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Multinational Patent Acquisition and Enforcement: Public Policy Challenges and Opportunities for Innovative Firms

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Summary

Globalization and technology have been viewed as increasingly prominent influences upon the U.S. economy. This perception has led to renewed attention towards the pragmatic aspects and policies of multinational patent acquisition and enforcement. Patent protection has long been understood to be a fundamental mechanism for encouraging the pursuit of technological knowledge, particularly for entrepreneurs and small, innovative firms. Recent trends reveal that U.S. industry has come to rely more heavily upon the world's patent systems, as compared to other intellectual property alternatives such as trade secrecy.

Although patent protection in a single jurisdiction is often ineffective to protect the interests of inventors, no true global patent system exists. If inventors desire intellectual property protection in a particular country, they must specifically procure a patent within that jurisdiction. Patent rights do not arise automatically. Instead, inventors must submit applications to a national or regional patent office. Patent examiners then assess whether the application fully discloses and distinctly claims a new and nonobvious invention. If allowed to issue, a granted patent provides its proprietor with the right to exclude others from making, using or selling the patented invention. Patent rights are not self-enforcing, however, and those patent owners who wish to compel others to observe their intellectual property rights usually must commence civil litigation.

The patent systems of the United States and its trading partners are linked through a handful of international agreements that, together, comprise the international patent regime. The oldest of these treaties, the Paris Convention, established an international priority system that facilitates the filing of patent applications in many jurisdictions. The Patent Cooperation Treaty built upon the Paris Convention by establishing a further procedural framework for expediting multinational patent acquisition. Finally, the World Trade Organization Agreement on Trade-Related Aspects of Intellectual Property Rights, the so-called TRIPS Agreement, in part required all of its signatories to provide for minimum substantive standards of patent protection and enforcement.

Acquiring and enforcing patent rights around the world is often a complex and expensive task. Entrepreneurs must additionally deal with considerable delays, difficulties in obtaining professional representation, differences in national patent laws, inconsistent results and the particular problems of the developing world. Should Congress decide to address this issue, legislative options for addressing the multinational patent system include offering financial support to inventors, assessing the impact of legal harmonization, reviewing patent office worksharing initiatives, providing technical assistance for foreign patent officials, and considering the propriety of an international agreement pertaining to patent enforcement.

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Introduction

Observers have increasingly recognized the prominent role technological advances play in driving the global economy.[1] As a result, interest in both innovative enterprises and the international patent system has expanded. Entrepreneurs and small, innovative firms are generally perceived as a major source of innovative products and processes.[2] By allowing enterprises to capture the benefits of their research and development efforts, the patent system too is understood to be a fundamental mechanism for encouraging the pursuit of technological knowledge.[3]

Globalization trends have brought with them growing international trade, increasing flows of information and more distributed manufacturing capabilities.[4] As a result, patent protection in a single country is often insufficient to protect inventors. To be effective in an increasingly global economy, even individual inventors and small firms must often secure patent rights in multiple jurisdictions.[5]

Obtaining and enforcing patent rights in many countries can prove a demanding endeavor, however. No true global patent system exists. Inventors who seek intellectual property protection must file individual applications in each country or region where patent rights are sought. This task can be one of significant expense, practical difficulty and legal complexity. Even where patent rights have been successfully procured, they are not self-enforcing. Innovative enterprises must often invoke civil litigation in order to compel competitors to respect their patent rights.

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[1]Tassey, Gregory, *The Economics of R&D Policy* (Connecticut: Quorum Books, 1997); Edwin Mansfield, "Intellectual Property Rights, Technological Change, and Economic Growth," in *Intellectual Property Rights and Capital Formation in then Next Decade*, eds. Charles E. Walker & Mark A. Bloomfield (New York: University Press of America, 1988), 5.

[2]Cordes, Joseph J. et al., *A Survey of High Technology Firms*, Small Business Admin. Contract No. SBA-8141-OA94 (Feb. 1999).

[3]Adelman, Martin J. et al., *Patent Law: Cases and Materials* (Minnesota: West Publishing Co., 1998), 1.

[4]Friedman, Thomas L., *The Lexus and the Olive Tree* (Farrar, Straus & Giroux 1999).

[5]Thomas, John R., "Litigation Beyond the Technological Frontier: Comparative Approaches to Multinational Patent Enforcement," 27 *Law and Policy in International Business* (1996), 277.

This undertaking too may require individual lawsuits in each country where a patent has issued, an effort that has been described as "fractionalized and onerous."[6]

This report provides an overview of multinational patent acquisition and enforcement. It begins by explaining the significance of entrepreneurs and small, innovative firms in high technology industries. This report then introduces the patent system and describes the role of patents in the process of technological change. Patent acquisition and enforcement mechanisms both domestically and abroad are then reviewed. This report next provides an overview of the international agreements that together comprise the international patent system.

With this background complete, this report next catalogues persistent concerns that innovative firms have faced when interacting with the multinational patent system. Among these challenges are expense, delay, obtaining professional representation, differences among national patent laws, inconsistent rulings and problems of the developing world. This report then closes with a discussion of legislative issues and options.

The Role of Patents in Entrepreneurship

Technological advancement is a principal driving force in the growth of the U.S. economy.[7] Technical innovations contribute to the creation of new goods and services, new industries, new jobs and new capital. They can expand the range of services offered and extend the geographic distribution of those services. Where national problems are amenable to technological solutions, innovation also contributes to the resolution of these problems.

Entrepreneurs and small, innovative firms play a role in the technological advancement and economic growth of the United States.[8] Several studies commissioned by U.S. federal agencies have concluded that such enterprises are a significant source of innovative products and services. For example, the National Academy of Engineering concluded that "small high-tech companies play a critical and diverse role in creating new products and services, in developing new industries, and in driving technological change and growth in the U.S. economy."[9] This assessment was founded on the ability of small firms to develop markets rapidly, generate new goods and services, and offer diverse products. The study also concluded that small

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[6]*Ibid.*

[7]Tassey, Gregory, *The Economics of R&D Policy* (Connecticut: Quorum Books, 1997), 54. *See also* Congressional Research Service, *Patents and Innovation: Issues in Patent Law Reform*, by Schacht, Wendy H., CRS Report 97-599, 24 August 1999, 2-4.

[8]National Science Board, *Science and Engineering Indicators, 1993*, 8 Dec. 1993, 185. *See also* Congressional Research Service, *Small, High Tech Companies and Their Role in the Economy: Issues in the Reauthorization of the Small Business Innovation (SBIR) Program*, by Schacht, Wendy H., CRS Report RL30216, 28 May 1999, 1-6.

[9]National Academy of Engineering, *Risk & Innovation: The Role and Importance of Small High-Tech Companies in the U.S. Economy* (Washington: National Academy Press, 1995), 37.

businesses were less risk adverse than larger, established corporations and were often better positioned to exploit market opportunities quickly.

