This commentary offers a critical analysis of the working paper "*Probabilistic Patents*" by Mark A. Lemley and Carl Shapiro. Because many patents in the United States are granted improperly, which is due to the malfunctioning of the patent-granting system and causes major social damage, this commentary pays special attention to suggestions for reforming this system of granting patents. In particular, the proposals of hiring more patent examiners, establishing a more effective opposition system, and raising the legal standard for nonobviousness will be examined in the following.

According to Lemley and Shapiro, patents generally contain two different elements of uncertainty: the commercial significance and the validity and scope of an invention being patented. The issue of whether more patent examiners should be hired is dominated by the question of which part of the uncertainty should be diminished. Patent reforms that raise the financial resources (by hiring more patent examiners, for example) to increase certainty about the validity and scope of issued patents would make no economic sense because the proportion of commercially significant patents in comparison to all patent applications is vanishingly small.[1] In specific terms, 95 percent of all patents are commercially insignificant since they are neither litigated nor opposed nor licensed for a royalty. Whether or not these insignificant patents are highly valid and scoped is irrelevant and means that 95 percent of the additional cost would be wasted. In addition to the idea that the patent examiners' experience and qualification should be improved to enhance the examination process through better hiring and compensation practices, the authors support the argument that it would be more effective to focus on patent applications that are likely to be commercially significant.[2] This would be possible without hiring additional examiners.

Most authors agree with the fact that the wrong works are being patented and patents are granted to "innovations" based on obvious knowledge. However, they have differing arguments on how to solve this problem. In the past few years, the number of examiners has been relatively stable while the amount and complexity of applications has increased. Furthermore, the employee turnover is higher. Consequently, the number of experienced examiners is relatively small but they are increasingly confronted with more complex applications. This results in a decrease of patent quality with high social costs.[3] All of the involved parties have the goal of reducing the high pendency of patent applications, which was about 35 months in 2009[4]. This goal could be achieved by hiring more examiners.[5] The idea presented by Farrell and Merges would be a different proposition to increase the certainty of patents and get more information into the process: "The USPTO could regularly, rather than exceptionally, have more than one examiner assess an application and could investigate further when examiners disagree." Up to now, this approach has only been applied in fields with substantial economic importance.[6]

[1] Lemley and Shapiro (2005), p. 76
[2] Lemley and Shapiro (2005), p. 84
[3] Merril ed al. (2004), p. 104
[4] United States Patent and Trademark Office (1) (2010)
[5] Shapiro (2004), p. 1036
[6] Farrell and Merges (2004), p. 960

Compared with other patent offices, the United States Patent and Trademark Office (PTO or USPTO) is relatively understaffed: During 2009, 6100 patent examiners worked for the USPTO and about 485,500 new patent applications were filed. This would result in an average of 80 new applications per examiner and year.[7] In Europe, 4500 examiners were employed and 135,000 new patent applications were filed during the same period. Each examiner was required to process an average of 30 new applications, which is less than half the number handled by a US examiner.[8] Contrary to the conclusion reached by Lemley and Shapiro, these reasons indicate that the USPTO should receive more funding and should hire more examiners. This would allow each examiner to devote more time to analyzing the applications.

Another possibility for obtaining more information and expertise about patent applications, and nonobvious patents in particular, would be to establish an opposition system that motivates third parties (consumers, competitors, and others) to challenge a patent without becoming involved in costly and lengthy patent litigation.[9]

The Federal Trade Commission (FTC) recommends an administrative procedure that allows third parties to adduce evidence of a patent application's invalidity in an opposition procedure, which could start when the application becomes public. Sometimes this is the case eighteen months after the application was submitted, which would be seventeen months before the average pendency ends. The reason for this time line is to protect patent applicants from possible harassment by competitors. The FTC also recommends a procedure allowing challenges that address only important patentability issues, which should be presided over by a patent judge. Because competitors might use this proceeding to cause an undue delay in requesting post-grant review or start multiple petitions, it should be restricted by an ending time limit. The authorizing legislation should be qualified to carefully verify the circumscribe discovery and enact the appropriate sanctions.[10]

