

Abstract

Although any attorney can represent clients with complex property, tax, or administrative issues, only a certain class of attorneys can assist with obtaining and challenging patents before the U.S. Patent & Trademark Office (PTO). Only those who are members of the PTO's patent bar can prosecute patents, and eligibility for the patent bar is only available to people with substantial scientific or engineering credentials. However much sense the eligibility rules make for utility patents—those based on novel scientific or technical inventions—they are completely irrational when applied to design patents—those based on ornamental or aesthetic industrial design. Yet the PTO applies its eligibility rules to both kinds of patents. While chemical engineers can prosecute both utility patents and design patents (and in any field), industrial designers cannot even prosecute design patents. This Article applies contemporary research in the law and economics of occupational licensing to demonstrate how the PTO's application of eligibility rules to design patents harms the patent system by increasing the costs of obtaining and challenging design patents. Moreover, we argue that the PTO's rules produce a substantial disparate impact on women's access to a lucrative part of the legal profession. By limiting design patent prosecution jobs to those with science and engineering credentials, the majority of whom are men, the PTO's rules disadvantage women attorneys. We conclude by offering two proposals for addressing the harms caused by the current system.

Introduction

When people need help securing their legal rights, they typically turn to attorneys. And when inventors need help securing their legal rights—patents—they also usually seek

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the advice of attorneys.³ But while any licensed attorney can help someone buy property or set up a corporation, only a certain class of attorneys is entitled to help inventors secure patents. In order to assist with patent “prosecution,” attorneys must be members of the U.S. Patent and Trademark Office’s (PTO) patent bar. Joining the patent bar requires passing the patent bar exam, an additional exam that primarily tests PTO rules and procedures. Yet the patent bar exam has its own eligibility rules. The PTO generally prohibits people from even sitting for the patent bar unless they have an undergraduate degree in science or engineering or have taken numerous classes in these fields.

These strict eligibility rules dramatically restrict the number of people who are able to prosecute patents. There are only 43,000 registered patent attorneys and agents in the U.S., although the number of actively practicing members is likely closer to 25,000. Not surprisingly, this restriction in the supply of eligible patent attorneys increases the price of obtaining and challenging patents. In this respect, PTO eligibility rules resemble other sorts of occupational licensing restrictions, like those requiring certain credentials to cut hair, sell real estate, or practice dentistry.

Here, the ostensible reason for the restriction involves the challenging technical nature of patents.⁴ Utility patents cover complicated scientific and technological discoveries that are, necessarily, on the cutting edge of innovation. One can understand the desire to restrict those who can draft patents on pharmaceuticals and semiconductors to a subclass of people who are more technologically sophisticated.

But however much sense the PTO’s eligibility restrictions might make for utility patents, they are completely irrational and downright harmful when applied to design patents. Like utility patents, design patent applications must be examined by the PTO, and claimants typically seek assistance from attorneys and agents when drafting their claims. But unlike utility patents, design patents only cover a product’s visual, ornamental design and not its underlying functionality.⁵ Despite the significant differences between utility patents and design patents, the only people eligible to prosecute design patents are those who meet the PTO’s scientific and engineering eligibility requirements.⁶ Thus, if you have an undergraduate degree in nuclear engineering, biochemistry, pharmacology, or computer

³ Inventors can also seek assistance from “patent agents” who are not licensed attorneys. Colin Wright, *Practicing Law Without Legal Training: The Expanded Authorization of Non-Lawyer Under the AIA*, 15 NW. J. TECH. & INTELL. PROP. 129, 132 (2017).

⁴ These issues are discussed *infra* Part I.B.

⁵ See Sarah Burstein, *Visual Invention*, 16 LEWIS & CLARK L. REV. 169 (2012); Jason J. Du Mont, *A Non-Obvious Design: Reexamining the Origins of the Design Patent Standard*, 45 GONZ. L. REV. 531 (2009).

⁶ William Hubbard, *Razing the Patent Bar*, 59 ARIZ. L. REV. 383, 404 (2017); Corey B. Blake, *Ghost of the Past: Does the USPTO’s Scientific and Technical Background Requirement Still Make Sense*, 82 TEX. L. REV. 735 (2004).

engineering, you are eligible to sit for the patent bar and to prosecute design patents. But if your undergraduate degree is in product, fashion, or industrial design, you cannot.

This is facially unreasonable, and it's also bad policy. The number of design patent applications has been increasing,⁷ but there is no reason to think that biologists will assist in drafting better design patents than will actual designers. Rather, the opposite is likely to be true. Indeed, *the PTO itself* appears to think this is case, since it has a demonstrated preference for hiring people with design backgrounds to examine design patents.⁸ If any educational qualifications are likely to increase the quality of design patent prosecutions, they are certainly ones related to design.

Moreover, limiting the number of people who can prosecute design patents artificially drives up the costs of obtaining them. This means that some creators will have to forego design patent protection because they cannot afford the fees. While more expensive design patents may not be a bad thing,⁹ the additional costs associated with obtaining a design patent should come from PTO filing and maintenance fees rather than attorneys' fees. Relatedly, only members of the patent bar can initiate challenges to granted patents via the PTO's *inter partes* and post grant review systems.¹⁰ This means that clearing the system of low-quality design patents is also more expensive than it ought to be.

Finally, and this is critical, the PTO's eligibility rules likely have a disparate impact on the number of women who can prosecute design patents.¹¹ The patent bar is heavily skewed towards men. Men account for about 70% of patent attorneys, even higher than their share of the American bar as a whole.¹² This added skew arises in part from the overrepresentation of men in the science and engineering fields that are eligible for the patent bar.

By contrast, men only account for about half of current law school graduates, and they make up only about 30% of undergraduate design majors.¹³ The science and engineering rules unfairly and irrationally restrict access to the profession for a considerable number of women. The rules constrict the pipeline to the patent bar to fields that are disproportionately male. In doing so, the PTO's eligibility rules produce worse patents that are more costly to

⁷ See discussion *infra* Part I.B.

⁸ See *infra* Part III.C.

⁹ Christopher Buccafusco, Mark A. Lemley & Jonathan S. Masur, *Intelligent Design*, DUKE L.J. (forthcoming 2018).

¹⁰ Wright, *supra* note 3, at 138.

¹¹ See *infra* Part III.D.

¹² Saurabh Vishnubhakat, *Gender Diversity in the Patent Bar*, 14 J. MARSHALL REV. INTELL. PROP. L. 67 (2014).

¹³ See *infra* Part III.D.

obtain and challenge, and the benefits of these additional costs, in terms of higher attorneys' fees, are disproportionately distributed to men.

To solve the problem, the PTO could adopt a number of different approaches.¹⁴ The PTO could incorporate design related undergraduate degrees within its list of eligible fields. This approach would allow designers to draft and prosecute both design and utility patents, although this might cause some concerns. To further refine this approach, the PTO could issue a registration that is limited to design patent prosecution. Alternatively, the PTO could hive off design patent prosecution from utility patent prosecution entirely and have separate eligibility rules for each area. The PTO seems to be doing something similar internally with examiners, so we suspect that it could do the same for patent prosecutors. This too would not be a novel concept for the PTO. It already has different requirements for trademark prosecutors; they do not need to jump the additional hurdle of passing a PTO examination before being permitted to prosecute trademarks. The PTO could develop a hybrid approach for design patents where everyone with an undergraduate degree in any field would be eligible to sit for a design patent-specific bar exam. In another permutation of a wholly separate design patent bar, the eligibility rules could mirror the current framework with a Category A and Category B and these categories could be directed exclusively to design related undergraduate degrees.

In Part I, we introduce design patents, design patent prosecution, and the PTO's educational eligibility rules for joining the patent bar. Part II then canvasses the emerging legal and economic literature on occupational licensing to provide theoretical and empirical grounding for assessing the costs and benefits of educational eligibility rules. In Part III we make the normative case for why the PTO's rules are not cost-justified. In particular, we explain their facial irrationality, their harmfulness in terms of increased costs, and their disparate impact on women's access to the profession. Finally, Part IV offers a series of solutions that the PTO could adopt to address these problems. We consider the relative merits of each proposal and indicate which we consider strongest.

I. The Patent Bar and Design Patent Prosecution

A patent gives its owner the exclusive right to make, use, or sell the invention that it discloses.¹⁵ But unlike copyrights, which emerge from the moment of fixation,¹⁶ or

¹⁴ We discuss these at length in Part IV.

¹⁵ 35 U.S.C. § 271(a) ("whoever without authority, makes, uses, offers to sell, or sells any patented invention...infringes the patent").

¹⁶ 17 U.S.C. § 102(a) ("Copyright protection subsists...in original works of authorship fixed in any tangible medium of expression...").

trademarks, which develop through use,¹⁷ patent rights must be obtained through a process called “prosecution.”¹⁸ Inventors who want to obtain patents must submit applications to the PTO detailing their inventions and disclosing relevant prior art.¹⁹ The PTO will then examine the applicants to determine whether they meet the statutory requirements, including that they are novel and not obvious.²⁰ This is the case both for utility and design patents.²¹

But while any registered attorney can help an author register a copyright or a firm register a trademark, only certain people are allowed to assist inventors with patent prosecution.²² To prosecute patent applications a person must be registered to practice before the PTO.²³ Registration is a two-step process. Applicants must first satisfy the eligibility requirements set forth by the PTO, and then they must pass the patent bar exam.²⁴ The patent bar exam is directed to patent law and the rules and regulations that govern practice before the PTO.²⁵ But to even be able to sit for the patent bar, applicants must meet the PTO’s strict educational eligibility criteria. In almost all cases, this means that the applicants must have an undergraduate degree in science or engineering or be able to demonstrate that they have taken a significant amount of coursework in those fields.²⁶

The PTO has never identified the precise reasoning behind the eligibility requirements, although some surmise that they are designed to insure patent quality and to protect consumers from unsavory practitioners.²⁷ In theory, having studied computer engineering as an undergraduate may assist patent prosecutors in drafting claims covering microchips, for example. Oddly, however, despite the significant differences between utility

¹⁷ *United Drug Co. v. Theodore Rectanus Co.*, 248 U.S. 90, 97 (1918) (“The right to a particular mark grows out of its use...”).

¹⁸ 35 U.S.C. § 111(a) (“An application for a patent shall be made, or authorized to be made, by the inventor...in writing to the Director”).

¹⁹ *Id.*; 37 C.F.R. §§ 1.97, 1.98.

²⁰ 35 U.S.C. § 102(a) (novelty) (“A person shall be entitled to a patent unless...the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention”); 35 U.S.C. § 103 (non-obviousness) (“A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains”).

²¹ 1 DONALD CHISUM, CHISUM ON PATENTS § 23.03.

²² 37 C.F.R. §§ 11.5, 11.6, 11.7; Christi J. Guerrini, *The Decline of the Patent Registration Exam*, 91 NEB. L. REV. 325, 328-29 (2012).