Similarly, a 1982 study supported by the Small Business Administration (SBA) determined that small firms produce twice as many product innovations per employee as large firms.[10] More recent SBA studies claim that 55% of the country's innovations originated with entrepreneurs and small, innovative firms.[11] A National Science Foundation report found that entrepreneurs and small firms are six times as effective as larger firms in utilizing research and development expenditures to generate new products.[12]

High technology industries contain an especially large number of small companies. According to a 1996 SBA study, 94% of high technology companies had under 500 employees and 73% had less than 20 workers. These small firms accounted for 18% of the total receipts generated by high technology industries. Almost forty percent of workers in private sector, high technology businesses were employed by small companies; 22.2% of all private sectors, high technology workers worked in firms with less than 100 employees. High technology employees comprised 3.1% of the total number of workers in the small business community, compared to 4.6% for the number of high technology employees in all companies regardless of size.[13]

Whether innovating directly or forging partnerships with larger enterprises, small, high tech companies have frequently turned to the regime of patents.[14] The patent system authorized by Article I, section 8, clause 8 of the U.S. Constitution serves to encourage the advancement of the useful arts. A principal effect of patent law in a market economy is to provide economic incentives to commit resources towards technological innovation. This effect is achieved by granting inventors exclusive rights to practice the patented invention.[15]

Industrial response to the Plant Variety Protection Act of 1970 (PVPA) is often cited in support of the rationale that patent rights can stimulate invention. In a field in which proprietary rights were previously unavailable, the PVPA allowed plant breeders the ability to obtain patent-like protection on novel varieties of plants grown

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[10]http://www.sba.gov/ADVO/stats/fact1.html

[11]*Ibid.*

[12]National Science Board, *Science and Engineering Indicators, 1993*, 8 Dec. 1993, 185. Anderson, Anne, "Small Businesses Make it Big in the SBIR Program," *New Technology Week*, 6 June 1998, 2.

[13]http://www.sba.gov/ADVO/stats/fact1.html.

[14]Levin, Richard C. *et al.*, "Appropriating the Returns for Industrial Research and Development," *Brookings Papers on Economic Activity*, 1987, in *The Economics of Technical Change*, eds. Edwin Mansfield and Elizabeth Mansfield (Vermont, Edward Elgar Publishing Co., 1993).

[15]Rose, Simone, "Patent 'Monopolyphobia': A Means of Extinguishing the Fountainhead?," 49 *Case W. Res. L. Rev.* 509 (1999).

from seed.[16] In the decade prior to the promulgation of the PVPA, industry developed approximately 150 new plant varieties. But in the decade following the enactment of the PVPA, over 3000 new varieties were created.[17]

The regime of patents purportedly serves other goals as well. The patent system encourages the disclosure of products and processes, for each issued patent must include a description sufficient to enable skilled artisans to practice the patented invention.[18] When the patent expires, ordinarily 20 years from the date the application is filed,[19] others are given the ability to practice the patented invention. Although estimates vary, one report observed that 85-90% of the information available in published patent instruments would not otherwise be publicly available.[20]

Issued patents may also encourage others to "invent around" the patentee's proprietary interest. A patentee may point the way to new products, markets, economies of production and even entire industries. Others can build upon the patentee's disclosure to produce their own technologies that fall outside the exclusive rights associated with the patent.[21]

The patent system has also been identified as a facilitator of markets. Absent patent rights, an inventor may have scant tangible assets to sell or license. In addition, an inventor might otherwise be unable to police the conduct of a contracting party. Any technology or know-how that has been disclosed to a prospective licensee might be appropriated without compensation to the inventor. The availability of patent protection decreases the ability of contracting parties to engage in opportunistic behavior. By lowering such transaction costs, the patent system may make technology-based transactions more feasible.[22]

Through these mechanisms, the patent system can act in more socially desirable ways than its chief legal alternative, trade secret protection. Trade secrecy guards against the improper appropriation of valuable, commercially useful and secret information. In contrast to patenting, trade secret protection does not result in the disclosure of publicly valuable information. That is because an enterprise must take reasonable measures to keep secret the information for which trade secret protection is sought. Taking the steps necessary to maintain secrecy, such as implementing

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[16]7 U.S.C. § 2402(a).

[17]Newman, Pauline, "Legal and Economic Theory of Patent Law," in Chisum, Donald S. *et al., Principles of Patent Law: Cases and Materials* 67, 70 (New York: Foundation Press, 1998).

[18]35 U.S.C. § 112.

[19]35 U.S.C. § 154.

[20]Newman, *supra* note 17, at 72.

[21]Eisenberg, Rebecca S., "Patents and the Progress of Science: Exclusive Rights and Experimental Use," 56 *University of Chicago Law Review* (1989), 1017.

[22]Merges, Robert P., "Intellectual Property and the Costs of Commercial Exchange: A Review Essay," 93 *Michigan Law Review* (1995), 1570.

physical security measures, also imposes costs that may ultimately be unproductive for society.[23]

The extent to which the patent system practically achieves these goals is difficult to assess. Economic research suggests that different industries attach widely varying values to patents. For example, one study of the aircraft and semiconductor industries suggested that lead time and the strength of the learning curve were superior to patents in capturing the value of investments.[24] In contrast, members of the drug and chemical industries attached a higher value to patents. Differences in the perception of the patent system have been attributed to the extent to which patents introduced significant duplication costs and times for competitors of the patentee.

Studies have indicated that entrepreneurs and small, innovative firms rely more heavily upon the patent system than larger enterprises. Larger companies often possess a number of alternative means for achieving a proprietary or property-like interest in a particular technology. For example, trade secrecy, ready access to markets, trademark rights, speed of development, and consumer goodwill may to some degree act as substitutes to the patent system. As Sally Wyatt and Gilles Bertin reported in their survey of alternatives to patenting, a representative of one European corporation opined that "multinational corporations could easily cease to use patents and use other available methods to achieve the same aims."[25] However, individual inventors and small firms often do not have these mechanisms at their disposal. As a result, the patent system may enjoy heightened importance with respect to these enterprises.[26]

Perhaps the best evidence available as to the perceived value of patents is that, in the United States, the number of filed patent applications and issued patents continues to climb.[27] In 1995, inventors filed 221,304 patent applications at the United States Patent and Trademark Office ("USPTO"). In 2000, that number had increased to 293,244 applications. The number of applications filed at the Japanese Patent Office increased from 369,215 in 1995 to 436,865 in 2000.[28] At the European Patent Office,[29] the number of applications increased from 78,300 in 1995 to 121,750

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[23]Friedman, David D. *et al.*, "Some Economics of Trade Secret Law," 5 *Journal of Economic Perspectives* (1991), 61.

[24]Levin *et al.*, *supra* note 14.

[25]Wyatt, Sally & Bertin, Gilles Y., *Multinationals and Industrial Property* 139 (Harvester 1988).

[26]Hawkins, J. Douglas, "Importance and Access of International Patent Protection for the Independent Inventor," 3 *University of Baltimore Intellectual Property Journal* (1995), 145.

[27]Hunt, Robert, "Patent Reform: A Mixed Blessing for the U.S. Economy?," Federal Reserve Bank of Philadelphia Business Review, available at http://www.phil.frb.org /files/br/brnd99rh.pdf.

