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Repository Citation

Mandy Barbara Seuffert, *Soft-Science Examiners at the USPTO: A Non-Obvious Solution to Reduce Erroneous Patent Grants*, 10 *Intellectual Property L. Rev.* 111 (2006).

Available at: <http://scholarship.law.marquette.edu/iplr/vol10/iss1/3>

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COMMENTS

Soft-Science Examiners at the USPTO: A Non-Obvious Solution to Reduce Erroneous Patent Grants

In response to transnational efforts to globalize the economy, business firms are increasingly seeking intellectual property protection to protect their investments in research and development. Companies have found it more profitable to apply for a patent and subsequently license the rights it produces rather than set up a subsidiary or a satellite branch. In addition, companies have become more aggressive in seeking patents because the recent development of more complex technologies has expanded the patentable subject matter capable of protection.¹ Companies are now flooding the United States Patent and Trademark Office (USPTO) with applications in their efforts to obtain a piece of the market.

The increased number of patents applied for and granted in the last two decades evidences this novel business approach. Patent activity has almost doubled since 1984.² In 2003, the USPTO reviewed approximately 350,000 patent applications and issued some 180,000 patents.³ The increased workload in the USPTO has dramatically affected trends in patent quality and has become the subject of many debates for reform. Examiners spend on average only twenty hours reviewing each patent application.⁴ Because they lack the resources to

1. Dale L. Carlson et al., *Re-Thinking Patent Bar Admission: Which Bag of Tools Rules?*, 87 J. PAT. & TRADEMARK OFF. SOC'Y 113, 136 (2005). U.S. patents are divided into searchable groups based on the technology claimed in the patent. The number of patent classes and subclasses continue to increase with the development of new patentable subject matter. In September 2002, 462 patent classes and 156,604 subclasses existed within the United States Patent Classification System. *Id.* In February 2004, the USPTO increased the number of patent classes by four and subclasses by 2079. *Id.*

2. See U.S. PATENT & TRADEMARK OFFICE, U.S. PATENT STATISTICS CHART CALENDAR YEARS 1963–2004, http://www.uspto.gov/go/oeip/taf/us_stat.htm (last visited Sept. 23, 2005). U.S. Patents Statistics Chart on the USPTO website states that 120,276 patents were applied for in 1984 and 72,650 were granted. *Id.* In 2003, the numbers nearly doubled when 366,043 patents were applied for and 187,015 were granted. *Id.*

3. See *id.*

4. Carl Shapiro, *Patent System Reform: Economic Analysis and Critique*, 19 BERKELEY TECH. L.J. 1017, 1027 (2004).

both devote more time to individual applications and to conduct more thorough reviews, a number of patents may be issued in error.

This Comment contends that soft-science graduates should participate in patent application review at the USPTO. Soft-science examiners could conduct secondary reviews when questions exist as to a patent's validity or obviousness. This Comment develops its argument in four sections. Part I examines the rising problems associated with the granting of erroneous patents. It discusses the commercial and economic effects questionable patents cause in the marketplace. Part II turns to the regulatory framework involved with the patent bar. It discusses the history of the USPTO, and how it came to regulate the admission to the patent bar. Part III is a critical assessment of the strategies currently in place. It pays particular attention to the changes the USPTO has made to accommodate business-method applications. Part III also considers the effects of prevalent problems in patent law such as the "revolving door" and "regulatory capture." Part IV focuses on the proposed solution. It discusses the reasons that militate in favor of including soft-science patent application review and answers any criticism that may be raised by commentators.

I. PATENT ERRORS

A. *Scope of the Problem*

The USPTO issues too many questionable patents. This is a problem that needs regulatory attention because patent award errors cost parties millions of dollars in litigation when the validity of a patent is tested in court.⁵ In addition, invalid patents affect consumers and competitors in the market if they are never litigated. This has spawned the Federal Trade Commission (FTC) and the Antitrust Division of the Department of Justice's interest in patent reform.⁶ In October 2003, the FTC issued a report that focused on ways to promote innovation by balancing competition with patent law and policy.⁷ The FTC made

5. *See id.* at 1028. The number of patent-related cases litigated in federal courts has doubled in the last twenty years. *See id.*

6. W. Scott Petty, *FTC Proposes Patent Law Reforms to Achieve a Balance Between Competition and Patent Protection*, *INTELL. PROP. TODAY*, Jan. 2004, at 41. The FTC conducts economic research and analysis to support its efforts to ensure that the nation's markets are "vigorous, efficient, and free of restrictions that harm consumers." Federal Trade Commission, *Guide to the Federal Trade Commission*, <http://www.ftc.gov/bcp/online/pubs/general/guidetofc.htm> (last visited Nov. 30, 2004).