²³ *Id.*

²⁴ *Id.*

²⁵ *Id.*

²⁶ *See infra* I.B.

²⁷ For a history of the relationship between patent attorneys and agents, see Kara W. Swanson, *The Emergence of the Professional Patent Practitioner*, 50 TECH. & CULT. 519 (2009).

patents and design patents, the eligibility requirements are the same for each type of patent. Computer engineers and microbiologists are eligible to prosecute design patents, but product designers are not.

In this Part, we first briefly discuss the nature of utility and design patents.²⁸ Then we explain the PTO's eligibility criteria for patent prosecutors and some potential justifications for them.

A. *The Differences in Nature, Scope, and Required Disclosures Between Utility Patents and Design Patents*

Put in the simplest of terms, utility patents are directed to how an invention works²⁹ while design patents are directed to how an invention looks.³⁰ For example, Apple has utility patents that cover efficient battery usage, camera technology, and the “pinch-to-zoom” feature.³¹ In addition, Apple also owns design patents that cover the curved rectangular shape of the iPhone and the shape and placement of the iPhone’s “home” button.³² Although the inventions disclosed in each of these patents can exist in the same device, the rights are very different, and the PTO has different requirements for each. Utility patents exist to encourage inventors to develop functionally useful new inventions.³³ By contrast, design patents provide incentives to create aesthetically pleasing industrial designs.³⁴

Although utility patents account for the vast majority of granted patents each year, the numbers of design patent applications and grants has been growing steadily. In 1995, applicants filed about fifteen thousand design patent applications, of which 11,712 were

²⁸ See also Christopher Buccafusco & Mark A. Lemley, *Functionality Screens*, 103 VA. LAW REVIEW 1293 (2017).

²⁹ 35 U.S.C. § 101 (“Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor...”); U.S. PATENT AND TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE §§ 1502.01 (2018)

³⁰ 35 U.S.C. § 171(a) (“Whoever invents any new, original and ornamental design for an article of manufacture may obtain a patent therefor, subject to the conditions and requirements of this title.”); U.S. PATENT AND TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE §§ 1502.01 (2018).

³¹ See, e.g. U.S. Pat. No. 7,844,915 (Nov. 30, 2010) (application programming interfaces for scrolling operations).

³² See, e.g. U.S. Pat. No. D593,087 (May 26, 2009) (ornamental design of an electronic device).

³³ *Kewanee v. Bicron*, 417 U.S. 470, 480 (1974) (“The patent laws promote this progress by offering a right of exclusion for a limited period as an incentive to inventors to risk the often enormous costs in terms of time, research, and development.”).

³⁴ *Gorham Mfg. Co. v. White*, 81 U.S. 511, 524 (1872) (“The acts of Congress which authorize the granting of patents for designs were plainly intended to give encouragement to the decorative arts. They contemplate not so much utility as appearance, and that, not an abstract impression or picture, but an aspect given to those objects mentioned in the acts.”)

granted.³⁵ Twenty years later, however, applications had more than doubled to 39,097, as had granted patents, which numbered 25,986.³⁶ Design patents aren't only expanding in raw numbers. They also seem to be increasingly valuable to firms' IP portfolios.³⁷ The recent smartphone litigation between Apple and Samsung, resulted in enormous infringement verdicts that were largely based on Apple's design patents.³⁸ Accordingly, we expect design patents' legal and economic significance to continue to grow.

Based on the fundamental difference in the purpose of utility versus design patents, it should be no surprise that the information that must be contained in each is quite different. To obtain a utility patent, the invention must relate to a machine, process, article of manufacture, or composition of matter.³⁹ Utility patent documents contain an abstract, a specification (including drawings), and claims.⁴⁰ The written description of the invention (part of the specification) is quite detailed and scientific.⁴¹ It contains sections on (1) the background of the invention, (2) a summary of the invention with reference to other inventions in the field (known as the "prior art"), (3) a description of the drawings, and (4) a detailed description of the invention sufficient to teach one of skill in the relevant art how it works.⁴² The claims define the metes and the bounds of the invention and are interpreted with reference to the written specification, but the written description cannot expand the meaning of the claims.⁴³ Most utility patents include multiple claims which establish the boundaries of the invention for purposes of validity and infringement.

³⁵ U.S. PATENT AND TRADEMARK OFFICE, DATA, *available at* https://www.uspto.gov/web/offices/ac/ido/oeip/taf/h_counts.htm.

³⁶ *Id.*

³⁷ See Mark Nowatarski, *The Power of Portfolio: Strong Design Patents III*, IP WATCHDOG, Aug. 23, 2013, at <http://www.ipwatchdog.com/2013/08/23/the-power-of-portfolio-strong-design-patents/id=44774/>.

³⁸ *Apple Inc. v. Samsung Elecs. Co., Ltd.*, 678 F.3d 1314 (Fed. Cir. 2012); *Apple Inc. v. Samsung Elecs. Co., Ltd.*, 839 F.3d 1034 (Fed. Cir. 2016) (jury damages of \$98 million)

³⁹ 35 U.S.C. § 101.

⁴⁰ U.S. PATENT AND TRADEMARK OFFICE, NONPROVISIONAL (UTILITY) PATENT APPLICATION FILING GUIDE (2014), <https://www.uspto.gov/patents-getting-started/patent-basics/types-patent-applications/nonprovisional-utility-patent#heading-4>; U.S. PATENT AND TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 608.01 (2018); 37 C.F.R. §§ 1.51, 1.72, 1.81.

⁴¹ U.S. PATENT AND TRADEMARK OFFICE, NONPROVISIONAL (UTILITY) PATENT APPLICATION FILING GUIDE (2014), <https://www.uspto.gov/patents-getting-started/patent-basics/types-patent-applications/nonprovisional-utility-patent#heading-4>; U.S. PATENT AND TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE §§ 2161-65 (2018); 35 U.S.C. § 112.

⁴² *Id.*

⁴³ U.S. PATENT AND TRADEMARK OFFICE, NONPROVISIONAL (UTILITY) PATENT APPLICATION FILING GUIDE (2014), <https://www.uspto.gov/patents-getting-started/patent-basics/types-patent-applications/nonprovisional-utility-patent#heading-4>; U.S. PATENT AND TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 2173 (2018); *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (*en banc*).

Design patents are appropriate for the ornamental design of an article of manufacture.⁴⁴ Design patent claimants are asserting rights in the novel ornamental shape of a product of industrial design.⁴⁵ Design patents only contain a single claim, and that claim is made by way of drawings of the shape of the article.⁴⁶ More precisely, the claim is always "The ornamental design for [the article which embodies the design or to which it is applied] as shown."⁴⁷ The patent has no abstract or in-depth written description; the PTO deems the drawings the best description of the invention.⁴⁸ The drawings are not scientific in nature and disclose a variety of views of the design, often including different perspectives and shading of contours.⁴⁹ Like utility patents, however, design patents also list the relevant prior art associated with the claimed invention.

Whether an inventor seeks a utility patent or a design patent she must first submit a patent application to the PTO. Both utility and design patent applications are characterized by class when they are filed,⁵⁰ and the PTO assigns an examiner to the application based on the class designation.⁵¹ Utility patents are typically assigned to examiners with scientific and engineering backgrounds, while design patents are typically assigned to examiners with backgrounds in design, the arts, and architecture. During patent prosecution, examiners review applications to determine whether they satisfy the various standards for patentability, and they issue allowances or rejections of the applications' claims. When claims are rejected, applicants may amend their claims to make them compliant, for example by clarifying or narrowing their scope. Throughout prosecution, applicants' attorneys are responsible for the back-and-forth communication to the PTO, and they will advise applicants on strategies associated with the interaction.

B. Patent Bar Eligibility has the Same Robust Scientific and Engineering Requirements for Both Design and Utility Patents

⁴⁴ 35 U.S.C. § 171(a) ("Whoever invents any new, original and ornamental design for an article of manufacture may obtain a patent therefor...").

⁴⁵ *Id.*

⁴⁶ U.S. PAT. & TRADEMARK OFF., DESIGN PATENT APPLICATION GUIDE, <https://www.uspto.gov/patents-getting-started/patent-basics/types-patent-applications/design-patent-application-guide#single>; 37 C.F.R. §§ 1.152-154; U.S. PATENT AND TRADEMARK OFFICE, MANUAL OF PATENT EXAMINING PROCEDURE § 1503 (2018)

⁴⁷ *Id.* The language [and described] is added at the end of the one claim if a special description is included for any of the drawings (*e.g.*, a description of the look of portions of design which are not illustrated in the drawing but which are claimed, such as a mirror image of one side).

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ U.S. PATENT AND TRADEMARK OFFICE, OVERVIEW OF THE U.S. PATENT CLASSIFICATION SYSTEM (2012) at 3-4

<https://www.uspto.gov/sites/default/files/patents/resources/classification/overview.pdf>

⁵¹ *Id.* at 15.

Although any attorney is allowed to help someone buy a piece of property, draft a complicated trust instrument, or negotiate a corporate merger, only certain people can represent inventors at the PTO. To prosecute any type of patent, you must be registered to practice before the PTO.⁵² Interestingly, to register with the PTO, you don't even have to be an attorney. You can qualify as a "patent agent."⁵³ But, whether you're a patent agent or a patent attorney, you must take and pass the patent bar exam.⁵⁴ To do that, however, you must meet the PTO's strict educational eligibility requirements.

In the 19th century, there were no limitations on prosecuting patents, with lawyers and non-lawyers co-existing in the market for services for inventors.⁵⁵ Over time, however, various groups began to raise concerns (sincerely, or not) about the harms caused by low quality or dishonest practitioners.⁵⁶ In 1922, Congress responded to these concerns by granting the Commissioner of Patents the power to require patent agents and attorneys to demonstrate that they have "the necessary qualifications" to render "valuable service."⁵⁷ The PTO immediately exercised this power and required that every applicant to the bar of registered⁵⁸ patent agents and attorneys "file proof that he is possessed of ... legal and technical qualifications."⁵⁹ And by the middle of the century, the PTO began requiring applicants to take and pass a separate patent bar exam, which non-lawyer agents could only sit for if they had a degree in engineering or physical science.⁶⁰ Eventually, the PTO extended its educational eligibility rules to lawyers as well, and it has continued to refine the ways of demonstrating eligibility.

In a document commonly referred to as the General Requirements Bulletin, the PTO sets forth three categories for demonstrating the appropriate scientific and technical qualifications. The most common method of qualifying is under Category A, where applicants

⁵² 37 C.F.R. § 11.10. There are two exceptions to this rule: (1) under § 11.9 a limited registration is available for a particular application or applications upon a showing of need or justification and 'good moral character and reputation' and (2) under § 11.17 a limited registration is available for law students prosecuting patent applications through participation in a PTO-certified law school clinic.

⁵³ Wright, *supra* note 3, at 132.