[28]Japan Patent Office, Annual Report 2000 at 58 (available at www.jpo.go.jp).

[29]The European Patent Office is an organization formed to unify patent acquisition procedures in certain European nations. For more on the European Patent Office, *see infra* text accompanying notes 129-31.

in 1999, the latest year for which data are available.[30] These statistics suggest that members of the technological community continue to view patents as valuable.

The patent system has long been subject to criticism, however. Some observers believe that the patent system encourages industry concentration and presents a barrier to entry in some markets.[31] Others believe that the patent system too frequently attracts speculators who prefer to acquire and enforce patents rather than engage in socially productive activity.[32] Still other commentators suggest that the patent system often converts pioneering inventors into technological suppressors, who use their patents to block subsequent improvements and thereby impede technical progress.[33]

When analyzing these contending views, it is important to note the lack of rigorous analytical methods available for analyzing the effect of the patent law upon the U.S. economy as a whole. The relationship between innovation and patent rights remains poorly understood. As a result, current economic and policy tools do not allow us to calibrate the patent system precisely in order to produce an optimal level of investment in innovation.

Introduction to U.S. Patent Law

The patent system's policy aspirations are fulfilled only to the extent that inventors engage in patent procurement and enforcement, the mechanics of which bear further explanation. As mandated by the Patent Act of 1952,[34] U.S. patent rights do not arise automatically. Inventors must prepare and submit applications to the U.S. Patent and Trademark Office ("USPTO") if they wish to obtain patent protection.[35] USPTO officials known as examiners then assess whether the application merits the award of a patent.[36] The patent acquisition process is commonly known as "prosecution."[37]

In deciding whether to approve a patent application, a USPTO examiner will consider whether the submitted application fully discloses and distinctly claims the

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[30]European Patent Office, 1999 Annual Report (available at www.european-patent-office.org).

[31]*See* Thomas, John R., "Collusion and Collective Action in the Patent System: A Proposal for Patent Bounties," *University of Illinois Law Review* (2001), 305.

[32]*Ibid.*

[33]*See* Merges, Robert P., & Nelson, Richard R., "On the Complex Economics of Patent Scope," 90 *Columbia Law Review* (1990), 839.

[34]P.L. 82-593, 66 Stat. 792 (codified at Title 35 United States Code).

[35]35 U.S.C. § 111.

[36]35 U.S.C. § 131.

[37]Thomas, John R., "On Preparatory Texts and Proprietary Technologies: The Place of Prosecution Histories in Patent Claim Interpretation," 47 *UCLA Law Review* (1999), 183.

invention.[38] In addition, the application must disclose the "best mode," or preferred way, that the applicant knows to practice the invention.[39] The examiner will also determine whether the invention itself fulfills certain substantive standards set by the patent statute. To be patentable, an invention must be useful, novel and nonobvious. The requirement of usefulness, or utility, is satisfied if the invention is operable and provides a tangible benefit.[40] To be judged novel, the invention must not be fully anticipated by a prior patent, publication or other knowledge within the public domain.[41] A nonobvious invention must not have been readily within the ordinary skills of a competent artisan at the time the invention was made.[42]

If the USPTO allows the patent to issue, the patent proprietor obtains the right to exclude others from making, using, selling, offering to sell or importing into the United States the patented invention.[43] Patent title therefore provides inventors with limited periods of exclusivity in which they may practice their inventions, or license others to do so. The grant of a patent permits the inventor to receive a return on the expenditure of resources leading to the discovery, often by charging a higher price than would prevail in a competitive market.

Patent rights are not self-enforcing. A patentee bears responsibility for monitoring its competitors to determine whether they are using the patented invention or not. Patent proprietors who wish to compel others to observe their intellectual property rights must usually commence litigation in the federal courts.

Patent trials are held in the federal district courts. As these courts possess jurisdiction over a wide variety of civil and criminal matters, patent cases form only a small portion of their docket. According to patent attorney John B. Pegram, a typical district court conducts a full patent trial only once every 6 to 8 years.[44] This number be misleading, however, as a recent study revealed that only about 6.9% of patent cases proceed to a full trial.[45] Another survey, conducted by Circuit Judge S. Jay Plager, concluded that from 1996 to 2000, there were about 1250 published district court decisions dealing with patents, heard by some 375 different district

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[38]35 U.S.C. § 112.

[39]*Ibid.*

[40]35 U.S.C. § 101.

[41]35 U.S.C. § 102.

[42]35 U.S.C. § 103.

[43]35 U.S.C. § 271(a).

[44]Pegram, John B., "Should There Be a U.S. Trial Court with a Specialization in Patent Litigation?", 81 *Journal of the Patent and Trademark Office Society* (2000), 766.

[45]Moore, Kimberly A., "Judges, Juries, and Patent Cases – An Empirical Peak Inside the Black Box." 99 *Michigan Law Review* (2000), 365.

judges.[46] Either litigant may request a jury trial in patent litigation. From 1997 through 1999, 59% of all patent trials were tried to juries.[47]

The U.S. Court of Appeals for the Federal Circuit ("Federal Circuit") possesses exclusive national jurisdiction over all patent appeals from the district courts.[48] The Federal Courts Improvement Act of 1982 created the Federal Circuit by merging two predecessor courts, the Court of Claims and the Court of Customs and Patent Appeals.[49] Since its creation, the Federal Circuit has sought to bring uniformity and predictability to patent law.[50] The U.S. Supreme Court possesses discretionary authority to review cases decided by the Federal Circuit.[51]

Patent enforcement can be expensive. As patent trials often involve complex legal and technological issues, the need for extensive discovery proceedings, expert witnesses and specially qualified attorneys can lead to high costs.[52] One study concluded that the average cost of a patent enforcement case was $1.2 million.[53] Even patent infringement cases with smaller stakes, involving damage claims between $1 million and $10 million, cost about $748,000 to litigate, according to the median figure in a survey by the American Intellectual Property Law Association.[54]

The maximum term of patent protection is ordinarily set at 20 years from the date the application is filed.[55] The patent applicant gains no enforceable rights until such time as the application is approved for issuance as a granted patent, however. Further, the patent will endure for its full term only if its owner pays maintenance fees at different times throughout the life of the patent. In the United States, a maintenance fee of $890 must be paid at 3.5 years; $1950 at 7.5 years; and $2990 at 11.5 years.[56] These fees are halved if the patent proprietor qualifies as a "small entity," a category that includes independent inventors, small businesses and

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[46]Plager, S. Jay, "Challenges for Intellectual Property Law in the Twenty-first Century: Indeterminacy and Other Problems," *University of Illinois Law Review* (2001), 69.

[47]Moore, *supra* note 42.

[48]28 U.S.C. § 1295(a)(1).

[49]P.L. 97-164, 96 Stat. 25.

[50]*See C.R.Bard, Inc. v. Schwartz*, 716 F.2d 874, 878 (Fed. Cir. 1983).

[51]28 U.S.C. §1254(1).