7. *See Petty, supra* note 6, at 41.

recommendations for regulatory changes that would improve patent quality.⁸

The FTC recognizes that “patent protection is aggressively pursued by members of a broad range of technology *and* services sectors.”⁹ In its report, the FTC considers the role that questionable patents play in competition and innovation. Its recommendations, if implemented by the USPTO, would make it more difficult to obtain a patent and would make it easier to challenge questionable patents.¹⁰ Since the report was released in 2003, the FTC has continued its examinations into patent reform.¹¹ It is apparent that changes need to be made at the administrative level of the patent process to properly balance the interests of consumers and innovators.

B. Economic and Social Impacts

The United States Constitution provides that Congress shall have the power “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”¹² A patent confers certain rights to its owner. It excludes other market participants from “making, using, offering for sale, or selling” the patented subject matter.¹³ There are several economic justifications for the patent system: “it preserves the incentive for inventors to create, develop, and commercialize new technologies” and serves to encourage disclosure of information about new technologies.¹⁴

8. *Id.* Proposals presented in the FTC report include the following: tighten legal standards used to evaluate whether a patent is “obvious”; consider possible harm to competition along with other possible benefits and costs before extending the scope of patentable subject matter; and expand consideration of economic learning and competition policy concerns in patent law decision making. See FEDERAL TRADE COMMISSION, TO PROMOTE INNOVATION: THE PROPER BALANCE OF COMPETITION AND PATENT LAW AND POLICY (2003), available at <http://www.ftc.gov/os/2003/10/innovationrpt.pdf>.

9. Petty, *supra* note 6, at 41.

10. Janet L. McDavid & Midna Schenchter, *The FTC’s Recent Report*, NAT’L L.J., Dec. 8, 2003, at 13.

11. See *News Focus: The Year Ahead: What’s Happening Where in 2005*, MANAGING INTELL. PROP., Feb. 2005, at 20.

12. U.S. CONST. art. I, § 8, cl. 8.

13. 35 U.S.C. § 154(a)(1) (2000). “The common law and not the patent law gives an inventor the right to make, use and sell his invention. Patent law gives him the license to sue—the right to exclude others from using the invention. This monopoly right is the unique quality of the patent property right.” See *Rawlings v. Nat’l Molasses Co.*, 394 F.2d 645, 647 (9th Cir. 1968).

14. John M. Olin, *The Disclosure Function of the Patent System (Or Lack Thereof)*, 118 HARV. L. REV. 2007, 2007–08 (2005). Information disclosed in a patent helps spur further

The FTC believes that the commercial impact of questionable patents is great. Such patents may adversely affect competition and innovation.¹⁵ Companies that devote significant amounts of resources to research and development (R&D) fear that invalid or overly broad patents granted by mistake raise costs, impose uncertainty, and restrict product design choices.¹⁶ They believe that the number of poor quality patents issued each year “hinder[s] their ability to compete, to innovate, and to contribute to economic growth.”¹⁷ Competition is harmed and innovation is hindered in the following ways: companies are forced to pay licensing royalties for patents that should have never been granted; companies incur great expenses when they choose to litigate over patent validity; and companies must engage in design-around efforts that raise their costs or hinder their product’s performance.¹⁸

C. Patent Error Effects

The economic problems caused by poor quality patents affect rival companies, inventors, and consumers. First, questionable patents influence the R&D decisions of competing companies. These companies are discouraged from investing in areas of R&D that are, in fact, open to them.¹⁹ Secondly, inventors are affected because uncertainty over patentability causes them to behave inefficiently. One commentator suggests that the “tremendous surge” in patent applications is the result of too many inventors seeking patent protection for inventions that are questionable.²⁰ This “surge” in applications, combined with some uncertainty over patent quality, has led to an increase in the number of invalid patents issued. Finally, invalid patents affect consumers because competitors are foreclosed from competing in the market. Consumers spend millions more dollars when market participants are not permitted to sell similar products and, thus, engage in price wars.

innovation, reduce wasteful duplicative research, and lead to more efficient investment in innovation. *See id.* at 2009.

15. *See* Shapiro, *supra* note 4, at 1018–19.

16. *Id.*

17. *Id.*

18. *Id.*

19. *See* Jonathan D. Putnam & Andrew B. Tepperman, *Revisiting the Cost of Bad Patents: For Whom Is “Rational Ignorance” Rational?*, *INTELL. PROP. TODAY*, Oct. 2004, at 17.

20. *Id.* at 18. Some inventors are uncertain whether their inventions are patentable, so they file a patent application at the USPTO. The costs of the application process are very low when compared to the costs of R&D.

When the USPTO issues a questionable patent, it undermines the patent system's purpose of promoting progress. Yet, an increased number of these patents issue every year. This is a matter of public concern that should be paid particular attention because investment decisions are made daily that discourage the R&D of high-quality inventions. It has long been known that society benefits when companies invest substantial resources to R&D. Patent protection allows these companies the opportunity to recover their costs. If these companies are unable to recover their costs because the USPTO grants questionable patents to their competitors, then they will be disinclined to contribute to future discovery and invention. All of society will suffer when these companies choose not to further contribute to social progress.