Lemley and Shapiro see the "free-riding problem" as an obstacle of opposition systems. No matter how questionable a patent might be, successfully challenging it will result in a social benefit. In contrast to the benefit, this approach would require the cost to be borne by the third party that challenges the patent. Although these costs are significantly lower than in litigation, the third party would lack sufficient incentive to challenge the patent. This is an asymmetry of stakes, which could be decreased by relying on fee shifting or offering a grant to a successful challenger.[11] A second aspect of the free-riding problem could be the signal that a challenger sends to the patent holder. Challenging a patent shows that the challenger has a major commercial interest in invalidating the patent.[12]

[7] United States Patent and Trademark Office (2) (2010)
[8] European Patent Office (2010)
[9] Lemley and Shapiro (2005), p. 85
[10] Federal Trade Commission (2003), p. 9
[11] Farrell and Merges (2004), p. 952
[12] Shapiro (2004), p. 1041

This "free-riding problem" cannot be the reason – or at least not the only reason – why the reexamination process does not play an important role in the United States. The European Patent Office (EPO) has an opposition procedure that serves a similar purpose; however, it is applied more frequently than the reexamination procedure in the United States. The procedures of these two systems differ dramatically and comparisons must be approached with great caution. The opposition procedure is a more effective tool for sorting out weak patents and assessing the value of patents than the reexamination procedure of the USPTO. Through the use of empirical regression analysis in their working paper, Harhoff, Scherer, and Vopel (2002) came to the conclusion that in Germany (where the patent system is quite similar to the one applied at the EPO) "a patent which has defeated opposition procedure (…) is considerably more valuable (by a factor of 11.2) than a patent that was never attacked". Eight percent of all EPO patents are opposed and fourteen percent of these oppositions lead to a revocation. Patents by corporations are opposed far more often than the average patent and the estimated costs (including attorney fees) were between USD 10,000 and 30,000 in 1999.[13] The PTO opposition law distinguishes itself from the USPTO reexamination law in the following crucial points: Anyone can contest the validity of a patent for nine months after its issuance in an opposition, which leads to a letter exchange between the patentee and the opponent in preparation for presenting their case to the EPO. Subsequently, the case is presented during an oral proceeding at the EPO in Munich. This proceeding and the available facts are the basis for the decision by the judge, who can reject the opposition or amend or revoke the patent. Under the reexamination law, only the patentee is engaged in a discussion with the USPTO to establish the validity of the reasons. Quite frequently (about forty-four percent of all reexaminations), the patentee is the initiator of the proceeding because patent holders hope to strengthen their patents in the face of newly revealed prior art. There is almost no situation in which the patent holder initiates an opposition proceeding at the EPO.[14]

Japan provides a different positive example. With an opposition system that is similar to the one in Europe, it is also quite successful in distinguishing between valuable and worthless patent applications.

A third proposal to reduce the number of improperly issued patents by raising the legal standard for nonobviousness will be analyzed in the following. The aim of this proposal is to make it more difficult for applicants to obtain patent protection for inventions that only differ marginally from existing patents or with differences that are obvious to a "person of ordinary skill in the art"[15] at the time that the invention was made. According to the U.S. Supreme Court, obviousness depends on the scope and content of the prior art, the difference between the claimed invention and the prior art, the level of skill of the average practitioner in the art, and any relevant secondary consideration, including commercial success, long felt but unsolved needs, and the failure of others.[16] The courts rule on various tests to evaluate the obviousness of a claimed invention. The "commercial success test" and the "suggestion test" are very familiar

[13] Harhoff, Scherer and Vopel (2002), p. 1351
[14] Graham, Hall, Harhoff and Mowery (2002), p. 11
[15] Lemley and Shapiro (2005), p. 84
[16] U.S. Supreme Court in Graham v. John Deere Co.

and frequently applied. The "suggestion test" assumes the ability to determine whether prior art would inevitably lead to the claimed invention. This includes the effect of hindsight, which means that inventions often look obvious in retrospect. Critics assert that the "suggestion test" is too narrow because it considers an invention to be obvious only if it has been specifically described as a possibility in the referenced prior art.[17] This would result in a less rigorous nonobviuosness standard and in the issuance of more obvious patents. The courts have perceived this problem and adjusted the "suggestion test" in recent opinions to a broader version. It now allows the inclusion of non-art grounds such as ordinary skill in the art and the nature of the problem being solved that is not embedded in prior art references.[18] Since the USPTO is responsible for these decision-making processes, it has a huge influence on the quality of the patents that are issued.