[52]Elleman, Steven J., "Problems in Patent Litigation: Mandatory Mediation May Provide Settlement and Solutions," 12 *Ohio State Journal on Dispute Resolution* (1997), 759.

[53]Gill, Dee, "Defending Your Rights: Protecting intellectual property is expensive," *Wall Street Journal* (25 Sep. 2000), 6.

[54]*Ibid.*

[55]35 U.S.C. § 154(a)(2). Although patent term is based upon the filing date, the patentee gains no enforceable legal rights until the USPTO allows the application to issue as a granted patent. A number of Patent Act provisions may modify the basic 20-year term, including examination delays at the USPTO and delays in obtaining marketing approval for the patented invention from other federal agencies.

[56]37 C.F.R. § 1.20.

universities.[57] Once the patent expires, others may employ the patented invention without compensation to the patentee.

Introduction to Foreign Patent Law

Significantly, U.S. patents provide their owners with rights only within the United States.[58] If inventors desire intellectual property protection in another country, they must specifically procure a patent in that jurisdiction. Ordinarily the foreign patent acquisition process begins with the submission of a patent application in a patent office overseas. As a practical matter, multinational corporations often obtain a set of corresponding national patents for each of their significant inventions.

This report next considers the process of prosecuting and litigating patents overseas, focusing on Europe and Japan but with reference to other patent systems as well. These two systems merit special attention because along with the USPTO, the European and Japanese patent offices receive over 80% of the patent applications filed in the world.[59] In terms of the number of patent applications filed, U.S. industry is the largest single user of both the USPTO and the European Patent Office, and the second largest user of the Japanese Patent Office.[60]

Foreign Patent Acquisition

Recent years have witnessed a substantial legal harmonization process within the field of patent law. As a result, the similarities have increased between the U.S. patent system and parallel regimes overseas. However, several notable differences between U.S. patent law and many foreign patent systems are worthy of mention here.

Deferred Examination. One distinct aspect of patent practice in some other nations is that examination is deferred following submission of an application. In contrast to the USPTO, where every filed application is automatically placed into a queue for substantive examination, in many other patent-issuing states the mere filing of an application does not mean that the patent office will further consider the application. Inventors who wish their applications to mature into an issued patent must submit additional requests in order for the patent office to consider the application. Such requests must occur within a specified time and be accompanied by the appropriate fee. In Germany, an inventor may defer examination for up to seven years;[61] in Japan, the maximum deferral period was recently reduced from seven

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[57]37 C.F.R. § 1.27.

[58]*Quality Tubing, Inc. v. Precision Tube Holdings Co.*, 75 F.Supp.2d 613, 619 (S.D. Tex. 1999).

[59]Japan Patent Office, Annual Report 2000 at 35.

[60]*Ibid;* European Patent Office, 1999 Annual Report.

[61]Linck, Nancy J., et al., "A New Patent Examination System for a New Millennium," 35 *Houston Law Review* (1998), 305.

to three years.[62] If no request for examination is made in a timely fashion, the application is deemed abandoned. If a request for examination is seasonably made, the novelty and nonobviousness of the application are judged as of the application's filing date.

Supporters of deferred examination regimes observe that they allow applicants the option of deciding to postpone the decision to obtain patent protection or not. Deferred examination regimes may also reduce patent office workloads. Further, since all pending applications are published approximately 18 months following their filing dates, the public has notice of the prospect of a granted patent whether examination is deferred or not.[63] Detractors note that a deferred examination system may delay the issuance of a fully considered patent instrument and, as a result, substantially increase marketplace uncertainties.[64]

Opposition Proceedings. Many foreign patent regimes allow for so-called opposition proceedings. An opposition is a patent revocation proceeding that is usually administered by authorities from the national patent office. Oppositions often involve a wide range of potential invalidity arguments and are conducted through adversarial hearings that resemble courtroom litigation.

Although the U.S. patent system does not include oppositions, the U.S. patent system has incorporated a so-called "reexamination" proceeding since 1981. Some commentators have viewed the reexamination as a more limited form of an opposition.[65] Under the reexamination statute, any individual, including the patentee, a competitor, and even the USPTO Director, may cite a prior art patent or printed publication to the USPTO. If the USPTO determines that this reference raises a "substantial new question of patentability" with respect to an issued patent, then it will essentially reopen prosecution of the issued patent.

Traditional reexamination proceedings are conducted in an accelerated fashion on an *ex parte* basis. Following the American Inventors Protection Act of 1999, an *inter partes* reexamination allows the requestor to participate more fully in the proceedings through the submission of argument and the filing of appeals.[66] Either sort of reexamination may result in a certificate confirming the patentability of the original claims, an amended patent with narrower claims or a declaration of patent invalidity.[67]

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[62]Japanese Patent Office, "Procedures for Obtaining a Patent Right" (available at www.jpo.go.jp).

[63]Linck, *supra* note 61.

[64]*Ibid.*

[65]Thomas, *supra* note 31.

[66]Janis, Mark D., "Inter Partes Reexamination," 10 *Fordham Intellectual Property, Media & Entertainment Law Journal* (2000).

[67]*Ibid.*

Congress intended reexamination proceedings to serve as an inexpensive alternative to judicial determinations of patent validity.[68] Reexamination also allows further access to the legal and technical expertise of the USPTO after a patent has issued.[69] However, some commentators believe that reexamination proceedings have been employed only sparingly and question their effectiveness.[70] Legislation introduced in the 107th Congress would introduce the more full-featured opposition proceedings into U.S. patent law.[71]

Priority Principle. Sometimes several persons independently develop the identical or similar invention at approximately the same time. In the United States, when more than one patent application is filed claiming the same invention, the patent will be awarded to the applicant who was the first inventor. In a so-called "interference" proceeding, applicants are allowed to submit evidence of their dates of inventive activity, such as the dates that they conceived of the invention and reduced it to practice.[72] The applicant that was the first to invent in the field is presumptively entitled to the patent.[73] The U.S. priority rule is described as following the "first-to-invent" principle.[74]

In every other patent-issuing state, priority of invention is established by the earliest effective filing date of a patent application disclosing the claiming invention.[75] Stated differently, the first patent applicant is presumptively entitled to the patent. Whether or not the first applicant was actually the first individual to complete the invention in the field is irrelevant. This priority system follows the "first-to-file" principle.[76]

The international patent community has witnessed an extensive and sometimes emotional debate on the relative merits of the first-to-invent and first-to-file principle.[77] Supporters of the first-to-invent principle in part assert that the first-to-file system creates inequities due to a "race to the Patent Office"; encourages premature and sketchy disclosures in hastily-filed patent applications; and disadvantages small entities with less resources to prepare and file patent applications quickly. Supporters of the first-to-file principle in part assert that it provides a

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[68] *Ibid.*

[69] Nard, Craig Allen, "Certainty, Fence Building and the Useful Arts," 74 *Indiana Law Journal* (1999), 759.

[70] *See* Thomas, *supra* note 31.

[71] H.R. 1333, 107th Congress, 1st Session ("Patent Improvement Act of 2001").

[72] 35 U.S.C. § 135.