The problem with the USPTO patent process is that its examiners allow too many patents to issue that are either invalid or excessively broad. A patent is only as reliable as the judgment of its examiner.²¹ Unfortunately, these examiners are overworked and are forced to review applications using inadequate resources. Examiners struggle to meet tough quotas that are based on speed and quantity, but not quality.²² The USPTO has approximately 350,000 applications on backlog, but it does not have the funds available to recruit and to retain more qualified examiners.²³ The USPTO loses hundreds of examiners every year to a more lucrative private sector.²⁴ At the same time, the number of patent applications the USPTO receives every year has increased by fifty percent since 1996.²⁵ These statistics suggest that the source of the problem is at the examination level of the patent process. The USPTO needs to make stronger efforts to recruit and to retain qualified examiners. To do this, it needs to consider making changes to its current qualification requirements for examiners.

II. REGULATORY FRAMEWORK INVOLVED

The USPTO recognized both lawyers and non-lawyers as patent agents in the early to mid-1800s. The non-lawyer agents "were

21. See Megan Barnett, *Patents Pending*, U.S. NEWS & WORLD REP., June 10, 2002, at 33.

22. *Id.* at 34. Ron Stern, President of the Patent Office Professional Association, stated, "The less work you do, the more credit you get. If you find nothing [in prior art], you're considered the most efficient of all." *Id.*

23. *Id.*

24. In 2000, only 375 examiners replaced the 437 examiners who left the USPTO. *Id.*

25. *Id.*

particularly responsible for deceptive advertising and victimization of inventors.”²⁶ Because they were not bound to adhere to the same professional conduct as their lawyer colleagues, the Commissioner of Patents required all persons practicing before the USPTO to register in 1899.²⁷ In 1922, Congress gave the Commissioner the authority to set criteria to recognize agents and attorneys in the USPTO.²⁸ The Commissioner could prescribe regulations that govern the recognition of persons representing applicants before the USPTO and that may require them to show that they possess the necessary qualifications to render valuable service.²⁹

When the Commissioner began to regulate the “intelligence and moral character” of attorneys and agents in 1869, a substantial number of those that practiced were chemists or engineers familiar with the technical concepts to which the patent application is related.³⁰ Today, persons who participate in the patent process must show that they possess the necessary legal, scientific, and technical qualifications that are required to provide the patentees with competent representation. An applicant to the patent bar is considered to have the necessary scientific or technical training if he or she has earned a minimum of a bachelor’s degree in one of sixteen accepted disciplines.³¹ The accepted degrees include the physical sciences, life sciences, engineering disciplines, and computer science.³² Although this list is not exhaustive, it does not easily allow for the expanding areas of technology that are becoming patentable.

This may be one reason why questionable patents are granted. Examiners who are only qualified in traditional subject areas may issue invalid patents because they do not possess the necessary skills to review the applications filed in the new subject matter categories. Recent court decisions may also explain why such high numbers of invalid patents are granted. For example, the Federal Circuit held that

26. See *Sperry v. Florida*, 373 U.S. 379, 390 (1963).

27. *Id.* Congress granted the Commissioner of Patents power to regulate practice before the USPTO in 1861. *Id.* at 388.

28. *Id.* at 390.

29. 35 U.S.C. § 31 (repealed Nov. 29, 1999).

30. *Sperry*, 373 U.S. at 388–89.

31. U.S. PATENT & TRADEMARK OFFICE, VACANCY ANNOUNCEMENT, PTO–05–001, GS–1224 (2004) 1, <http://www.uspto.gov/web/offices/ac/ahrpa/ohr/jobs/files/05-001.pdf> [hereinafter QUALIFICATIONS LIST] (last visited Oct. 3, 2005).

32. See *id.* at 1–6.

business methods were patentable in 1998.³³ Mathematic algorithms, such as electronic, chemical, or mechanical algorithms, are patentable as a “process” if they produce a useful result and do not preempt other uses of the mathematical principle.³⁴ Following the decision, the USPTO was swamped with applications related to business modules.³⁵ The numbers of applications submitted in this area continue to increase each year. In 2004, approximately five times the number of applications submitted in 1998 was filed.³⁶ Other courts have held other complex technologies patentable as well. The expanding areas of technology have increased the number of patent applications that even qualified examiners must review. The demanding workload is overly burdensome.