⁵⁴ Guerrini, *supra* note 22, at 326.

⁵⁵ See Swanson, *supra* note 27, at 537-40.

⁵⁶ *Id.*; Hubbard, *supra* note 6, at 400-01.

⁵⁷ Act of February 18, 1922, ch. 58, § 3, 42 Stat. 390.

⁵⁸ Registration with the PTO had been required since 1897. U.S. PATENT AND TRADEMARK OFFICE, Official Gazette of the U.S. Patent Office 971, r. 17 (Aug. 17, 1897).

⁵⁹ 37 C.F.R. § 11.7. See also Hubbard, *supra* note 6, at 401.

⁶⁰ Hubbard, *supra* note 6, at 401; Guerrini, *supra* note 22, at 337-38.

qualify if they have undergraduate degrees in one of 32 fields.⁶¹ This list contains the natural and physical sciences, a variety of engineering fields, and computer science.⁶² Excluded from eligibility under Category A are degrees in art, design, or architecture.⁶³

Alternatively, applicants can qualify for the patent bar under Category B if, although they lack an engineering or science degree, they have taken substantial coursework in these fields.⁶⁴ Usually this means taking at least twenty-four semester hours of physics or thirty semester hours of chemistry, or some combination of physics and chemistry plus other scientific or engineering fields.⁶⁵ Finally, under Category C, applicants can earn the opportunity to take the patent bar if they first pass a comprehensive engineering exam administered by the National Council of Examiners for Engineering and Surveying.⁶⁶

The PTO's eligibility requirements establish a firm limit on people's ability to join the patent bar and prosecute patents. Unless applicants can demonstrate substantial science or engineering education, they simply cannot join the patent bar. The PTO does not offer any means by which an applicant can make a case for an exemption from the requirements. And the science and engineering requirements apply to all patent prosecution, including design as well as utility, yet no design fields are included. If an applicant qualifies for the patent bar based on an electrical engineering degree, he can prosecute patents in electrical engineering, of course, but also in biotech, pharmacology, astrophysics, and, even, design. Yet if an applicant has a degree in product or industrial design, she isn't allowed to even prosecute design patents.

The PTO has never publicly explained the basis for issuance of the General Requirements Bulletin or the disciplines identified therein.⁶⁷ Documents internal to the PTO

⁶¹ U.S. PATENT AND TRADEMARK OFFICE, GENERAL REQUIREMENTS BULLETIN FOR ADMISSION TO THE EXAMINATION FOR REGISTRATION TO PRACTICE IN PATENT CASES BEFORE THE UNITED STATES PATENT AND TRADEMARK OFFICE at 4-8 (hereinafter "GENERAL REQUIREMENTS BULLETIN").

⁶² The acceptable fields of study are:

Biology, Pharmacology, Electrochemical Engineering, Biochemistry, Physics, Engineering Physics, Botany, Textile Technology, General Engineering, Computer Science, Aeronautical Engineering, Geological Engineering, Electronics Technology, Agricultural Engineering, Industrial Engineering, Food Technology, Biomedical Engineering, Mechanical Engineering, General Chemistry, Ceramic Engineering, Metallurgical Engineering, Marine Technology, Chemical Engineering, Mining Engineering, Microbiology, Civil Engineering, Nuclear Engineering, Molecular Biology, Computer Engineering, Petroleum Engineering, Organic Chemistry, and Electrical Engineering.

⁶³ U.S. PATENT AND TRADEMARK OFFICE, GENERAL REQUIREMENTS BULLETIN, *supra* note 61, at 4-8.

⁶⁴ *Id.* at 4-5.

⁶⁵ *Id.* at 6-7.

⁶⁶ *Id.* at 8.

⁶⁷ Hubbard *supra* note 6, at 398 and 402 n.104.

do not appear to explain the basis either.⁶⁸ Instead, when confronted with a legal challenge to the Bulletin, the PTO defended it by simply stating that the Bulletin is just “an interpretation of the agency’s regulations” and the Federal Circuit accepted this explanation.⁶⁹ The regulation to which the PTO referred is a provision with the broadly-stated requirement that applicants must have “the legal, scientific, and technical qualifications necessary for him or her to render applicants valuable service.”⁷⁰

It’s worth noting that the patent bar exam does not actually test scientific or technical knowledge. Instead, the focus is on patent law and, in particular, the procedures and rules applicable to prosecution practice before the PTO.⁷¹ And the technologies that are used as examples on the exam are generally trivially simple and do not require expertise in an particular scientific or engineering field.⁷² Interestingly, in our research into past patent bar exams, we have found that the exam only tests design patents on two or three questions out of the one hundred asked every year.⁷³

The PTO’s educational eligibility rules for patent prosecution are unique in federal law.⁷⁴ No other agency requires specialized knowledge of the underlying field, including those that regulate similarly complex subjects like antitrust, communications policy, and the environment. Indeed, the PTO does not apply restrictions to attorneys who prosecute trademarks before the Office.⁷⁵ There are procedures and rules applicable to trademark prosecution as well, but trademark prosecutors do not need to take an entrance exam: “[a]ny individual who is an active member in good standing of the highest court of any State may represent others before the USPTO in trademark matters.”⁷⁶ Lawyers do not need a degree in environmental science to represent clients before the Environmental Protection Agency, nor do they need a degree in economics when appearing before the Antitrust Division of the Department of Justice. The PTO alone, and only for patent prosecution, demands particular educational qualifications.

⁶⁸ *Id.*

⁶⁹ *Premysler v. Lehman*, Civ. A. No. 94-0937, 1994 WL 776982, at *3 (D.D.C. 1994), *aff’d*, 71 F.3d 387, 390 (Fed. Cir. 1995).

⁷⁰ 37 C.F.R. § 11.7 (a)(2)(ii).

⁷¹ U.S. PATENT AND TRADEMARK OFFICE, GENERAL REQUIREMENTS BULLETIN, *supra*, note 61, at 18-19.

⁷² *See Guerrini*, *supra* note 22, at 328.

⁷³ For past exam questions and answers see U.S. PATENT AND TRADEMARK OFFICE, PAST EXAMS QUESTIONS AND ANSWERS, at <https://www.uspto.gov/past-exams-questions-and-answers>.

⁷⁴ *Guerrini*, *supra* note 22, at 328.

⁷⁵ United States Patent and Trademark Office, *Becoming a trademark practitioner*, available at <https://www.uspto.gov/learning-and-resources/patent-and-trademark-practitioners/becoming-trademark-practitioner>

⁷⁶ *Id.* *See also* 37 CFR § 11.14(a) (“Any individual who is an attorney...may represent others before the Office in trademark and other non-patent matters. An attorney is not required to apply for registration or recognition before the Office in trademark and other non-patent matters.”).

C. *Composition of the Patent Bar*

The number of people registered to practice before the PTO is relatively small. According to the PTO, there are only about 45,000 people registered who are active.⁷⁷ Others estimate that this number is closer to 25,000 when retirement and death are factored in.⁷⁸ With decreasing law school enrollments since 2010, it also seems likely that the number of new patent attorneys may not be able to keep pace with retirements, meaning that the overall number of practitioners will shrink.⁷⁹ As recent analysis of the patent bar has shown, its membership is made up almost entirely of people with backgrounds in chemical, mechanical, biological or electrical fields.⁸⁰ Patent bar members with training in these fields account for about 95% of those eligible to prosecute patents at the PTO.⁸¹

This small group of people is responsible for handling the huge and growing number of prosecutions. In a recent 5-year period, the PTO granted an average of 300,000 combined patents per year, or a total of 1.5 million.⁸² And issued patents represent only a fraction of the number of applications filed. In the same 5-year period, close to 3 million applications were filed.⁸³ Currently, design patents only account for about 10% of these numbers, but as we noted above, design patent applications and grants are both increasing as well.⁸⁴

These data indicate that while the number of utility and design patent applications is likely to rise over the next decade, there will be fewer members of the patent bar to prosecute them, and the bar's membership will be made up almost exclusively of scientists and engineers. Furthermore, because people with design backgrounds are ineligible from joining the patent bar, the increasing number of design patent applications will be handled by people without any expertise in the field. Ultimately, the pool of patent prosecutors will remain

⁷⁷ U.S. PATENT AND TRADEMARK OFFICE, PATENT PRACTITIONER HOME PAGE, available at <https://oedci.uspto.gov/OEDCI/>

⁷⁸ Dennis Crouch, *Estimate: Fewer than 26,000 Active US Patent Attorneys & Agents*, PATENTLY-O (Jan. 13, 2012), <http://patentlyo.com/patent/2012/01/the-uspto-records-identify-more-than-41750-active-registered-practitioners-that-number-is-obviously-wrongbecause-many-folk.html>

⁷⁹ Kenneth L. Port, Molly R. Littman & Lucas Hjelle, *Where Have all the Patent Lawyers Gone? Long Time Passing...*, 97 J. PAT. & TRADEMARK OFF. SOC'Y. 193, 197-98 (2015).

⁸⁰ Ralph D. Clifford, Thomas G. Field, Jr. & Jon R. Cavicchi, *A Statistical Analysis of the Patent Bar: Where Are the Software-Savvy Patent Attorneys?*, 11 N.C.J.L. & TECH. 223, 229 (2010).

⁸¹ *Id.*

⁸² U.S. PATENT AND TRADEMARK OFFICE, U.S. PATENT ACTIVITY CALENDAR YEARS 1790 TO THE PRESENT, at https://www.uspto.gov/web/offices/ac/ido/oeip/taf/h_counts.htm. The most recent five-year period for which data is available was used (2011-2015).

⁸³ *Id.*

⁸⁴ *See supra* note 82.

small, because the PTO's eligibility rules operate as an occupational licensing regime that restricts access to the profession.

II. The Patent Bar as Occupational Licensing

In an increasing number of professions, people are subject to licensing restrictions that condition access to the occupation on satisfying various criteria.⁸⁵ Lawyers, doctors, and dentists have long needed licenses to practice their professions.⁸⁶ More recently, however, states have begun to require licenses for a broad range of professions, including auctioneers, interior designers, and hair braiders.⁸⁷ In order to legally practice hair braiding, for example, people in many states must attend two years of cosmetology school, pass an exam, and pay yearly dues.⁸⁸ While some of these licensing regimes probably seem prudent, others are intuitively absurd.

The PTO's science and engineering educational requirements are also a form of occupational licensing.⁸⁹ People are prevented from representing clients as patent attorneys or agents unless they meet the criteria established by the PTO.⁹⁰ The question we address in this Article is whether applying these requirements to design patent prosecutors is prudent or absurd. Here, we review recent economic and legal literature on the costs and benefits of occupational licensing regimes. The next Part will analyze how these issues apply to the PTO's eligibility requirements.