[73] In addition, the party that was the first to invent must not have abandoned, suppressed or concealed the invention. 35 U.S.C. § 271(g).

[74] *See* Gholz, Charles E., "First-to-File or First-to-Invent?", 82 *Journal of the Patent and Trademark Office Society* (2000), 891.

[75] *See* Jackman, Peter A., "Adoption of a First-to-File System: A Proposal," 26 *University of Baltimore Law Review* (1997), 67.

[76] *Ibid.*

[77] *See* Gholz, *supra* note 74.

definite, readily determined and fixed date of priority of invention; believe that it would decrease the complexity, length and expense associated with current USPTO interference proceedings; and observe that most of U.S. industry is already acting on this basis in order to avoid forfeiture of patent rights abroad. Although many U.S. trading partners have proposed that the United States shift to the first-to-file priority principle, some observers believe that there is currently no U.S. consensus on the advisability of this approach.[78]

Grace Period. The U.S. patent system essentially provides inventors with a one-year period to decide whether patent protection is desirable, and, if so, to prepare an application. Specified activities such as publications or sales act to bar the applicant from obtaining a patent before the so-called "critical date," the day one year before the application was filed.[79] If, for example, an entrepreneur first discloses an invention by publishing an article in a scientific journal, he knows that he has one year from the publication date in which to file a patent application. Importantly, uses, sales, and other technical disclosures by third parties will also start the one-year clock running.[80] As a result, inventors have a broader range of concerns than merely his own behavior.

In contrast, many other patent-granting states provide more limited grace periods, or no grace periods at all. In Europe, any sales or publication of an invention anywhere in the world prior to the filing date defeats the patentability of an invention.[81] The Japanese patent system includes a six-month grace period tied only to the activities of the inventor.[82] Under the patent law of Japan, any disclosures of an invention made by a third party even one day before the filing date defeats the novelty of that invention.

Much discussion has occurred over the wisdom of a grace period. Supporters of a grace period say that it assists inventors who are not sophisticated in patent matters; encourages the development of inventions that require a certain amount of public testing before the invention can be said to be complete; and comports with norms of the academic and scientific community that call for early publication of research results.[83] Detractors claim that grace periods increase commercial uncertainties and imply a prolongation of the patent term, and also assert that academics and scientists who wish to enter the commercial world must abide by the legal rules already established there.[84]

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[78] *Ibid.*

[79] 35 U.S.C. § 102(b).

[80] Adelman *et al.*, *supra* note 3, at 204-05.

[81] European Patent Convention, Article 54(2).

[82] Japanese Patent Act, Article 29(1).

[83] Straus, Joseph, Expert Opinion on the Introduction of a Grace Period in European Law (8 May 2000) (available at http://www.european-patent-office.org/news/pressrel/pdf/straus.pdf).

[84] Galama, Jan E.M., Expert Opinion on the Case For and Against the Introduction of a Grace Period in European Law (2000) (available at http://www.european-patent-office.org/news/pressrel/pdf/galama.pdf).

Patentable Subject Matter. The sorts of inventions that are subject to patent protection appear to be narrower in some foreign jurisdictions than in the United States. For example, the July 23, 1998, decision of the United States Court of Appeals for the Federal Circuit in *State Street Bank & Trust Co. v. Signature Financial Group*,[85] held that inventors may obtain patents on methods of doing business. Subsequent judicial opinions from U.S. courts have confirmed this holding.[86] Recently issued U.S. patents in fields such as architecture, investment, marketing, psychological analysis and sports methods also suggest that inventions from virtually any human endeavor may be the subject of proprietary rights through the patent system.[87]

In contrast, many patent systems overseas, including the harmonized European patent regime and the Japanese patent law, have declined to extend patent protection to business methods and other inventions outside the realm of traditional industry. For example, European patent law includes the requirement that an invention possess "industrial application" and expressly excludes from patentability such inventions as "schemes, rules and methods for performing mental acts, playing games or doing business."[88] A September 8, 2000, decision of the European Patent Office Board of Appeal applied this reasoning to reject a patent application filed by a U.S. inventor on a computerized pension benefit system.[89]

Biotechnology is also more amenable to patent protection in the United States than in other nations.[90] Broadly speaking, a plant or animal invention that is either a non-naturally occurring substance, or results from a substantial amount of human intervention, is patentable in the United States.[91] Both the Japanese and European systems impose additional restrictions on biotechnology patenting. According to the Japanese Patent Office, "processes in the fields of medicine, diagnosis, therapy, and pharmacology in which the human body is an indispensable element" are not patentable.[92] European patent law is still more restrictive, excluding from patentability "plant and animal varieties" and "essentially biological processes" among other inventions.[93]

Much debate has proceeded about the most appropriate subject matter for patenting. Advocates of broad notions of patentable subject matter believe that patents can encourage investment, innovation and the disclosure of new inventions in

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[85]149 F.3d 1368 (Fed. Cir. 1998).

[86]*See, e.g., AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999).

[87]*See* Thomas, *supra* note 31.

[88]European Patent Convention, Article 52(c).

[89]Improved pension benefits system, T 0931/95 - 3.5.1, European Patent Office (2000).

[90]North, Michael, "The U.S. Expansion of Patentable Subject Matter: Creating a Competitive Advantage for Foreign Multinational Companies?," 18 *Boston University International Law Journal* (2000), 111.

[91]*Ibid.*

[92]*Ibid.*

[93]European Patent Convention, Article 53(b).

a broad range of fields.[94] Opponents of business method patents instead observe a long history of avoiding state-granted monopolies on business methods and find little evidence that patents will encourage further innovation in innovative business practices.[95] Opponents of biotechnology patents have contended that it is inappropriate to grant property rights in living organisms and genetic materials and that such patents disrupt the norms and values of traditional agriculture.[96]

Publication of Pending Applications. Most foreign patent regimes publish all pending patent applications 18 months after they have been filed.[97] Until recent years, the U.S. patent system traditionally maintained applications in secrecy. This regime advantaged patent applicants because it allowed them to understand exactly what the scope of any allowed claims might be prior to disclosing an invention. Thus, if the applicant was wise enough to maintain the invention that was subject to a patent application as a trade secret, then he could choose between obtaining the allowed patent claims and trade secret status.[98]

However, this secrecy regime has been perceived as imposing costs as well. Others might well engage in repetitive research efforts during the pendency of patent applications, unaware that an earlier inventor had already staked a claim to that technology. This arrangement also allows inventors to commence infringement litigation on the very day a patent issues, without any degree of notice to other members of the technological community.[99]

The Domestic Publication of Foreign Filed Patent Applications Act of 1999, which was one component of the American Inventors Protection Act of 1999, P.L. 106-113, attempted to strike a middle ground. U.S. patent applications will be published 18 months from the date of filing, except where the inventor represents that he will not seek patent protection abroad. If an applicant certifies that the invention disclosed in the U.S. application will not be the subject of a patent application in another country that requires publication of applications 18 months after filing, then the PTO will not publish the application.[100]

Sometimes inventors seek more robust patent protection in some countries than in others. This step may be taken for business reasons or due to differences in the

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[94]*E.g.*, Kuester, Jeffrey R. & Thompson, Lawrence E., "Risks Associated with Restricting Business Method and E-Commerce Patents," 17 *Georgia State University Law Review* (2001), 657.