III. CRITICAL ASSESSMENT OF STRATEGIES CURRENTLY IN PLACE

So far, the USPTO has implemented strategies to redress this problem. For example, it has instituted polices designed to improve patent quality in the area of business method inventions. To meet the resource needs in the business method-related arts, the USPTO has brought together examiners and new hires who share the interests and necessary backgrounds to review applications. The USPTO seeks examiners with knowledge and experience in the business method

33. See *State St. Bank & Trust Co. v. Signature Fin. Group*, 149 F.3d 1368, 1375 (Fed. Cir. 1998). In *State St. Bank & Trust Co.*, a patent was directed to a data processing system for implementing an investment structure for the administration and accounting of mutual funds. *Id.* at 1370. The court found that algorithms that are reduced to some type of practical application with a useful concrete result are patentable. *Id.* at 1373. The court also held that the patent in question was patentable even though its useful result was expressed in numbers, such as price, profit, percentage, cost, or loss. See *id.* at 1373–75.

34. See *AT&T Corp. v. Excel Commc'ns, Inc.*, 172 F.3d 1352, 1355–57 (Fed. Cir. 1999) (citing *State St. Bank & Trust Co.*, 149 F.3d at 1374–75). In *AT&T Corp.*, the plaintiff filed a patent describing a “message record for long-distance telephone calls.” *Id.* at 1353. The invention was “designed to operate in a telecommunications system with multiple long-distance service providers.” *Id.* The court found that the plaintiff corporation’s patent was valid because it fell within the “process” category of the four enumerated categories of patentable subject matter. See *id.* at 1361.

35. See WYNN COGGINS, BUSINESS METHODS STILL EXPERIENCING SUBSTANTIAL GROWTH—REPORT OF FISCAL YEAR 2001 STATISTICS, <http://www.uspto.gov/web/menu/pbmethod/fy2001strport.html> (last visited Oct. 27, 2005). An examination work assignment program was initiated to meet resource needs in the business method-related arts. *Id.*

36. See U.S. PATENT & TRADEMARK OFFICE, CLASS 705, APPLICATION FILING AND PATENTS ISSUED DATA, <http://www.uspto.gov/web/menu/pbmethod/applicationfiling.htm> (last visited Oct. 27, 2005). In 1998, 1340 applications were filed in the business related arts and 420 were granted. *Id.* In 2004, 6200 applications were filed in the business related arts and 282 were granted. *Id.* In 2001, 8700 business-related arts applications were filed. *Id.*

area.³⁷ These examiners likely possess data processing or computer degrees and relevant experience. It appears that the USPTO's business method patent initiative may be working. Although the USPTO receives an increased number of applications each year, it grants fewer patents. In 2004, 6200 applications were filed and only 282 were granted.³⁸ This suggests that greater scrutiny has been given to the validity and quality of each individual patent.

Many critics doubt the validity of business-related patents. Representative Howard Berman, a Democrat from California, critically assessed the strategy currently in place when he spoke at a hearing before the Subcommittee on Courts, the Internet, and Intellectual Property in 2001.³⁹ Representative Berman expressed several concerns. His first concern was that abstract ideas for conducting or organizing business operations that receive patent protection might preclude competition in business.⁴⁰ Secondly, he was concerned about the quality of some patents granted. Representative Berman believes that the USPTO issues patents that "simply cover age-old business practices," and that these patentees should not be rewarded for "putting old wine in new bottles."⁴¹ He believes that companies moving at "Internet speed" are especially at risk.⁴² They invest enormous sums of capital into their business plans and risk later learning that a rival company already patented important elements of their plan.⁴³

Representative Berman's assessment of the USPTO's business method strategy suggests that expanding patentable subject matter may, in some cases, adversely affect innovation. Similar arguments can be made for other complex technologies. Critics may alternatively argue that courts should continue to expand patentable subject matter as technology evolves because patent law encourages inventors to "push

37. See COGGINS, *supra* note 35. The USPTO sought examiners with experience in the fields of banking, securities, market analysis, real estate analysis, business consulting, management, sales, insurance, business information systems, and financial analysis. See *id.*

38. See *supra* note 36.

39. *2001 Business Method Patents: Hearing Before the Subcomm. on Courts, the Internet, and Intellectual Property*, 107th Cong. 72-299 (2001) [hereinafter *Hearing*] (statement of Rep. Howard Berman), available at http://commdocs.house.gov/committees/judiciary/hju72299.000/hju72299_0.htm (last visited Nov. 15, 2005).

40. *Id.*

41. *Id.*

42. *Id.*

43. *Id.* Technology companies do not know what business methods are claimed in rival applications for at least eighteen months after filing.

the boundary of knowledge and possibility.”⁴⁴ In fact, they may argue that the problems with questionable patents have nothing to do with subject matter. Instead, themes of “regulatory capture” and “the revolving door” are prevalent in patent law. These may be the primary reasons why so many invalid patents are granted.