Ultimately, the appropriateness of a given licensing regime turns on whether the benefits it produces exceed the costs that it generates. Adam Smith, in *The Wealth of Nations*, was strongly skeptical of the most salient licensing regimes of his day—lengthy apprenticeship programs.⁹¹ According to Smith:

The patrimony of a poor man lies in the strength and dexterity of his hands; and to hinder him from employing this strength and dexterity in what manner he thinks proper without injury to his neighbor, is a plain violation of this most sacred

⁸⁵ Morris Kleiner, *Occupational Licensing*, 14 J. ECON. PERSPECTIVES 189, 190 (2000).

⁸⁶ See Marc T. Law & Sukkoo Kim, *Specialization and Regulation: The Rise of Professionals and the Emergence of Occupational Licensing Regulation*, 65 J. ECON. HIST. 723 (2005).

⁸⁷ Aaron Edlin & Rebecca Haw, *Cartels By Another Name: Should Licensed Occupations Face Antitrust Scrutiny?*, 162 UNIV. PA. L. REV. 1093, 1096 (2014).

⁸⁸ *Id.* at 1106.

⁸⁹ These issues are reviewed in the utility patent context at length in Hubbard, *supra* note 6, at 393-98.

⁹⁰ See *supra* Part I.B.

⁹¹ See Kleiner, *supra* note 85, at 189.

property. It is a manifest encroachment upon the just liberty both of the workman, and of those who might be disposed to employ him.⁹²

Although Smith was chiefly concerned with the two major costs that licensing regimes produce—limits on service providers and limits on consumers of their services—he also seemed to appreciate that the issue isn’t one-sided. The freedom to practice one’s chosen profession must be weighed against its propensity to cause injury to one’s neighbor. Although licensing regimes inhibit the supply of laborers and increase the costs of their services, they may also ensure that laborers are more skilled. Contemporary economic analysis has begun to offer guidance on how to identify and balance the tradeoffs between restricting labor supply and improving service quality.

A. *The Potential Benefits of Occupational Licensing Regimes*

In both law and economics, we generally begin with the assumption that markets for goods or services will be efficient and will not require intervention to ensure that those goods and services are optimally provided in society.⁹³ Only when we predict certain market failures does regulation become appropriate. Occupational licensing regimes interfere with the general operation of the market for professional services, so they are only justified to the extent that they cure certain market failures.⁹⁴ Here, we identify two market failures that may arise in markets for professional services.

1. Information Asymmetries

When you go to the store to buy a new suit, you can tell a lot about the quality of the garment by looking at it, touching it, and trying it on.⁹⁵ You can tell if it’s well or shoddily made, and you can compare it to other suits of varying prices to choose the price/quality ratio that is appropriate for your tastes and wallet. Perhaps after you wear the suit once or twice you’ll realize that it wasn’t, in fact, well made, but your investment will not have been too great, and you’ll know not to purchase from that company in the future.

⁹² ADAM SMITH, *THE WEALTH OF NATIONS* (Book I, Ch. 10, Part II) (1776).

⁹³ See e.g. Ronald Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960) (explaining how, in markets without transaction costs, goods will tend to flow efficiently to the highest valuing users).

⁹⁴ Edlin & Haw, *supra* note 87.

⁹⁵ Clothing generally has attributes of what economists call “search goods” and “experience goods.” See Henry N. Butler & Jason S. Johnston, *Reforming State Consumer Protection Liability: An Economic Approach*, 2010 COLUM. BUS. L. REV. 1, 61 (2010).

None of these things may be true, however, when you are choosing a doctor.⁹⁶ You are likely to have a difficult time telling whether Anne or Bob is the more skilled surgeon or if the higher fees that Anne is charging are related to greater talent or care. If you choose poorly, the consequences for you may be catastrophic, but you may not even know if you've made a poor choice. By the time you learn that Carl's advice to drink a pint of fish oil a day wasn't so wise, you won't be able to do anything about it. Although reputational information may alleviate some of these challenges, many could remain.

In markets for medical professionals, then, we might expect potential market failures to arise from information asymmetries between sellers and consumers.⁹⁷ Consumers may not have or be able to obtain sufficient information about the quality of service that they are obtaining.⁹⁸ Thus, consumers with preferences for high quality service will not be able to find high quality providers. Anne may have studied for much longer and although she is a better physician than Bob, would-be patients cannot be confident that this is the case. And Anne, knowing this, will have diminished incentives to invest in providing higher quality (and, thus, more costly) service.⁹⁹

Occupational licensing regimes can mitigate information asymmetries by enabling consumers to find providers that match their preferences.¹⁰⁰ If the state conditions medical practice on learning about medical science and demonstrating that knowledge through a rigorous exam, consumers can be confident that all licensed doctors have some minimal level of skill. And because high quality service providers know that consumers can find them, the providers will be motivated to invest in their skills.

For the licensing regime to minimize information asymmetries, though, the licensing rules must provide a strong proxy for the skills that consumers desire.¹⁰¹ If obtaining a medical license were conditioned on an applicant having perfect pitch, the license would not convey any valuable information to consumers, and, as we discuss further below, it would screen out some providers who would be perfectly competent doctors.

2. Establishing Quality Minimums

⁹⁶ Physicians' skills and many other services are classic "credence goods," where consumers may have a difficult time observing quality. Winand Emons, *Credence Goods Monopolists*, 19 INT'L. J. INDUS. ORG. 375 (2001).

⁹⁷ *Id.* at 376.

⁹⁸ See George A. Akerlof, *The Market for "Lemons" Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488, 489 (1970).

⁹⁹ Edlin & Haw, *supra* note 87, at 1116.

¹⁰⁰ *Id.* at 1115-16.

¹⁰¹ Hubbard, *supra* note 6, at 397.

Occupational licensing regimes can also be valuable if there are reasons to think that some consumers will be willing to choose poor quality service when doing so is socially costly.¹⁰² Licensing rules prevent some professionals from offering low quality service even though a segment of the market desires it. The state may choose to interfere in markets for services paternalistically because it believes that consumers will make irrational choices as a matter of their own welfare.¹⁰³ Or the state may establish quality minimums because consumers' choices will produce negative externalities for the rest of society.¹⁰⁴

In economics and in law, we generally assume that consumers are best positioned to make choices that maximize their own welfare and that people should have autonomy to choose how to spend their money.¹⁰⁵ There may be reasons for the state to be worried that consumers will make poor choices. Consumers may be duped into choosing low quality/low cost service because they think they're getting a good deal when really they're getting scammed. Or consumers may be subject to systematic biases that cause them to inappropriately evaluate certain kinds of risks.¹⁰⁶ For example, people often struggle to rationally assess non-economic risks in monetary terms.¹⁰⁷ Thus, although some people might be willing to accept the increased risks from hiring a cheap, unlicensed surgeon, state licensing laws prevent them from doing so.

Consumers may also make choices that are fine for themselves individually but costly for society as a whole.¹⁰⁸ Consider someone with the flu who seeks treatment from an unqualified physician.¹⁰⁹ Whether or not this decision is good for the patient who seeks treatment, it could be disastrous for other people if the physician's "treatment" allows the disease to spread more quickly or more maliciously. Here, the provision of low quality service generates negative externalities for the rest of society, and the state may have a role to play in preventing consumers from making these choices. By ensuring that all physicians meet some minimum level of quality, the state's licensing regime can minimize externality-generating activities.

3. Evidence of Higher Quality Service?

¹⁰² See Edlin & Haw, *supra* note 87, at 1116.

¹⁰³ Hubbard, *supra* note 6, at 395.

¹⁰⁴ *Id.* at 395-96.

¹⁰⁵ See e.g. Matthew D. Adler & Eric A. Posner, *Rethinking Cost-Benefit Analysis*, 109 YALE L.J. 165 (1999).

¹⁰⁶ See John Bronsteen, Christopher Buccafusco & Jonathan S. Masur, *Well-Being Analysis vs. Cost-Benefit Analysis*, 62 DUKE L.J. 1603 (2013) (describing the systematic biases that affect people's evaluations of different states).

¹⁰⁷ JOHN BRONSTEEN, CHRISTOPHER BUCCAFUSCO & JONATHAN S. MASUR, *HAPPINESS AND THE LAW* (2016).

¹⁰⁸ Edlin & Haw, *supra* note 87, at 1116.

¹⁰⁹ Hubbard, *supra* note 6, at 396.

Although information asymmetries, consumer biases, and negative externalities can provide theoretical justifications for occupational licensing regimes, the empirical evidence connecting licensing in improved service quality is ambiguous at best.¹¹⁰ Some studies indicate that licensing regimes are correlated with higher quality service,¹¹¹ but other studies show no meaningful effects of licensing.¹¹² And some studies even indicate that licensing regimes are correlated with lower quality service.¹¹³ Of course, in some regulated fields like barbering and cosmetology, figuring out how to even measure service quality seems implausible.

B. The Costs of Occupational Licensing

As with any regulation, occupational licensing regimes are only appropriate if their expected benefits exceed their costs. In all cases, occupational licensing entails substantial administrative and enforcement costs. Additionally, because licensing restricts the labor supply, it increases the costs of obtaining professional services. Consumers will pay more, some consumers will be priced out of service entirely, and some would-be service providers will be prevented from offering their services.

1. Administrative Costs

Administering a licensing regime can be extremely costly. Employees of the licensing body must be paid. If obtaining a license is conditioned on passing an exam, then the licensing body must pay to create and administer the test. And finally, the licensing body has to expend resources enforcing the requirements and punishing violators. While some of these expenses can be recovered from fees paid by applicants and members of the profession, not all licensing regimes will be internally cost-justified. Moreover, those fees must come from somewhere, and they are likely to be passed along to consumers of the services.

2. The Labor Supply and Consumer Prices

One of the main effects of occupational licensing is to restrict the supply of labor in a field. Naturally, when the supply of labor shrinks, the price of labor increases. A licensing requirement increases the costs to would-be professionals who are considering entering the field.¹¹⁴ This means that some service suppliers will decide not to enter the field, because

¹¹⁰ Edlin & Haw, *supra* note 87, at 1116 (describing it as “murky”).

¹¹¹ See *e.g.* Sidney L. Carroll & Robert J. Gaston, *Occupational Licensing and the Quality of Service*, 7 L. & HUM. BEHAV. 139 (1983); Carl Shapiro, *Investment, Moral Hazard, and Occupational Licensing*, 53 REV. ECON. STUD. 843 (1986).

¹¹² See *e.g.* Joshua D. Angrist & Jonathan Guryan, *Teacher Testing, Teacher Education, and Teacher Characteristics*, 94 AM. ECON. REV. 241 (2004).

¹¹³ Edlin & Haw, *supra* note 87, at 1117.