[95]Thomas, John R., "The Patenting of the Liberal Professions," 40 *Boston College Law Review* (1999), 1139.

[96]Naik, Paul S., "Biotechnology in the Eyes of an Opponent: The Resistance of Activist Jeremy Rifkin," 5 *Virginia Journal of Law and Technology* (2000), 5.

[97]Todaro, John C., "Potential Upcoming Changes in U.S. Patent Laws: the Publication of Patent Applications," 36 *IDEA: Journal of Law and Technology* (1996), 309.

[98]Goller, Mimi C., "Is a Padlock Better than a Patent? Trade Secrets vs. Patents," 71 *Wisconsin Lawyer* (May 1998), 20.

[99]Thomas, *supra* note 37, at 187.

[100]*Ibid.* Note that if a U.S. patent applicant later decides to file abroad as well, that enterprise is charged with notifying the USPTO so that its U.S. application may be published.

patent or competition laws in varying jurisdictions. P.L. 106-113 therefore contains a provision allowing applicants to submit to the PTO "a redacted copy of the application filed in the [PTO] eliminating any part or description of the invention in such application that is not also contained in any of the corresponding application filed in a foreign country." As a result, if an applicant seeks broader patent protection in the United States than in other countries, only the more limited version of the application will be published here.

This Act also creates so-called provisional rights that may attach to published patent applications. Provisional rights are equivalent to a reasonable royalty, the amount that the patentee would have charged an infringer had the two parties entered into a licensing arrangement at the time the infringement began.[101] Persons who employ the invention as claimed in the published patent application are potentially liable for this amount. Provisional rights are subject to several qualifications. They are only effective at such time as the patent issues, apply only when the infringer had actual notice of the published patent application and the claims of the published application are "substantially identical" to those of the issued patent.

An example may clarify the workings of provisional rights. Suppose that an inventor files a U.S. patent application on February 1, 2001. Assuming the inventor does not file the appropriate certification, the USPTO will publish the application 18 months later, on August 1, 2002. Suppose further that this application results in an issued patent that the USPTO formally grants on June 1, 2003. Under these facts, the inventor may file a patent infringement suit on or after June 1, 2003. Assuming the statutory requirements are fulfilled, the inventor may claim provisional rights equivalent to a reasonable royalty from August 1, 2002, the date the application was published, through June 1, 2003, the date the patent was granted. Infringing acts that occur after June 1, 2003, will be subject to the full range of remedies under the Patent Act, including an injunction and damages based upon the lost profits of the patentee.[102]

Foreign Patent Enforcement

Most patent-issuing states allow patent owners to enforce their rights in civil courts of general jurisdiction. Because civil litigation varies considerably from nation to nation, an exacting analysis of multinational patent enforcement would require a lengthy discussion beyond the scope of this report. This report instead points to several salient distinctions between U.S. and foreign patent litigation that are persistently discussed in the professional literature.

Limited Discovery. U.S. civil procedure allows for discovery, a pre-trial proceeding through which litigants may obtain information necessary to prove their cases. Depositions, interrogatories, requests for production of documents, and requests for admission are among the tools litigants may use to aid in investigating facts and defining issues for trial. In patent cases, patentees use discovery to determine such matters as the extent of infringing activities; accused infringers use

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[101] *Rodime PLC v. Seagate Technology, Inc.*, 174 F.3d 1294, 1308 (Fed. Cir. 1999), *cert. denied*, 120 S.Ct. 933 (2000).

[102] 35 U.S.C. § 288.

discovery to obtain further information as to the validity and enforceability of the patent.

No other nation provides for the extensive pre-trial discovery available in the United States.[103] Under some civil law systems, the litigants do little more than exchange papers filed with the court. In such regimes the litigating parties must make use of alternative methods of obtaining information, including extrajudicial investigational efforts or using the results of discovery procedures available elsewhere.[104]

Proponents of discovery claim that the availability of discovery helps eliminate from trials the element of unfair surprise, assures that cases would be decided on their merits, and mitigates unfairness resulting from disparities of wealth and power by prescribing means by which less powerful litigants could obtain the information necessary to prove their claims. Detractors assert that discovery has been subjected to abuses that prolong litigation, and increases the expense of U.S. litigation when compared with proceedings overseas.[105] In patent infringement actions, lack of discovery may make it difficult for a plaintiff to prove infringement, especially for process patents where access to the accused infringer's production facilities and documents may be critical.[106]

Jury System. The United States is also the only nation that uses a jury system in patent trials. Although many commentators have criticized the use of lay jurors to decide patent infringement issues,[107] others have found many merits to the use of juries and observe the place of a jury system within the Bill of Rights.[108] In other nations, one or more judges or administrative officials decide patent validity and infringement matters. Some jurisdictions, such as Germany, have established positions for specialized trial judges who decide patent cases.[109]

Patent Validity as an Infringement Defense. In the United States and many common law countries, courts that decide infringement matters also may review

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[103]*See* Blumer, Fritz, "Jurisdiction and Recognition in Trans-Atlantic Patent Litigation," 9 *Texas Intellectual Property Journal* (2001), 329.

[104]Revelos, William C., "Patent Enforcement Difficulties in Japan: Are There Any Satisfactory Solutions for the United States?", 29 *George Washington Journal of International Law and Economics* (1995), 503.

[105]*E.g.*, Shepherd, George B. & Cloud, Morgan, "Time and Money: Discovery Leads to Hourly Billing," *University of Illinois Law Review* (1999), 91.

[106]Revelos, *supra* note 104.

[107]*See* Leibold, Gregory D., "In Juries We Do Not Trust: Appellate Review of Patent-Infringement Litigation," 67 *University of Colorado Law Review* (1996), 623.

[108]*See* Livingston, Kevin, "Junking the Jury? As the Science at Patent Trials Becomes More Complex, Some Advocate Dumping Juries from the System," *The Recorder (San Francisco)* (19 Oct. 1999), 1 (noting supporters and detractors of the use of juries in patent cases).

[109]*See* Aldisert, Ruggero J., "Rambling Through Continental Legal Systems," 43 *University of Pittsburgh Law Review* (1982), 935.

the validity of the asserted patent.[110] Accused infringers often argue that the asserted patent was improvidently granted. In some civil law nations, however, the courts that decide patent infringement matters may not rule on whether a patent is valid or invalid. Challenges to patent validity are instead exclusively considered by the national patent office or by specialized courts. Some authorities believe these split proceedings can lead to delay and higher costs.[111]

Court Costs. It is common practice for courts to assess some fee against an individual who commences litigation, patent-related or otherwise. In the United States, the fee for filing a civil case is ordinarily set at a fixed amount, which is currently $150.[112] In some foreign countries, the filing fee is tied to the amount in controversy. For example, the fee in Japan is set to roughly 0.5% of the damages claimed.[113] Because patent cases sometimes involve high stakes, some observers believe that these scaled filing fees present a barrier to enforcing patent rights.