The issue of “regulatory capture” presents itself when regulators serve the interests of those they are intended to regulate.⁴⁵ It occurs when regulators and regulatees work closely together. In the USPTO, patent applicants cooperate with the examiners and provide them with the information necessary for the examiners to complete their review. If the applicants’ attorney or agent earns the sympathies of the examiners, they may receive extra consideration.⁴⁶ This leads to a point when the USPTO serves the interests of its subjects more than the general public. One problem associated with regulatory capture is that regulators tend to cooperate with their subjects and regulatees are, thus, able to use regulation to prevent competition.⁴⁷ This is apparent in patent law. Companies and inventors are able to use the current examination process to keep down competition when they cooperate with an examiner who subsequently grants them a patent. The USPTO examiners are too inclined to issue patents to the companies with which they work closely. A poor decision will unfairly restrict competition in the marketplace. The USPTO is a regulatory agency that has been captured.

One commentator described the mechanics of regulatory capture in the following way:

You give more attention to a particular law or agency if you feel that you have something at stake—you’re more likely to know about the laws and policies that affect your work, your hobbies, and issues of particular concern to you. And if you’re someone important in a business that’s about to come under regulation, you have a *lot* at stake.⁴⁸

Examiners may not give sufficient weight to the social costs that

44. *Id.*

45. Posting of Bruce Baugh to BlogSpot, http://www.fortunewriter.blogspot.com/2002_06_30_fortunewriter_archive.html (July 3, 2002, 13:35 EST). Bruce Baugh is a freelance writer for Blogger, a service owned by Google that focuses on helping people have their own voice on the World Wide Web and organize the world’s information from a personal perspective.

46. *Id.*

47. *Id.*

48. *Id.*

their decisions may have on parties in the marketplace, with the exception of the applicant.⁴⁹ In many ways, this balance inquiry best describes all practitioners working in the area of patent law: examiners, patent applicants, patent owners, and patent challengers. Everybody is cooperating with each other to issue as many patents as possible.

With the exception of the FTC's recent interest in patent law reform, no outspoken advocates have highlighted patent issues and brought them into public attention. Patent policy presents many economic and social issues that are of great concern to everybody. The general public is greatly affected by the decisions of Congress and the USPTO, yet the issues that relate to patent law have not been the subject of public debate in recent years. Discussion of reform is great among patent circles and those most affected by patent regulation, namely large corporations that seek many patents; however, there are few that lobby for the consumers and the other parties whose social interests are affected as well. Without significant public participation in patent reform lobby efforts, that is, participation by persons and entities whose interests are not entirely related to patent law, little change to the system will be made. The parties whose interests are most at stake will remain protected at the expense of others.

Every regulatory agency has a duty to protect the public. It may sometimes appear that the USPTO confuses this duty with one to grant many patents. This situation presents a conflict of interest issue. This conflict is only increased by the "revolving door" problem prevalent in the USPTO. Each year, the USPTO loses hundreds of examiners to the more lucrative private sector. These examiners leave to work for large law firms or in-house for large corporations. In many cases, these examiners intend to work at the USPTO for only a short while. The USPTO offers them invaluable experience that they later use to promote themselves within the profession. One problem that this presents is possible bias. These examiners review applications filed by law firms and companies for which they wish to work. They may be more inclined to grant even more questionable patents if it will help them gain favor when they seek to enter the private sector.

One reason these examiners aspire to leave their government position to enter the private sector is compensation. In the USPTO, salary is dependent on the examiner's individual knowledge or

49. Shapiro, *supra* note 4, at 1022–23. Other companies and final consumers may also be affected when the examiner grants a patent. *Id.* at 1030–31.

experience. In 2005, an examiner's salary scale started at \$34,548.⁵⁰ An examiner who has also earned a Juris Doctorate started at \$49,729.⁵¹ Examiners receive bonuses of up to ten percent of their salaries for the number of patents they issue.⁵² This bonus incentive places pressure on the patent examiner to grant a questionable patent in error rather than deny it.⁵³

Examiners' salaries cannot compete with the average starting salary for college graduates with degrees in the same discipline. Graduates with a degree in civil engineering started at \$43,159 in 2005.⁵⁴ Similarly, graduates earned \$51,042 with a degree in computer science, \$51,113 with a degree in electrical engineering, and \$53,659 with a degree in chemical engineering.⁵⁵ These salaries are approximately \$10,000 to \$20,000 more than what the USPTO can offer. The starting salary of an examiner who obtained a Juris Doctorate is also quite modest when compared to patent attorneys. The median salary for a Juris Doctorate in private practice is \$90,000 nationwide.⁵⁶ Patent attorneys make considerably more.

The USPTO does not have the funds to compete with the more lucrative private sector. It is especially difficult for the USPTO to compete for graduates with advanced degrees. A person with very sophisticated academic accomplishments will not likely consider working for the government when the private sector lures them with much higher pay and prestige. Although employers demand significant use of this specialized knowledge, they compensate examiners for the sacrifices they made and the time they spent acquiring that knowledge.