¹¹⁴ Hubbard, *supra* note 6, at 396.

obtaining the appropriate credentials is too expensive.¹¹⁵ This is the concern that Adam Smith expressed in the passage quoted above.¹¹⁶ Some people will be prevented from entering the field because they cannot obtain or afford the requisite qualifications.¹¹⁷

Relative to an unregulated market, then, there will be fewer suppliers in a licensed field.¹¹⁸ And with fewer competitors, suppliers with the license will be able to charge higher fees for their services.¹¹⁹ Those with the appropriate qualifications can engage in rent seeking and extract a larger proportion of the gains from trade than they otherwise could.

Ultimately, because prices increase when low-cost suppliers are barred from the labor supply, some consumers will be entirely priced out of the market.¹²⁰ Although some consumers would have been willing to pay for dentistry or hair braiding at the price supplied by an unregulated market, they will be unable or unwilling to pay for those services at the regulated price. These unconsummated transactions produce deadweight loss for society.¹²¹

While the empirical support for the effects of occupational licensing on improved service quality is weak, there is substantial evidence that licensing regimes increase consumer costs.¹²² Studies have found that consumers can pay between 7% and 18% more when occupational licensing restrictions are in place.¹²³ Obviously, the stricter the licensing requirement and the more it impacts the labor supply, the greater the price increase.¹²⁴

C. Lessons for Licensing

One can make a valid case for the benefits of occupational licensing, but those benefits must always be traded off against the regime's costs. Based on the theoretical and empirical literature just discussed, we can learn some lessons about when occupational licensing is most likely to be cost-justified.¹²⁵ First, there should be a demonstrable market failure caused by information asymmetries, consumer biases, or negative externalities. Without some likely social welfare loss, there isn't a reason to endure the costs of occupational licensing. Next, the licensing regime should accurately proxy for the lack of skill that

¹¹⁵ *Id.*

¹¹⁶ *See supra* note 92.

¹¹⁷ Kleiner, *supra* note 85, at 192-93; Edlin & Haw, *supra* note 87, at 1115.

¹¹⁸ Carroll & Gaston, *supra* note 111, at 139.

¹¹⁹ Kleiner, *supra* note 85, at 192.

¹²⁰ Edlin & Haw, *supra* note 87, at 1114 ("If licensing increases consumer prices, then some consumers must go without professional services...").

¹²¹ *Id.* at 1115.

¹²² Kleiner, *supra* note 85, at 194-96.

¹²³ *See* Edlin & Haw, *supra* note 87, at 1113-14.

¹²⁴ *Id.* at 1114 (noting that prices are higher when licensing boards are more heavy-handed).

¹²⁵ We have adapted these lessons from Hubbard's similar list. Hubbard, *supra* note 6, at 397.

generates the predicted welfare loss. Requiring practitioners to have certain skills or attributes only makes sense if they are closely related to essential features of the service. Finally, any regulation should only be as strict as is necessary to correct the market failure. If a looser regulation or another mechanism can solve the problem at a lower cost, then it should be preferred. The deadweight losses associated with occupational licensing should be as small as possible.

III. Applying the PTO's Eligibility Rules to Design Patents is Irrational, Harmful, and Unfair

The PTO's science and engineering eligibility requirements represent an occupational licensing scheme similar to the ones that apply to doctors, lawyers, dentists, and cosmetologists. Having considered the potential benefits and costs of occupational licensing regimes, we now analyze the application of the eligibility rules to design patent prosecutors in light of those factors. In our view, the eligibility limitation has virtually zero benefit, and it produces enormous costs.

The PTO's eligibility requirements appear to have been issued in response to concerns related to the complicated, technical nature of utility patent applications, and one can understand the reasoning behind them.¹²⁶ The notion that someone who studied electrical engineering as an undergraduate will draft better patent applications for circuits or diodes than someone who studied sociology is, at least, plausible.¹²⁷ But it's not plausible to believe that the electrical engineer will draft better patent applications for the shape of sneakers or smart phones than someone who studied industrial design. In this Part, we argue that the PTO's eligibility rules, as applied to design patent prosecutors, are facially unreasonable, create bad policy for the design patent system, and likely work an injustice against women in the profession.

A. Is There a Market Failure?

The basic justification for occupational licensing regimes is their capacity to cure market failures brought on by asymmetric information, bias, or negative externalities.¹²⁸

¹²⁶ See *supra* Part I.

¹²⁷ There is good reason to question the rationality and appropriateness of the eligibility requirements as applied to utility patents in the landscape of modern day patent prosecution. That is not the primary focus on this essay, though. *But see* Hubbard, *supra* note 6.

¹²⁸ See *supra* Part II.A.

Accordingly, we must first determine whether any such failure is likely to exist with design patent prosecution.¹²⁹ We believe the case for a market failure is weak.

Design patent prosecution is a service similar to those offered by attorneys in other fields, and as with most services, there is a possibility that clients will be in a poor position to distinguish high and low quality service providers.¹³⁰ As we explained above, this could lead to clients getting duped or to insufficient incentives to invest in high quality service.¹³¹ It's certainly possible that this could happen in design patent prosecution, and there is some historical evidence that it may have once been the case. Some have claimed that the demise of design patents throughout the twentieth century was based in part on inventors being duped into obtaining cheap but weak design patents instead of expensive but strong utility patents.¹³²

We suspect that the risks here are not especially high, however. In the 1800's and well into the 1900's, patent prosecution was still a new and developing practice area.¹³³ Concerns about patent quality then would have been based on a very different professional landscape than they are now. Today, patent prosecution is a well-established practice area, and the clients who need these services are generally sophisticated, repeat players. Many parties who are seeking design patent prosecution are reasonably sophisticated professional actors. Many, in fact, are enormous corporations and are repeat players at the PTO.¹³⁴

In addition, here are many law firms around the country, big and small, that offer patent prosecution services, and many corporations have their own patent prosecution departments that provide these services in house. To the extent that these law firms and corporations think that patent prosecutors should have scientific or technical credentials, they can insist upon their prosecuting attorneys possessing them. Once hired, patent prosecutors can be assigned to applications that are directly related to their technical background. When corporations employ outside counsel for patent prosecution services, they are not in the dark about the lawyers they hire. Lawyers' biographical details are publicly available through various sources. If a corporation believes that certain skills or credentials are important (and worth paying for), they can seek outside law firms or particular attorneys within firms that have them.

Also, unlike utility patents, design patents applications are very simple documents. Design patents only include a single claim for the ornamental shape of an article of

¹²⁹ Again, we restrict our discussion to design patents.

¹³⁰ See *supra* notes 96-100.

¹³¹ *Id.*

¹³² On alleged misbehavior of patent prosecutors generally, see Swanson, *supra* note 27, at 530.

¹³³ *Id.* at 531.

¹³⁴ CITE DATA ON WHICH COMPANIES OBTAIN THE MOST DESIGN PATENTS

manufacture, along with several drawings of the article. Although there are important strategies associated with design patent claiming,¹³⁵ many of them are comprehensible to lay people and are no more difficult than the sorts of things attorneys do for clients in many other legal fields.¹³⁶

Finally, but essentially, attorneys' ethical obligations are likely to deter inappropriate behavior without having to resort to occupational licensing. Attorneys in every state are bound by a code of professional responsibility including canons of ethics that require lawyers to competently represent their clients.¹³⁷ This includes only taking on matters in practice areas for which one has the skills to provide quality legal services.¹³⁸

Low quality design patent prosecution is also unlikely to generate sufficient negative externalities, or at least not the sort that are curable by occupational licensing. While low quality design patents are certainly costly to society,¹³⁹ we might hope that applicants' preferences for high quality design patents will generally overlap with society's interest in high quality design patents. If applicants hire unqualified attorneys, they may run a greater risk that their patents will be invalidated. This will give them some incentive to invest in high quality attorneys who will draft high quality patents.

Of course, it might often be the case that applicants in fact desire low quality patents, in the sense that they are overbroad or insufficiently novel.¹⁴⁰ But in these cases, the attorneys aren't giving the clients low quality legal services the way that a quack physician might mistreat a communicative disease. Instead, clients could be seeking out *high quality* attorneys to help them draft low quality patents.¹⁴¹ Although this practice certainly produces negative externalities for society, these costs are not ones that arise from low quality practitioners who don't understand patent prosecution. Accordingly, there is no reason to

¹³⁵ Jeanne C. Fromer & Mark P. McKenna, *Claiming Design*, 167 UNIV. PA. L. REV. (forthcoming 2018).

¹³⁶ For example, tax law and estate planning are almost certainly more complicated than design patent prosecution.

¹³⁷ AMERICAN BAR ASSOCIATION, MODEL CODE OF PROFESSIONAL RESPONSIBILITY (2015), Canon 6 (e.g., EC 6-3: 'While the licensing of a lawyer is evidence that he has met the standards then prevailing for admission to the bar, a lawyer generally should not accept employment in any area of the law in which he is not qualified.') https://www.americanbar.org/content/dam/aba/migrated/2011_build/professional_responsibility/mod_code_prof_resp.authcheckdam.pdf

¹³⁸ *Id.*

¹³⁹ Buccafusco, Lemley & Masur, *supra* note 9, at 34; Sarah Burstein, *Costly Designs*, 77 OHIO ST. L.J. 107 (2016); Mark McKenna & Katherine J. Strandburg, *Progress and Competition in Design*, 17 STAN. TECH. L.J. 1 (2013).

¹⁴⁰ Buccafusco, Lemley & Masur, *supra* note 9, at 15 (explaining how costly screens can weed out negative social value design patents).

¹⁴¹ Christi J. Guerrini, *Defining Patent Quality*, 82 FORD. L. REV. 3091, 3123 (2014); Stephen Yelderman, *Improving Patent Quality with Applicant Incentives*, 28 HARV. J.L. & TECH. 77 (2014).

believe that an occupational licensing regime that aims at eliminating low quality design patent prosecutors would have any effect on strategic overclaiming.

We see little reason to think that there is a sizable market failure associated with low quality design patent prosecutors. Neither information asymmetries nor negative externalities seem especially costly or potentially curable by an occupational licensing regime. Moreover, as we explain below, we see absolutely no reason to think that any risk of design patent prosecution market failure can be cured by limiting practice to those who studied science or engineering.

B. The Rules Are Facially Unreasonable

Even assuming there is some possible market failure associated with design patent prosecution, we must consider whether the PTO's eligibility rules are a cost-justified response. We need do nothing more than state the situation for its irrationality to be apparent. *People who majored in biology, chemistry, and civil engineering are permitted to prosecute design patents, but people who majored in industrial, product, or fashion design are not.*

Design patents claim the ornamental appearance of articles of manufacture, and if specialized knowledge about design appearances is necessary,¹⁴² then that expertise is likely held by designers rather than scientists or engineers. One could imagine that design patent prosecutors should be able to advise clients on the existence and scope of prior art designs that may read on their claims. For example, when prosecutors run prior art searches, they should be able to advise their clients on the likelihood that their claims are likely to be found invalid because previous designs anticipate them. And design patent prosecutors should be able to explain different drafting conventions, including dotted line and broken line claiming strategies, and the costs and benefits of using them.¹⁴³ But there is no reason to think that the subject-matter specific skills related to design patent prosecution are held by pharmacologists and biochemists. If anyone is more likely to be able to assist a designer, than that person probably has a background in design herself. And to the extent that the patent bar exam primarily tests procedural rules about practice before the PTO,¹⁴⁴ that knowledge, and its application to design, is just as understandable to those who studied design as those who studied science or engineering.