In conclusion, the patent law and quality of the patents being issued is very important for the capacity of innovation in industrial economies. For example, the fact that U.S. companies spent over one billion dollars to enforce or defend against patent lawsuits in 1991 but spent 3.7 billion dollars on research and development (R&D) during that time period[19] leads to the perception that U.S. patent law is interlaced with weak points and still has much room for improvement. Some suggestions for improvement have been analyzed in this commentary. Compared with the EPO, the USPTO is understaffed for dealing with the increasing technological complexity and amount of information. Hiring more examiners and raising the legal standard for nonobviousness would lead to the issuance of fewer worthless patents and less additional cost for the economy and the companies. Moreover, a reexamination process similar to the opposition process in Europe would also help in avoiding costly litigations.

[17] Samardzija (2007), p.190
[18] Cotropia (2006), p.1533
[19] Samardzija (2007), p.190

REFERENCE LIST

Cotropia, Christopher A. 2006. “Patent Law Viewed Through an Evidentiary Lens: The 'Suggestion Test' as a Rule of Evidence.” 6, pp. 1517-1588

European Patent Office. 2010. *Statistics: File 1: European applications filed in 2009 and staff and resources* http://www.epo.org/about-us/office/annual-reports/2009.html (November 2010)

Farrell, Joseph and Merges, Robert P. 2004. “Incentives to Challenge and Defend Patents: Why Litigation Won’t Reliably Fix Patent Office Errors and Why Administrative Patent Review Might Help.” *Berkeley Technology Law Journal.* 19, pp. 943-970

Federal Trade Commission. 2003. “To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy: Executive Summary.” Available at http://www.ftc.gov/os/2003/10/innovationrptsummery.pdf (November 2010)

Graham, Stuart J. H., Bronwyn H. Hall, Dietmar Harhoff, and David C. Mowery. 2002. “Post-Issue Patent ‘Quality Control’: A Comparative Study of US Petnet Re-examination and European Patent Oppositions.” *NBER Working Paper Series*. 8807, pp. 1-44

Harhoff, Dietmar, Frederic M. Scherer, and Katrin Vopel. 2002. “Citations, family size, opposition and the value of patent rights.” *Research Policy*. 32, pp. 1343–1363

Lemley, Mark A. and Shapiro, Carl. 2005. “Probabilistic Patents.” *Journal of Economic Perspectives*. 19:2, pp.75-98.

Merril Stephan A., Richard C. Levin, and Mark B. Myers. 2004. “A Patent System for the 21st Century.” *National Academies Press*. Available on http://www.nap.edu/catalog/10976.html (November 2010)

Samardzija, Michael R. 2007. “The Obvious War.” *Science Magazine.* 315, pp. 190-191

Shapiro, Carl. 2004. “Patent System Reform: Economic Analysis and Critique.” *Berkeley Technology Law Journal*. 19, pp. 1017-1047

United States Patent and Trademark Office (1). 2010. *Table 1: Summary of patent examining activities.* http://www.uspto.gov/web/offices/com/annual/2009/oai_05_wlt_01.html#Note7a (November 2010)

United States Patent and Trademark Office (2). 2010. *Table 2: Patent Applications Filed and Table 28: End of Year Personnel,* http://www.uspto.gov/web/offices/com/annual/2009/oai_05_wlt_00.html (November 2010)

U.S. Supreme Court in Graham v. John Deere Co. (1966). 383 U.S. 1, 17