50. U.S. PATENT & TRADEMARK OFFICE, SPECIAL SALARY RATE TABLE, <http://www.usptocareers.gov/salaryrates.asp> [hereinafter RATE TABLE] (last visited Oct. 3, 2005). To determine grade, see QUALIFICATIONS LIST, *supra* note 31. Pay levels are dependent on examiner qualifications. *See id.* at 3–6. An examiner with a bachelor's degree will start at \$34,548. RATE TABLE, *supra*; QUALIFICATIONS LIST, *supra* note 31, at 3–5. The examiner will start at \$42,794 if he demonstrated superior academic achievement in school (GPA above 3.00). RATE TABLE, *supra*; QUALIFICATIONS LIST, *supra* note 31, at 5. Examiners with one year of graduate education will start at \$42,794. RATE TABLE, *supra*; QUALIFICATIONS LIST, *supra* note 31, at 5–6.

51. *See* RATE TABLE, *supra* note 50; QUALIFICATIONS LIST, *supra* note 31, at 5–6.

52. *See* Michael R. Taylor & Jerry Cayford, *American Patent Policy, Biotechnology, and African Agriculture: The Case for Policy Change*, 17 HARV. J.L. & TECH. 321, 357 (2004).

53. *See id.*

54. Blanca Torres, *Getting in the Job Game*, BALT. SUN, Apr. 13, 2005, at 1K, 3K.

55. *Id.*

56. *Employment Rate Dips for New Law School Graduates*, N.Y. L.J., Aug. 1, 2003, at 1. The overall median salary for new lawyers was \$60,000. *Id.*

IV. PROPOSED SOLUTION: SOFT-SCIENCE EXAMINERS AT THE USPTO

The USPTO should consider inviting soft-science graduates to work as examiners. The “soft-sciences” as used here are the general disciplines of psychology, sociology, political science, and economics.⁵⁷ At least four reasons militate in favor of including soft-science patent application reviews: (1) the USPTO can increase the number of examiners at a relatively low cost; (2) more time can be devoted to each questionable patent application review; (3) soft-science examiners use complementary skills and insights that might promote fewer erroneous patent approvals;⁵⁸ and (4) fewer parties will be forced to litigate over patent validity.

The first reason why the USPTO should recognize soft-sciences lies in relative costs. The USPTO cannot always raise fees to provide for more funding. Congress reserves the right to divert funds from fees paid to the USPTO.⁵⁹ The USPTO has lost approximately \$500 million in diverted user fees since 1990.⁶⁰ In 2003 alone, Congress intended to divert as much as \$162 million of the \$237 million USPTO budget increase to homeland security efforts.⁶¹ The USPTO cannot continue to raise fees so long as Congress has the right to divert funds. In the alternative, the USPTO can cut costs by hiring graduates with soft-science degrees. The average starting salary in 2005 is \$29,060 for liberal arts graduates.⁶² The USPTO can compete with this figure. In fact, it can offer soft-science graduates less than the \$34,548 it offers

57. See Wikipedia, Social Sciences, http://en.wikipedia.org/wiki/Social_science (last visited Aug. 30 2005). Soft-sciences, also known as social sciences, differ from the humanities and the arts in that the soft-science disciplines emphasize the scientific method in the study of the human aspects of the world. Many scientists refer to the soft-sciences as the harder sciences given the complexity of their subject matter. Psychology studies the human mind and behavior; sociology examines human society and human relationships; political science studies the governing of groups and countries; and economics concerns the production and allocation of wealth in society. See *id.*

58. See generally Wikipedia, Scientific Method, http://en.wikipedia.org/wiki/Scientific_method (last visited Aug. 30, 2005). The soft-science disciplines emphasize the applications of scientific methods or other rigorous standards of evidence fundamental to scientific investigation and the acquisition of new knowledge. See *id.*

59. Joseph N. Hosteny, *Post-Grant Opposition: Building on Sand*, INTELL. PROP. TODAY, Aug. 2004, at 8. Congress continues to divert fees and this “shortfall may now approach \$1 billion.” *Id.*

60. *Id.*

61. Barnett, *supra* note 21, at 34.

62. Torres, *supra* note 54, at 1K.

hard-science graduates because it can delegate different duties to the two types of examiners.

The USPTO should maintain its strict science and technical requirements for the examiners who first review applications. These examiners will review the claims in the patent and conduct a basic search for prior art. The soft-science examiners can then conduct a more in-depth secondary search when there remains a question as to validity or obviousness. This means that the average time spent on one questionable application will nearly double. Any prior art that may have been missed by the first examiner is likely to be discovered by the second.

Some critics may argue that soft-science examiners will not have the scientific or technical background necessary to read claims and, thus, cannot properly conduct a prior art search if they do not understand the subject matter they are researching. To counter this argument, one could argue that a secondary reviewer does not need to have a sophisticated knowledge of the technical or engineering sciences so long as he or she understands the complex and sophisticated level of legal writing involved in constructing a claim. The secondary examiner would only need to be familiar with claim drafting language and be efficient in researching prior art. This can certainly help the USPTO weed out “thesaurus patents.”⁶³ When applicants use multiple adjectives to describe an invention, two patents that are functionally redundant may be issued.⁶⁴ An examiner may fail to discover prior art if different adjectives are used to describe similar inventions. A secondary examiner may locate prior art simply by conducting different word searches. This will prevent some invalid patents from issuing.