¹⁴² Below we discuss whether such specialized knowledge is important for design patents. *See infra* notes 199-200.

¹⁴³ *See supra* note 44-49.

¹⁴⁴ *See supra* notes 71-72. The patent bar exam appears to test design patents very lightly, with usually only a couple of questions per year.

One might argue that at least one class of patent-bar-eligible prosecutors—mechanical engineers—may be well-placed to serve design patent applicants. While that may be true, it hardly provides a satisfactory justification for the regulation. First, although mechanical engineers can prosecute design patents, so can all of the other people who qualify under the other science or engineering degrees. That one group is rationally included does not excuse either the irrational inclusion of some groups (e.g. biologists and chemists) or the irrational exclusion of other groups (e.g. designers). Moreover, to the extent that mechanical engineers may possess expertise in design, it likely relates to the utilitarian or functional aspects of design rather than design’s ornamental aspects. Yet these ornamental, aesthetic aspects of design are precisely those protected by design patents.¹⁴⁵ Functional aspects of designs should not be protected by design patents.¹⁴⁶

Ultimately, the most damning evidence of the irrationality of the PTO’s patent eligibility rules is that *the PTO itself* does not apply them internally. When the PTO hires design patent examiners—the administrators who will determine whether patents should issue—it does not look for applicants with science and engineering backgrounds.¹⁴⁷ Logically, it looks for applicants who understand designs. In a recent job posting for design patent examiners, the PTO sought “talented individuals with degrees or education in Industrial/Product Design, Architecture, Applied Arts, Graphic Design, Fine/Studio Arts.”¹⁴⁸ When they interview, the PTP asks design patent examiner applicants questions about visual similarities between different designs.¹⁴⁹ And applicants are evaluated on spatial reasoning tests and their ability to describe drawings in words.¹⁵⁰ This evidence shows that the PTO

¹⁴⁵ See *supra* note 34.

¹⁴⁶ Buccafusco & Lemley, *supra* note 28, at 1301.

¹⁴⁷ See, e.g., U.S. PATENT & TRADEMARK OFFICE, INFO SESSION FOR DESIGN PATENT EXAMINER POSITIONS, at <https://www.uspto.gov/about-us/events/info-session-design-patent-examiner-positions> (the info session was held Mar. 9, 2016 in San Jose, CA).

¹⁴⁸ U.S. PATENT & TRADEMARK OFFICE, INFO SESSION FOR DESIGN PATENT EXAMINER POSITIONS, at <https://www.uspto.gov/about-us/events/info-session-design-patent-examiner-positions> (the info session was held Mar. 9, 2016 in San Jose, CA).

¹⁴⁹ The website Glassdoor allows applicants to post about job interviews, and it includes a number of posts from people who have applied for design patent examiner positions with the PTO. See e.g. Anonymous Employee in Alexandria, VA, *Design Patent Examiner Interview*, US PAT. AND TRADEMARK OFF.: GLASSDOOR (Sept. 7, 2016), https://www.glassdoor.com/Interview/US-Patent-and-Trademark-Office-Design-Patent-Examiner-Interview-Questions-EI_IE41351.0,30_KO31,53.htm; Anonymous Interview Candidate in Alexandria, VA, *Design Patent Examiner Interview*, US PAT. AND TRADEMARK OFF.: GLASSDOOR (June 10, 2016), https://www.glassdoor.com/Interview/US-Patent-and-Trademark-Office-Design-Patent-Examiner-Interview-Questions-EI_IE41351.0,30_KO31,53.htm.

¹⁵⁰ See Sarah Burstein, *Design Patent Myths -- On Examiners and Expertise*, THE FACULTY LOUNGE (Oct. 30, 2013, 8:04 AM) <http://www.thefacultyounge.org/2013/10/design-patent-examiners.html>.

itself does not believe that science or engineering degrees provide the best background for understanding design patent applications.

C. The Rules Are Harmful to Design Patents

Not only are the PTO's eligibility rules facially unreasonable, they are also a bad idea. The patents that issue are no better for being drafted by scientists and engineers, but they are more expensive, and they might be worse. The eligibility rules increase the costs of obtaining design patents, and they also increase the costs of challenging bad design patents. The rules are a rare example of a regulation that has virtually no upside and considerable downside.¹⁵¹

Like other occupational licensing restrictions, the PTO's eligibility rules limit the supply of patent agents and attorneys who are eligible to assist applicants.¹⁵² It is an axiomatic economic principle that when the supply of a good is constricted, its price tends to rise.¹⁵³ Thus, we can expect that the 43,000 active registered patent agents and attorneys can charge substantially higher prices for their services than they could in a fully competitive market.¹⁵⁴ Because the PTO restricts competition, the attorneys who are eligible to prosecute patents charge higher fees and make more money.

The higher fees associated with limited competition likely have a large effect on would-be applicants. Currently, attorneys' fees make up the predominant share of the costs of obtaining a design patent.¹⁵⁵ This will have two significant effects. First, attorneys and agents will capture a larger share of the gains from trade than they would in an unregulated market for prosecution services. That means less money in the pockets of designers to invest in their work. Second, it is likely that many designers are foregoing design patent protection because they cannot afford the inflated fees. If the occupational regulation has the standard effect on prices that these restrictions do in other areas (7-20% increase), then for some

¹⁵¹ Normally administrative agencies face a difficult task when implementing rules, because those rules have both costs and benefits. Figuring out how to weigh costs and benefits is a tricky task. But here, the PTO's eligibility rules have only costs and no benefits.

¹⁵² See *supra* Part II.

¹⁵³ See *supra* note 114.

¹⁵⁴ There is some evidence that patent attorneys make more money than do other categories of attorneys. Hubbard notes, for example, that the median income for all attorneys is about \$115,000 per year, while the median income for patent attorneys is about \$175,000. Hubbard, *supra* note 6, at 387-88.

¹⁵⁵ Buccafusco, Lemley & Masur, *supra* note 9, at 12.

designers the higher price could be the difference between getting protection and going without.¹⁵⁶

While attorneys' fees for pursuing design patent protection are unnecessarily inflated, filing and maintenance fees are actually too cheap. As one of us has argued elsewhere, there are too many low quality design patents that produce negative social value, and they should be screened out by higher filing fees.¹⁵⁷ But while occupational restrictions will technically achieve these results, they do so through a manifestly worse channel than other options. Instead, negative social value design patents should be screened out with higher application fees and maintenance fees.¹⁵⁸ There are so many bad design patents in part because the PTO doesn't charge enough to obtain rights, and it doesn't charge anything to maintain them.¹⁵⁹ Increasing these fees could provide the PTO with a greater resources to hire more examiners and to engage in more robust examination.¹⁶⁰ The heightened attorneys' fees that come from PTO's eligibility rules, by contrast, simply enrich a select group of agents and attorneys. Thus, whether you think obtaining design patents should be cheaper or more expensive, the PTO's eligibility rules are a bad idea.

Importantly, the PTO's eligibility rules don't just raise costs for applicants; they also increase the costs for parties interested in challenging bad design patents. Congress has created various administrative mechanisms for challenging patents, including inter partes review (IPR) and post grant review (PGR).¹⁶¹ If someone believes that a patent was granted improperly, for example, because it wasn't novel or nonobvious, she can institute various administrative proceedings before the Patent Trial and Appeal Board.¹⁶² The PTAB can take a "second look" at the patent, and it has the authority to cancel one or more of the claims in it.¹⁶³ These proceedings are vastly cheaper than full-scale district court litigation, so they substantially diminish the difficulty of getting rid of bad patents.¹⁶⁴

¹⁵⁶ Thus, there could be many designs that have low private value to their creators but positive social value that do not receive protection. See Jonathan S. Masur, *Costly Screens and Patent Examination*, 2 J. LEG. ANALYSIS 687 (2010).

¹⁵⁷ Buccafusco, Lemley & Masur, *supra* note 9, at 37.

¹⁵⁸ *Id.* at 45.

¹⁵⁹ *Id.*

¹⁶⁰ *Id.*

¹⁶¹ See 35 U.S.C. § 311 (2012) (inter partes review); 35 U.S.C. § 321 (2012) (post grant review)

¹⁶² *Id.* See also Hubbard, *supra* note 6, at 413.

¹⁶³ *Cuozzo Speed Technologies, LLC v. Lee*, 136 S.Ct. 2131, 2144 (2016).

¹⁶⁴ Rochelle Cooper Dreyfuss, *Giving the Federal Circuit a Run for Its Money: Challenging Patents in the PTAB*, 91 NOTRE DAME L. REV. 235, 236 (2015).

Although virtually all of the attention paid to IPR and PGR has focused on their application to utility patents,¹⁶⁵ these procedures are also applicable to design patents.¹⁶⁶ And given the ease with which design patents are granted, we suspect that there may be substantial opportunities for parties to request them. But just as you need a member of the patent bar to get a design patent, you also need a member of the patent bar to challenge one at the PTAB.¹⁶⁷ The lead counsel in an IPR or PGR challenge must be a member of the patent bar.

Accordingly, in the same way that the eligibility rules mean that attorneys and agents can charge higher prices to applicants, they also affect that prices that attorneys can charge to challengers. And it's possible that challengers will be even more sensitive to small differences in price than applicants. Applicants can obtain affirmative exclusive rights to make and sell their designs, but challengers can only cancel one or more claims of an existing patent.¹⁶⁸ While the cancellation presumably provides some benefit the challenger, the challenger cannot recoup the total social good that it has generated for competitors and consumers.¹⁶⁹ Thus, to the extent that the PTO's eligibility rules make challenging patents more costly, they further reduce the incentives for parties to engage in this socially valuable process.

The costs associated with the PTO's rules are pretty clear. But other than as an indirect mechanism for screening out some negative social value rights, we can see no tangible benefits to offset them. Limiting the practice of medicine to those who have gone to medical school and passed various examinations almost certainly increases the overall quality of patient care. The same is also likely true of limits on practicing law. And it may even be the case that undergraduates who studied science and engineering fields will make for better utility patent prosecutors. But we can think of no plausible grounds to believe that limiting design patent prosecution to people who studied science or engineering would be a good thing.

As we explained above, if specialized knowledge of design is important to design patent prosecution, there is no reason to think that patent-bar-eligible attorneys have it. And if such knowledge isn't important, then there is no reason to limit the field to a certain class

¹⁶⁵ See *e.g.* *Oil States Energy Serv., LLC v. Greene's Energy Group, LLC*, 138 S.Ct. 1365 (2018) (holding that IPR does not violate Article III or the Seventh Amendment).