Attorney Fees. In the United States, each litigating party pays its own attorney fees. In many other jurisdictions, such as England, the losing party must pay at least some of the prevailing party's costs and attorney fees.[114] Although the so-called "English Rule" allows the prevailing party to recoup some of its litigation expenses, the possibility of paying the other side's fees may discourage meritorious litigation.[115]

Scope of Patent Protection. A subtle but significant distinction between patent systems is the scope of protection a court will accord to an issued patent during enforcement proceedings. The scope of proprietary rights is based upon, but not limited to, the precise wording of the patent instrument. In the United States, a court may find infringement even if the accused infringement does not precisely fall within the claims of the asserted patent, so long as "insubstantial differences" exist between the patented invention and the accused infringement. U.S. courts refer to this concept as the "Doctrine of Equivalents."[116]

Some observers believe that the scope of protection accorded patent rights differs among the national courts. The courts of Germany and the Netherlands have, for example, been considered to accord patents a more robust scope of protection than do the U.S. courts. At the other extreme are the courts of Japan. According to a 1993 report from the U.S. General Accounting Office, "Japan has virtually no

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[110]*See* 35 U.S.C. § 282.

[111]Adelman *et al.*, *supra* note 3, at 1225.

[112]28 U.S.C. § 1914.

[113]Revelos, *supra* note 104.

[114]Davis, Kent W., "The International View of Attorney Fees in Civil Suits: Why is the United States the 'Odd Man Out' in How It Pays Its Lawyers?", 16 *Arizona Journal of International and Comparative Law* (1999), 361.

[115]*Ibid.*

[116]*See Warner-Jenkinson Co. v. Hilton Davis Chemical Co.*, 520 U.S. 17 (1997).

'doctrine of equivalents' as that term is used in the United States."[117] Some commentators believe that more recent decisions suggest that Japanese courts are construing patents more broadly than they once did.[118] In addition, some observers believe that since the late 1990's, the U.S. Court of Appeals for the Federal Circuit has exhibited a trend towards a narrowing of patent rights.[119]

The International Patent System

The patent regimes of the United States and its trading partners are linked through a handful of international agreements that, together, comprise the international patent system. These international agreements do not create a true global patent system, in that they do not provide for a single patent application and grant procedure that can lead to rights effective worldwide. However, they do provide inventors with mechanisms for expediting the acquisition of patent rights in many countries. This report discusses the most significant of these international agreements in the order that they were enacted.

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[117]General Accounting Office, *Intellectual Property Rights: U.S. Companies' Patent Experiences in Japan* (GGD-93-126) (1993).

[118]Yamamoto, Shusaku & Tessensohn, John A., "Doctrine of Equivalents Adds Torque to Japanese Patent Infringement," 81 *Journal of the Patent and Trademark Office Society* (1999), 483.

[119]*E.g.*, Cherny, Steven C. & Richetti, Joseph J., "A Year of Important Cases on Patents: Doctrine of Equivalents Takes a Beating in the Federal Circuit," 23 *The National Law Journal* (30 April 2001), B9.

The Paris Convention

The foundational patent harmonization treaty, the Paris Convention, was formed in 1884.[120] As of July 15, 2001, 162 nations had signed the Paris Convention. The World Intellectual Property Organization (WIPO), a specialized agency located in Geneva, Switzerland, administers this international agreement (and a number of subsequent instruments addressing intellectual property). The Paris Convention commits its signatories to the principle of national treatment, the principle of patent independence, and a system of international priority. Through the national treatment principle, Paris Convention signatories agree to treat foreign inventors no worse than domestic inventors in their patent laws, so long as these foreign inventors are nationals of a Paris Convention signatory state.

A second principle set forth by the Paris Convention is the independence of different national patents. Prior to the advent of the Paris Convention, many national laws applied a principle of patent dependence against foreign inventors. Under this principle, domestic patents would expire at the same time any foreign patent covering the same invention lapsed, regardless of the term the patentee was ordinarily due. These provisions sometimes worked a hardship against inventors who had obtained patent protection in many countries, only to discover that marketing the invention was feasible only in some subset of them. Such an inventor would prefer to let some patent rights lapse rather than incur expensive maintenance fees. In a world where patent rights depended on one another, however, allowing one patent to lapse would amount to a global forfeiture of patent rights.

The independence principle established by the Paris Convention put an end to this situation. One significant consequence of the independence of national patents is that they must be enforced individually. Even different national patent instruments with identically drafted descriptions, drawings and claims do not stand or fall together. A competitor who succeeds in invalidating one national patent may face the prospect of repeating the effort within another set of national borders. Similarly, the successful enforcement of a patent in one forum may simply signal the start of patent litigation elsewhere.[121]

The international priority system allows an inventor to file a patent application in one Paris Convention signatory state, which is usually the inventor's home country. If the inventor subsequently files patent applications in any other Paris Convention signatory state within the next 12 months, overseas patent-granting authorities will treat the application as if it were filed on the first filing date. Critically, information that enters the public domain between the priority date and subsequent filing dates does not prejudice the later applications. Paris Convention priority allows inventors to preserve their original filing dates as they make arrangements to file patent applications overseas.[122]

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[120]Convention of Paris for the Protection of Industrial Property, 13 U.S.T. 25 (1962).

[121]*See* Thomas, *supra* note 5.

[122]*See* Bodenhausen, G.H.C., *Guide to the Paris Convention for the Protection of Industrial Property* (United International Bureau for the Protection of Intellectual Property, Geneva, Switzerland 1968).

Suppose, for example, that an inventor files a patent application at the USPTO on October 1, 2001. The inventor then files a patent application claiming the same invention in the Japanese Patent Office on September 1, 2002. As part of his Japanese application, the inventor informs the Japanese Patent Office of the earlier U.S. application. Because Japan has acceded to the Paris Convention, the Japanese Patent Office will treat that inventor's application as if it had been filed on October 1, 2001. As a result, information that entered the public domain after the U.S. filing date would not prejudice the inventor's Japanese application. A journal article published on January 1, 2002, for example, would not limit the opportunity of the inventor to obtain a Japanese patent.

The Paris Convention was an advanced treaty at the time of its formation in the late nineteenth century. However, many observers believed that its shortcomings became more pronounced with the passage of time. Other than the minimal standard of national treatment, the Paris Convention does not provide substantive patent law standards for its signatories to adopt within their domestic patent systems.[123] The Paris Convention further lacks an effective enforcement mechanism. Although one nation could commence an action against another for Paris Convention violations in the International Court of Justice, that tribunal's lack of enforcement powers made this possibility more theoretical than practical. In the 120-year history of the Paris Convention, no such suit has ever been brought.[124]

Finally, the Paris Convention requires unanimous consent to amend. As the number of signatory states grew, such consensus became difficult to obtain. The opportunity to advance the international patent system shifted to other vehicles, including the Patent Cooperation Treaty.