Soft-science examiners may be particularly useful when considering whether a questionable patent is non-obvious. A patent may not be obtained if the differences between the subject matter sought to be patented and the prior art would have been obvious to a person having ordinary skill in the art.⁶⁵ Obviousness must be determined on the basis

63. Barnett, *supra* note 21, at 34. Applicants may use arcane or creative language in applications. *See id.* Examiners can fail to discover prior art in these situations because they may conduct only a basic search using a word or phrase in the claim. *Id.* These thesaurus patents can cost companies millions to invalidate patents. *See id.*

64. *Id.*

65. *See* 35 U.S.C. § 103 (2000). Non-obviousness requirements express congressional determination that the purposes behind the patent clause are best served by free competition and exploitation of that which is either already available to the public or may be readily discerned from publicly available material. *See Bonita Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150 (1989).

of both technical factors and secondary considerations, such as historical events and conditions.⁶⁶ Secondary considerations that should be considered when determining obviousness are the following: failure of others to solve the problem, long-felt need in the industry for the device, and widespread commercial success.⁶⁷ Secondary considerations may be relevant in determining obviousness, but they cannot alone determine patentability.⁶⁸ However, when these secondary considerations are afforded great weight, soft-science examiners may prove to be particularly useful. Because the liberal arts foster a social awareness in its students, examiners who studied sociology, political science, economics, and other related disciplines may be in a better position to determine how society will better benefit if a patent is granted or denied. A vast number of patents are invalidated in courts for obviousness. Commercial success and long-felt need are not scientific concepts. A secondary examiner can prevent invalid patents from being granted if there are questions as to its obviousness during review.

Examiners with soft-science degrees may also alleviate USPTO problems with regulatory capture and the revolving door. Critics have suggested that the USPTO is too inclined to issue patents without first weighing the costs to the broader public.⁶⁹ Soft-science examiners could prevent this problem because it would be their responsibility to consider these costs. They could better balance the interests of the inventor with those of rivals and consumers. In addition, conflict of interest issues could be alleviated as well. Soft-science examiners would not be interested in leaving the USPTO to work for patent law firms or work as in-house counsel at corporations because they could not promote themselves within the patent-related private sector. For this reason, the soft-science examiners would not make biased decisions.

Every year many patents are held invalid in court. Parties spend millions of dollars litigating validity. The average patent infringement case costs each party two million to litigate.⁷⁰ One lawyer proposes that

66. See *Arthur J. Schmitt Found. v. Stockham Valves & Fittings, Inc.*, 292 F. Supp. 893, 907 (N.D. Ala. 1966).

67. See *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). “[S]econdary considerations such commercial success, long felt but unfulfilled needs, and failure of others to devise are relevant indicia of nonobviousness.” *Hensley Equip. Co. v. Esco Corp.*, 375 F.2d 432, 436 n.5 (9th Cir. 1967) (quoting *Graham*, 383 U.S. at 17–18).

68. *Univ. of Ill. Found. v. Winegard Co.*, 402 F.2d 125, 127–28 (8th Cir. 1968).

69. See *supra* note 45.

70. Joseph Farrell & Robert P. Merges, *Incentives to Challenge and Defend Patents: Why Litigation Won't Reliably Fix Patent Office Errors and Why Administrative Patent Review Might Help*, 19 *BERKELEY TECH. L.J.* 943, 948 (2004). Infringement cases cost parties

the USPTO could issue patents immediately after the applications are filed.⁷¹ He suggests that because parties litigate the validity anyhow, the USPTO should allow almost all patents to be granted without a real examination. Unfortunately, litigation cannot be relied upon to assess patent validity.⁷² Sometimes parties may not be aware that an invalid patent exists that infringes on their own valid one. Secondly, the costs of litigating an infringement suit may not be worthwhile for companies that risk losing many of their assets. Many parties cannot afford to litigate. The patent system serves as a tool to help inventors recover their costs of R&D. It should not cost them nearly as much to defend their patent.

The lawyer who suggested that the USPTO issue patents immediately believes that this is a possible way to reduce poor quality patents from being issued.⁷³ He believes that the USPTO could do a better job if examiners' workloads were reduced, and if the USPTO could maintain its budget.⁷⁴ The same goal can be accomplished if the USPTO invites soft-science graduates to work as secondary examiners. This will certainly raise criticisms in patent circles, particularly because the patent bar has worked hard to establish its scientific requirements to ensure that its examiners are competent enough to work towards accomplishing USPTO goals; however, those who are seriously concerned about the current patent process should consider this reform idea.

