation. Although they may not have sophisticated economic training, this does not make them any worse than either judges or examiners. And PTAB judges can access sophisticated economic analysis if needed, either from the Patent Office's newly created Office of the Chief Economist or through expert witnesses.

Those who favor implementing greater patent-specific or industry-specific tailoring through patent litigation emphasize that courts are less vulnerable to capture – being beholden to special interests or regulated entities for financial, career, or informational reasons – than Congress or the Patent Office.<sup>343</sup> Congress is influenced financially and in terms of the information available to it by significant lobbies with strong, albeit competing, views on the patent system.<sup>344</sup> The Patent Office and its examining corps traditionally has been biased in favor of patent owners and patent issuance because of its examiner evaluation system, fee structure, and historically limited role of only interacting with inventors and issuing patents.<sup>345</sup>

The PTAB mitigates some of these traditional concerns about capture of the Patent Office, since it gives the Patent Office experience with competitors and the negative effects of patents, as well as more balanced

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<sup>340</sup> Rai, *supra* note \_\_, at 1268.

<sup>341</sup> Reilly, *Decoupling*, *supra* note \_\_, at 568.

<sup>342</sup> Bush, *supra* note \_\_.

<sup>343</sup> Rai, *supra* note \_\_, at 1266-1272.

<sup>344</sup> *Id.* at 1266-67.

<sup>345</sup> Wasserman, *supra* note \_\_, at 2014.

financial incentives from the fees paid by competitors.<sup>346</sup> Admittedly, there is some concern that the PTAB may become biased against patent owners, since its existence, importance, and finances depend on challengers filing a large volume of post-issuance challenges.<sup>347</sup> However, the PTAB and its judges are ultimately under the supervision of the Patent Office as a whole, and the Patent Office's hierarchy has at least some ability to influence the PTAB and its policies.<sup>348</sup> In the modern patent system, the Patent Office as an institution should have fairly balanced incentives, given its dual role of examining and issuing applications from patent owners and reviewing and deciding post-issuance challenges by competitors.<sup>349</sup>

Thus, allowing the PTAB to make a discretionary decision based on the context of individual patents as to whether or not a post-issuance claim amendment is warranted may offer a better claim amendment policy than either a generally applicable liberal or restrictive approach. It also offers a means for introducing more discretionary, contextual, and policy-driven analysis into the patent system while mitigating concerns of cost, competence, and capture. Alternatively, Congress could create a system by which the PTAB refers the claim amendment question to a special board composed of technical, economic, patent examination, and patent policy experts, perhaps after the PTAB makes an initial finding as to whether the amendment overcomes the challenged grounds of invalidity. Such a board would be the modern echo of the board composed of the Secretary of State, Secretary of Treasury, and the Commissioner of Patents that evaluated applications for patent term extensions in the mid-19<sup>th</sup> century.

#### CONCLUSION

This Article's comprehensive evaluation of the optimality of claim amendments fills a surprising gap in the literature given the current salience of claim amendments. The insights it provides are mixed and unlikely to fully please any one side in contemporary patent policy debates. Examination amendments rest on shakier normative grounds than their historical pedigree and widespread acceptance would suggest. Conversely, the justifications for post-issuance amendments are greater than many assume and are, at most, different in degree, not different in kind, from examination amendments. In both settings, the optimal claim amendment policy depends on where the risk

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<sup>346</sup> *Id.* at 2014-15.

<sup>347</sup> See Br. Amicus Curiae Unisone Strategic IP, Inc. in Support of Petitioner 4-10, *Oil States*.

<sup>348</sup> See John M. Golden, *Working Without Chevron: The PTO As Prime Mover*, 65 DUKE L.J. 1657, 1663 (2016).

<sup>349</sup> See Wasserman, *supra* note \_\_, at 2014-15.

of error should lie – with deserving inventors denied the opportunity to amend or with legitimate competitors when unwarranted amendments are allowed. This depends on a normative judgment of the proper balance at the core of the patent system between incentivizing innovation and protecting competition.

For that reason, examination claim amendments offer a promising, though underutilized, tool for Congress to calibrate the basic balance of the patent system. And it is Congress that ultimately should choose whether to depart from long-standing liberal allowance of claim amendments, even if the Patent Office reasonably could reasonably do so for AIA proceedings given the current statutory ambiguity. A promising claim amendment policy for Congress to adopt would be to move away from policy of general applicability for post-issuance claim amendments – whether liberal or restrictive – and towards a policy that allows the Patent Office to make a discretionary, context-specific determination with regards to individual patents whether or not a post-issuance amendment achieves the optimal balance between spurring innovation and protecting competition and follow-on innovation.