¹⁶⁶ See *e.g.* *Caterpillar, Inc. v. Miller International, Ltd.*, Case IPR2015-00416 (PTAB 2015) (finding a design patent on a warning symbol obvious and invalid).

¹⁶⁷ 37 C.F.R. § 42.10(a), (c) (2017). See also Hubbard, *supra* note 6, at 414.

¹⁶⁸ 35 U.S.C. § 321 (2012).

¹⁶⁹ Dreyfuss, *supra* note 164, at 239 (suggesting that the public could bring IPR and PGR challenges to patents when their interests diverge from those of the patent holder's rivals).

of people. If anything, allowing biologists or geological engineers to advise on design patents may produce worse patents.¹⁷⁰

D. The Rules Likely Limit Opportunities for Women in the Profession

By limiting patent bar eligibility to people who studied science and engineering, the PTO allows patent-eligible attorneys to charge higher fees for the services. That's bad. But what makes it even worse is that the group of people benefited by these rules are disproportionately men.¹⁷¹ This is another example of how the economic opportunities associated with STEM fields tend to favor men rather than women. While the PTO is making efforts to improve the representation of women among patent holders,¹⁷² its own policies likely limit opportunities for women to practice patent law.

A recent estimate by Saurabh Vishnubhakat indicates that the patent bar is currently about 70% men.¹⁷³ This is a greater percentage of men than among current law students (~50%),¹⁷⁴ law firm associates (~55%),¹⁷⁵ and the American bar as a whole (~64%).¹⁷⁶ Although a number of reasons for this skew are possible, including the possibility that men and women attorneys have different subject matter preferences, one of the strongest possibilities is that the eligibility rules prevent more women than men from practicing patent law. By limiting access to the patent bar to people who have studied science and engineering, the PTO's rules disparately impact women's access to the profession.

Science and engineering fields are notoriously skewed towards men in colleges and universities. As of 2013, women earned only 37% of undergraduate STEM degrees in the

¹⁷⁰ Blake, *supra* note 6, at 755.

¹⁷¹ Vishnubhakat, *supra* note 12, at 67.

¹⁷² UNITED STATES PATENT AND TRADEMARK OFFICE, MEMORANDUM ON THE STUDY OF DIVERSITY AMONG PATENT APPLICANTS (2015), <https://www.uspto.gov/sites/default/files/documents/Determination%20on%20Diversity%20of%20Applicants.pdf>. Improving the representation of women among patent holders is a goal with which we entirely agree and are, ourselves, working towards. See Cardozo/Google Patent Diversity Project, at <https://cardozo.yu.edu/programs-centers/cardozo-google-patent-diversity-project>.

¹⁷³ Vishnubhakat, *supra* note 12, at 80. The population of registered patent attorneys and agents is about 69% male, although the percentage of men is higher among attorneys (~73%) than agents (~59%). *Id.*

¹⁷⁴ Elizabeth Olson, *Women Make Up Majority of U.S. Law Students for First Time*, N.Y. TIMES, Dec. 16, 2016, available at <https://www.nytimes.com/2016/12/16/business/dealbook/women-majority-of-us-law-students-first-time.html>.

¹⁷⁵ AMERICAN BAR ASSOCIATION – COMMISSION ON WOMEN IN THE PROFESSION, A CURRENT GLANCE AT WOMEN IN THE LAW, 2 (2017) available at https://www.americanbar.org/content/dam/aba/marketing/women/current_glance_statistics_january2017.authcheckdam.pdf.

¹⁷⁶ *Id.* See also Deborah L. Rhode, *From Platitudes to Priorities: Diversity and Gender Equity in Law Firms*, 24 GEO. J. LEGAL ETHICS 1041 (2011).

U.S.¹⁷⁷ Although women now make up more than half of undergraduate biology majors, their share of engineering fields remains small.¹⁷⁸ Men make up about 80% of undergraduate engineering students,¹⁷⁹ while the STEM fields in which women are more prevalent tend not to those that are eligible for the patent bar (like psychology and other social sciences).

Compare the numbers above to the relatively equal share of male and female law students.¹⁸⁰ Or, more to the point, consider the share of women in undergraduate design programs. Women make up the vast majority of students at leading industrial and fashion design schools like Parsons School of Design (78%),¹⁸¹ Rhode Island School of Design (69%),¹⁸² and Fashion Institute of Technology (85%).¹⁸³ Accordingly, the patent bar is drawing attorneys from a highly distorted pipeline of talent.¹⁸⁴ If the PTO allowed in either design majors or people with any undergraduate major, the number of women who were eligible patent attorneys would be sure to rise.

In sum, the PTO's eligibility restrictions are entirely unrelated to the skills that the PTO itself recognizes as potentially important to design patent prosecution, those restrictions increase the costs of obtaining and challenging design patents because eligible attorneys can charge higher fees, and the higher fees disproportionately go to men, while women are excluded from the system. These costs are far too great when weighed against any plausible benefits that the occupational licensing could generate.

IV. Fixing the Design Patent Bar

As we explained above, utility and design patents are quite different in nature, scope, and required disclosures. Nevertheless, the PTO treats these very dissimilar patents exactly

¹⁷⁷ National Science Foundation, Integrated postsecondary education data system, 2013, COMPLETIONS SURVEY. NATIONAL CENTER FOR SCIENCE AND ENGINEERING STATISTICS: INTEGRATED SCIENCE AND ENGINEERING RESOURCES DATA SYSTEM available at <https://webcaspar.nsf.gov> (2014). See also Sapna Cheryan, Sianna A. Ziegler, Amanda K. Montoya & Lily Jiang, *Why Are Some STEM Fields More Gender Balanced Than Others?*, 143 PSYCHOL. BULL. 1, 1 (2017).

¹⁷⁸ *Id.*

¹⁷⁹ <https://www.nsf.gov/statistics/2017/nsf17310/static/data/tab2-9.pdf>

¹⁸⁰ Olson, *supra* note 174.

¹⁸¹ PETERSON'S, https://www.petersons.com/college-search/parsons-the-new-school-for-design-000_10000570.aspx (last visited June 4, 2018).

¹⁸² U.S. NEWS & WORLD REPORT, <https://www.usnews.com/best-colleges/risd-3409> (last visited June 4, 2018).

¹⁸³ *Enrollment Data*, FIT STATE UNIV. OF NY <http://www.fitnyc.edu/about/get-to-know/enrollment-data.php> (last visited June 4, 2018).

¹⁸⁴ On the "pipeline problem" and diversity see THE EDUCATION PIPELINE TO THE PROFESSIONS: PROGRAMS THAT WORK TO INCREASE DIVERSITY (Sarah E. Redfield, ed. 2012).

the same for purposes of determining who is eligible to prosecute them. This does not make sense, and it's a bad policy. Here, we propose a series of options that the PTO could implement to improve the current situation. They range from expanding the list of eligible fields to include design-related degrees to eliminating the eligibility rules in their entirety to having limited registrations for design prosecutors to having a separate and different set of eligibility requirements for design prosecutors. Each of these approaches has costs and benefits, and we assess the tradeoffs between them below.

We anticipate some resistance both from the PTO, which would have to implement these changes, and, especially, from the current members of the patent bar who are the beneficiaries of the educational requirements. Accordingly, we offer an array of proposals. We also indicate which proposal we favor.

A. Expand the List of Degrees Included in the Eligibility Requirements

Just as science and engineering degrees are deemed relevant to prosecuting utility patents, so too might design degrees be helpful in prosecuting design patents. Accordingly, the PTO could consider ways to expand the range of eligible undergraduate degrees for patent prosecution.

1. Add Design Degrees to Category A and/or Case-by-Case under Category B

If some sort of educational requirements are appropriate for ensuring patent quality, the PTO could expand the list of applicable fields to include design, architecture, and art degrees. This would allow those with backgrounds more closely linked to design patents to take the existing patent bar exam and join the general patent bar.¹⁸⁵ Like current members of the patent bar, they would be entitled to prosecute patents in any field before the PTO. So just as a person with a biology degree can prosecute aeronautics patents or design patents, a person with an industrial design degree could prosecute patents in biotech, computer engineering, or design.

This change could be implemented in one or two ways. First, design-related degrees could be added to the list of eligible degrees in Category A. Currently, Category A allows individuals with a bachelor's degree in one of thirty-two enumerated science, engineering, and computer science fields to sit for the patent bar exam. Design-related degrees could simply be added to this list. The precise degrees to be added could be based on what appears to be the PTO's own view regarding the backgrounds most relevant to the examination of design patents – degrees in industrial design, product design, architecture, applied arts,

¹⁸⁵ We imagine that the same rules could apply to patent agents as well as patent attorneys for this proposal.

graphic design, fine arts, and studio arts.¹⁸⁶ Logically, fashion design should also be included. And there are likely others as well, particularly in view of the fluid nature of design-related degrees. The PTO has navigated the landscape well with respect to the newer and less-established scientific and engineering degrees and we assume it could do so here too.¹⁸⁷

Another possibility is to allow individuals with design-related training to make case-by-case arguments for inclusion under Category B. A similar case-by-case analysis is already found in Category B, section xii for those people with training and expertise in science or engineering but who do not have one of the degrees specified in Category A:

xii. Other Training: Other factors will also be considered on a case-by-case basis with respect to scientific and technical training. OED will consider expertise in scientific and technical training which is equivalent to that of a Bachelor's degree in a subject listed in Category A. An applicant without a degree listed in Category A has the burden of establishing possession of sufficient training and expertise in science or engineering to be equivalent to that of a Bachelor's degree in a subject listed in Category A. Objective evidence demonstrating that training is equivalent to training received in courses accepted under Category A may establish such equivalency.¹⁸⁸

Category B, section xii could easily be amended to allow individuals with design-related training to make a similar showing. All that would be needed is to add the word 'design' in the places where the word 'science' or 'scientific' is used.

Expanding the eligibility requirements to include design-related degrees would help ensure that patent prosecutors have 'the legal, scientific, and technical qualifications necessary for him or her to render applicants valuable service.'¹⁸⁹ Such expansion could also open the patent bar to many more women, adding some long overdue diversity to a bar that is currently about 70% men.¹⁹⁰ The PTO itself is trying to diversify the patent bar and this is

¹⁸⁶ See U.S. PATENT & TRADEMARK OFFICE, INFO SESSION FOR DESIGN PATENT EXAMINER POSITIONS, <https://www.uspto.gov/about-us/events/info-session-design-patent-examiner-positions>

¹⁸⁷ For example, we doubt that the PTO struggled to make place for bioengineering degrees once those became popular.

¹⁸⁸ UNITED STATES PATENT AND TRADEMARK OFFICE, GENERAL REQUIREMENTS BULLETIN, *supra* note 61, at 7.