A. Criticisms That May Be Raised

Scientists who work for the USPTO or practice patent law are respected for their sophisticated knowledge of challenging disciplines. They may be concerned about their pay scale or their status in the patent community if the USPTO were to recognize soft-science examiners. These scientists may fear that inventors would lose confidence in the USPTO. Inventors may fear that their patents would be less secure. To answer these concerns, the USPTO has current and proposed competence rules in place.⁷⁵ Examiners must adhere to the

\$2 million when they risk losing \$1 million to \$25 million. *See id.*

71. Joseph N. Hosteny, *Litigators Corner: A Modest Proposal*, INTELL. PROP. TODAY, Feb. 2005, at 12.

72. *See Bonita Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150 (1989).

73. *See Hosteny, supra* note 71, at 13.

74. *See id.*

75. *See* 37 C.F.R. § 10.77 (2004). A proposed competence rule makes it a conduct violation for examiners to handle legal matters without the sufficient legal or scientific

USPTO Code of Professional Responsibility.⁷⁶ The Code states that an examiner cannot handle a legal matter in which he or she is not competent unless he associates with another practitioner who is technically competent in a matter.⁷⁷ The soft-science examiners are competent enough to conduct a second prior art search when there are questions as to obviousness or validity. The first examiner will always have the necessary scientific and technical training. There would be no drastic changes made to this aspect of the current patent process. Secondary examiners would only assist the first examiner. This proposal can be further supported if the first examiner sets up the field of the search and its guidelines. There is no reason why practitioners or inventors should lose confidence in the USPTO.

B. USPTO Responses to Criticism

For years, judges in the Federal Circuit have heard patent cases without formal scientific training. Judges act more like “gatekeepers” because they assess how reliable the science is in patent validity cases.⁷⁸ They screen out unreliable science.⁷⁹ One commentator suggests that judges become sufficiently competent to render decisions about scientific matters by virtue of their background or experience “on the bench.”⁸⁰ Through their USPTO experience, these secondary examiners will also gain familiarity in the sciences by conducting searches. Another commentator has suggested that judges may be in the best position to rule on issues of validity or obviousness because they do not think scientifically.⁸¹ Because judges do not think in terms of mathematical algorithms or complex chemical equations, they can look at questionable patent matter from an outside perspective and say, “Gee, that is really obvious.” Scientists may be so immersed in their disciplines that they are unable to recognize what is obvious to others. A soft-science examiner could offer this outside perspective as well.

training. Changes to Representation of Others Before the United States Patent and Trademark Office, 68 Fed. Reg. 69,442–02 (Dec. 12, 2003) (to be codified at 37 C.F.R. § 11.101).

76. *Id.*

77. *Id.*

78. Scott Brewer, *Scientific Expert Testimony and Intellectual Due Process*, 107 *YALE L.J.* 1535, 1680 (1998). See *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 597 (1993).

79. Brewer, *supra* note 78, at 1680.

80. *Id.* The author discusses a judge’s competency to make decisions regarding scientific expert testimony. *Id.*

81. Interview with Professor Michael Henry Davis, Professor of Law, Cleveland-Marshall College of Law, in Cleveland, Ohio (Feb. 2005).

Most federal judges do not possess a strong familiarity of the technical and engineering sciences. Yet, they have ruled on patent validity for years. Soft-science examiners will not compromise the USPTO policy that examiners must meet the science and technical qualifications because they will only be used to conduct secondary reviews when the obviousness or validity of the patentable subject matter is in question. The first examiner will continue to conduct the same prior art search that is part of the current patent process.

V. CONCLUSION

In recent years, the USPTO has admitted practitioners to the patent bar that possess unique degrees, such as package engineering, in response to expanding areas of technology. Because so few people earn highly specialized degrees, the USPTO cannot succeed if it recruits only these few graduates. The business method initiative the USPTO enacted in response to the increased number of business module patent applications has proven successful. By recruiting examiners with degrees and experience in market analysis, financial analysis, securities, etc., the USPTO has improved the quality of the patents it grants in this area. If the USPTO recruits examiners who have majored in the soft-sciences, fewer weak or questionable patents would be issued as well. The USPTO would be able to devote more time to review questionable subject matter. Not as many invalid patents would be granted, and fewer parties would be forced to spend millions on litigation. The USPTO would also save substantial funds because the salaries it could offer to the new examiners would not be as financially burdensome.

Inviting people with soft-science degrees into the USPTO is a reform proposal that deserves considerable attention. A proper regulatory proposal needs to address weak and poor quality patents and the problems they create in the marketplace. Many of the problems the USPTO faces can be resolved, in part, by this proposal. The patent system encourages inventors to push beyond the boundary of possibility.⁸² Perhaps the USPTO should push beyond its own boundaries and consider utilizing soft-science examiners.

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82. See *supra* note 39.

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