¹⁸⁹ 37 C.F.R. § 11.7 (a)(2)(ii) (2015)

¹⁹⁰ UNITED STATES PATENT AND TRADEMARK OFFICE, MEMORANDUM ON THE STUDY OF DIVERSITY AMONG PATENT APPLICANTS (2015), <https://www.uspto.gov/sites/default/files/documents/Determination%20on%20Diversity%20of%20Applicants.pdf>

one way to help achieve that goal.¹⁹¹ This is also a way to increase the number of women holding patents. Studies show that one of the reasons for the gender patent gap is the cost of obtaining a patent,¹⁹² which for design patents is largely based on attorneys' fees. By increasing the competition among patent prosecutors, fees should be reduced, and for some women, this will make the difference between obtaining a patent and not.

We suspect that the members of the patent bar and the PTO itself may object to allowing designers to prosecute utility patents for the same reasons that they would likely object to doing away with the educational requirements entirely. They might argue that letting mere designers prosecute complex and important utility patents covering pharmaceuticals would produce low quality, socially costly patents. For purposes of this Article, we are agnostic about the importance of science and engineering training for prosecuting utility patents,¹⁹³ but, we appreciate the force of the objection and the political difficulties our first option introduces.

2. Issue a Limited Registration for Those with Design Degrees

Accordingly, to assuage concerns that patent quality would suffer if designers were permitted to prosecute utility patents, the PTO could limit their registration to the prosecution of design patents. Those possessing a degree in science or engineering would still be able to prosecute utility and design patents, but those with design-related degrees would only be permitted to prosecute design applications. This solution can create a stronger connection between the background of the prosecuting attorney and the subject matter of the applications being prosecuted and can only serve to improve the quality of design patents.

This approach might be closest to the PTO's internal practices regarding the examination of design patents. The PTO appears to hire examiners with design-related degrees to handle design applications.¹⁹⁴ There is simply no reason why the examiners handling design applications have backgrounds so closely aligned with the subject matter of the applications they are examining but the prosecuting attorneys do not.

In other contexts, the PTO has utilized limited registrations. One example is in the context of the PTO-certified law school clinics that are now in place in more than fifty law

¹⁹¹ *Id.*

¹⁹² See Jessica Milli, Emma William-Baron, Meika Berlan, Jenny Xia, & Barbara Gault, *Equity in Innovation: Women Inventors and Patents*, INSTITUTE FOR WOMEN'S POLICY RESEARCH (Dec. 1, 2016) at <https://iwpr.org/publications/equity-in-innovation-women-inventors-and-patents/>.

¹⁹³ *But see* Hubbard, *supra* note 6.

¹⁹⁴ *See supra* notes 147-150.

schools around the country.¹⁹⁵ In these clinics, students work with a supervising attorney to prosecute patent applications. The PTO issues limited registrations to these students in order that they might file patent applications prepared as part of their clinic work.¹⁹⁶ And the PTO seems pleased with how this process is going. It recently expanded the number of clinics and, thus, students who could work under limited registrations.¹⁹⁷

This approach has quite a lot of appeal. It would likely enhance the quality of design patents, because it creates a strong nexus between the prosecuting attorney and the subject matter of the applications being prosecuted. It does not require the PTO to wade into uncharted territory administratively. It is consistent with the PTO's own hiring practices for design patent examiners, and finally, it advances a pressing social justice issue.

B. Create Separate Prosecution Bar for Design Patents

1. Educational Eligibility Rules for People with Design Degrees

Another approach is for the PTO to create a completely separate track for design patent prosecutors. The PTO could hive off design patent prosecution from utility patent prosecution and maintain separate criteria for each. The design patent bar could mirror the general framework of degrees, coursework, and/or training of Categories A and B but for design-related backgrounds. The eligible fields would include industrial design, product design, architecture, applied arts, graphic design, fine arts, studio arts, fashion, and perhaps mechanical engineering. Individuals with science and engineering backgrounds (other than, perhaps, mechanical engineering) would not be eligible. This approach would allow every design application to be prosecuted by someone with a background strongly correlated to the subject matter of the application just as is the case currently for utility patents. In addition, the PTO could offer a separate bar exam that more thoroughly tested issues related to design patent prosecution.¹⁹⁸

If the costs associated with the eligibility rules are believed to be justified in order to ensure patent quality and prevent potential patentees from being duped, this approach would seem to provide the most positive impact on the cost-benefit analysis. Creating a separate bar and bar exam will introduce additional administrative costs for the PTO, and

¹⁹⁵ U.S. PATENT AND TRADEMARK OFFICE, LAW SCHOOL CLINIC CERTIFICATION PROGRAM (2018), <https://www.uspto.gov/learning-and-resources/ip-policy/public-information-about-practitioners/law-school-clinic-1>; U.S. PATENT AND TRADEMARK OFFICE, USPTO ADDS ADDITIONAL SCHOOLS TO LAW SCHOOL CLINIC CERTIFICATION PROGRAM, Press Release June 20, 2018, <https://content.govdelivery.com/accounts/USPTO/bulletins/1f8bd25>

¹⁹⁶ *Id.* These students do not need to take an exam directed to patent law or PTO procedure and rules.

¹⁹⁷ *Supra*, note 13.

¹⁹⁸ Currently, the patent bar exam only includes two or three questions about design patents out of the one hundred total questions. *See supra* note 172.

ultimately, these costs will get passed on to applicants in terms of higher fees. The members of the patent bar may oppose the exclusion of scientists and engineers from the design bar because they will lose the attorneys' fees that come from the steadily increasing number of design patent prosecutions. But this hardly seems like a legitimate reason for objecting. None of these costs seem excessive from the perspective of desiring high quality design patents.

Perhaps a larger worry is that having a design patent bar that is limited to those with design degrees will further constrain competition among prosecutors if there aren't many people who satisfy the criteria. If there aren't that many designers who go to law school, the number of design patent prosecutors could shrink, and the price of obtaining and challenging design patents would rise. As a stopgap measure, the PTO might consider grandfathering in all current members of the patent bar into both the utility and design patent bars.

2. Eliminate All Eligibility Rules for Design Patent Prosecution

Ultimately, we are not persuaded that limiting prosecution of design patents to those with particular educational credentials is worthwhile. Design patents may be among the clearest legal documents to read and draft. Although artistic skill is clearly required to produce the drawings in a design patent,¹⁹⁹ the design patent's text is simple. As we explained above, each design patent only includes a single claim, in the form of "the ornamental design of [X]." And while various legal strategies are important components of advising designers, we believe this knowledge to be generally learnable by all trained attorneys regardless of educational background. Finally, we suspect that the markets for design patent attorneys' services can handle expertise issues without external intervention. The law firms that hire attorneys and the clients who hire the law firms are generally sophisticated parties capable of determining what level of expertise is appropriate.²⁰⁰ Design patent prosecution, no less than trademark prosecution, is unlikely to suffer from a costly market failure that is worthy of legal intervention.

To the extent, then, that the educational eligibility rules are not cost-justified for design patents, the PTO could simply scrap them with respect to design patent prosecution, expanding eligibility to join the new design patent bar to any attorney in good standing with

¹⁹⁹ Applicants have the option of using professional drawing services to offer the best rendering of their design just as is the case for the drawings of utility patents.

²⁰⁰ While it is true that independent designers may not be very sophisticated about the appropriate qualifications for design patent attorneys, they are likely to be able to consider some of the relevant issues. And there is no reason to think that they are less sophisticated than those who hire attorneys to assist with their taxes despite the lack of educational requirements for tax attorneys.

a state bar.²⁰¹ We suspect that the PTO might want to offer a patent bar exam that is specific to design patents, although we do not believe this to be essential. Accordingly, anyone who could master the rules of design patent prosecution would be allowed to offer their services to design inventors.

Doing away with the education requirements would place design patent prosecutors between the PTO's treatment of utility patent prosecutors and its treatment of trademark prosecutors. Trademark prosecutors are not subject to the same requirements as patent prosecutors. Indeed, the PTO does not require trademark prosecutors to be registered with the office,²⁰² nor does it require trademark prosecutors to sit for and pass a separate bar exam²⁰³ even though trademark prosecution, like patent prosecution, is governed by a robust set of PTO rules²⁰⁴. The PTO does not require that trademark prosecutors possess a specific educational background²⁰⁵ despite the possibility that certain backgrounds such as art, design, marketing, and advertising could be useful in the context of trademark prosecution. In our proposed design patent bar, prosecutors would not be subject to any educational restrictions (as in trademark law), but they would still be subject to a design patent bar exam that tests rules and procedures (as in utility patent law).

This proposal's principle merit compared to the prior suggestion is that it would dramatically expand the pool of eligible design patent prosecutors and significantly reduce the costs of obtaining and challenging patents. We wouldn't have to worry about a shortage of design-trained attorneys, because all attorneys would be eligible for the design patent bar.²⁰⁶ And to the extent that familiarity with the PTO's prosecution procedures is valuable, the design patent bar exam could help ensure that practitioners knew them.

As with other sorts of occupational licensing, the question here is whether the benefits of eradicating the PTO's eligibility requirements for design patent prosecution would exceed its costs. The goal is to find the cheapest means of maintaining patent quality. We believe that this approach is likely to offer the best option, largely because it maximizes the size of the pool of design patent prosecutors without seriously risking design or utility patent quality. The patent bar can remain to make sure that practitioners understand the

²⁰¹ We are assuming, here, that sitting for the patent bar exam is, itself, a legitimate hurdle to place on patent prosecutors. For concerns about the patent bar exam, see Guerrini, *supra* note 22, at 328.

²⁰² 37 C.F.R. § 11.14.

²⁰³ *Id.*

²⁰⁴ U.S. PATENT & TRADEMARK OFFICE, U.S. TRADEMARK LAW, RULES OF PRACTICE & FEDERAL STATUTES, (2018), <https://www.uspto.gov/sites/default/files/documents/tmlaw.pdf>

²⁰⁵ 37 C.F.R. § 11.14.

²⁰⁶ The situation with respect to design patent agents is somewhat less clear. To the extent that non-attorneys will be allowed to prosecute design patents in the way that they are allowed to prosecute utility patents as patent agents, we could imagine opening these positions up to anyone with a bachelor's degree who could pass the new design patent bar exam.

rules, and applicants will be able to engage in appropriate sorting to hire the prosecutors that they desire. As a practical matter, there should be no concern about a negative impact on patent quality if the PTO's eligibility requirements were eliminated because, as we explained above, law firms and their clients are generally well-positioned to screen for the credentials they deem appropriate.

Conclusion

Each of the solutions that we propose necessarily entails some administrative cost for the PTO, but we are confident that these costs are dwarfed by the substantial benefits that will arise from increased fairness, efficiency, and equal access to the legal profession. The PTO should not let status quo bias or the personal economic interests of one class of attorneys prevent it from amending its educational eligibility policies.