The Patent Cooperation Treaty

The Patent Cooperation Treaty, or PCT, was formed in Washington, DC in 1970. Recognizing the needless repetition of duplicative patent examinations around the world, representatives of different patent offices agreed to a procedural framework to facilitate the often burdensome task of multinational patent acquisition. The PCT is open to any nation that has acceded to the Paris Convention, and in fact over 100 nations have currently signed the PCT. It provides for the filing of one patent application that can lead to issued patents in many countries.[125]

An inventor may use the PCT if he is a national or domicile of a PCT contracting state. Most often, an inventor commences the PCT process by filing a so-called "international application" at his local patent office. The international application designates all PCT member states in which the inventor wishes to obtain patent protection. An international application has the effect of a national application in all of the countries that the applicant designates.

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[123] Abbott, Frederick *et al.*, *The International Intellectual Property System: Commentary and Materials* (Kluwer Law International, The Hague 1999), 646.

[124] *Ibid* at 661-62.

[125] *Ibid* at 1430-41.

This application will then be sent to one of several entities designated as an International Searching Authority. In addition to the USPTO, the national patent offices of Australia, Austria, China, Japan, the Republic of Korea, the Russian Federation, Spain, and Sweden, as well as the European Patent Office, have been designated as International Searching Authorities. These entities research existing patent documents and other technical literature in order to determine public domain knowledge pertinent to the invention claimed in the patent application. The applicant then receives an international search report, which lists citations of prior art relevant to the claims of the international patent application and gives an indication of the possible relevance of the citations to the questions of novelty and nonobviousness.

If the international search report does not reveal any public domain knowledge that would defeat the patentability of the claimed invention, the applicant may wish to enter the second part of the PCT process, the so-called "national stage." Here the applicant submits the PCT application to various national offices. At this time, patent examiners in each country examine the application based upon their own national laws, either allowing or rejecting the patent application.

The PCT also allows for an optional intermediate step between the time an applicant receives an international search report and enters the national stage. The applicant must also request an international preliminary examination of his application. This preliminary examination is made, on the basis of the international search report, according to internationally accepted criteria of patentability, including novelty and nonobviousness. It is carried out by an International Preliminary Examining Authority, which consists of one of the International Searching Authorities mentioned above, with the exception of the national patent office of Spain. An international preliminary examination provides inventors with an even stronger basis on which to evaluate their chances of obtaining patents in the national stage. However, the ultimate decision on the granting of a patent remains the task of individual national or regional patent offices; the international preliminary examination report is authoritative but not binding upon those authorities.

The PCT has attracted a large number of applicants, with a disproportionate share of users based in the United States. In 2000, the International Bureau of WIPO received 90,948 international applications filed with PCT receiving Offices worldwide, an increase of 22.9% from 1999. According to WIPO, the 90,948 international applications received in 2000 had the equivalent effect of 8,457,172 national applications. Applicants from the United States filed the largest number of PCT applications in 2000, filing 42.0% of all applications. U.S. inventors were followed by Germany (13.2%), Japan (10.3%), the United Kingdom (6.1%) and France (4.0%).[126]

Still, the PCT has been subject to some criticism. Upon entering the national stage, many patent offices do not appear to respect fully the work product of the International Search Authority. In fact, most Patent Offices normally repeat the search and examination at the national phase in the same manner as for an ordinary national application. Under the view of some observers, these redundant efforts

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[126]PCT Newsletter, available at http://www.wipo.int/pct/en/newslett/2001/index.htm.

appear to undermine much of the logic behind PCT.[127] In addition, the PCT fee schedule is based upon Swiss francs. Past currency fluctuations have sometimes led to significant cost increases for U.S. applicants.

Regional Agreements

A number of regional agreements provide for some sort of centralized examination procedure, through which an inventor obtains patents effective in member nations designated by the applicant. Although the United States is not a party to any of these treaties, applicants filing in the United States frequently take advantage of these regional examination techniques when seeking patents abroad.[128]

The European Patent Convention (EPC) is the most prominent example of a regional patent harmonization agreement.[129] Among other measures, the EPC creates a European Patent Office based principally in Munich, Germany and the Hague, the Netherlands. An inventor may file a single patent application at the European Patent Office, which, if accepted, matures into a number of individual national patents in the European states the applicant has designated. Significantly, the EPC does not create a unitary European patent. A European Patent Office application amounts to a group of national patent applications that are processed together but then are given individual legal effect within the appropriate jurisdictions. Once issued by the European Patent Office, these patents enjoy independent legal lives, and must be enforced and maintained separately.[130] A draft treaty known as the Community Patent Convention would take this system one step further, creating a true unified European patent, but its ratification has been delayed for many years.[131]

Other regional agreements include:

- African Intellectual Property Organization (also known as the Organization Africaine de la Propriete Intellectuelle or OAPI), for portions of French-speaking Africa.
- African Regional Intellectual Property Organization (ARIPO), for portions of English-speaking Africa.
- Eurasian Patent Convention, joined by certain former members of the Soviet Union.

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[127]*See* Nolff, Markus, "TRIPS, PCT and Global Patent Procurement," 83 *Journal of the Patent and Trademark Office Society* (2001), 479.

[128]For example, in 1999, U.S. entities filed 25,333 applications at the European Patent Office (EPO). This number represented 28.35% of the total applications at the EPO and made the United States the largest single source of EPO applications. European Patent Office, *1999 Annual Report*.

[129]*See* Paterson, Gerald, *The European Patent System: The Law and Practice of the European Patent Convention* (Sweet & Maxwell, London 2000).

[130]*Ibid.*

[131]*See* Thomas, *supra* note 5.

NAFTA

The North American Free Trade Agreement (NAFTA), currently joined by the United States, Canada and Mexico, includes a number of intellectual property provisions.[132] More rigorous than the Paris Convention or the PCT, NAFTA requires its signatories to commit to substantive patent law measures, including term of protection, scope of rights accorded to patentees, and standards of patentability such as novelty and nonobviousness. At the time of its effective date of January 1, 1994, NAFTA was a premier intellectual property treaty. However, in terms of the extent of its obligations and the scope of signatories, NAFTA was quickly eclipsed by the World Trade Organization's TRIPS Agreement. Rather than focus on the particulars of NAFTA, this report next discusses the TRIPS Agreement.

The TRIPS Agreement

One component of the international agreement forming the World Trade Organization (WTO) is the so-called TRIPS Agreement, or Agreement on Trade-Related Aspects of Intellectual Property Rights.[133] Although the TRIPS Agreement addresses a number of intellectual property laws, including copyrights, trademarks and trade secrets, this report confines its discussion to the patent provisions of the TRIPS Agreement. The TRIPS Agreement has three principal components: minimum substantive standards of protection; enforcement provisions; and dispute settlement between member countries. The TRIPS Agreement also includes transition provisions governing the effective date of its obligation in different WTO member states. This report reviews each of these topics in turn.

Minimum Standards of Protection. Under Part III of the TRIPS Agreement, all member countries agreed to enact patent statutes that include certain substantive provisions. In particular, each signatory agreed to allow patents to issue on inventions "in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application."[134] The TRIPS Agreement includes some exceptions to this broad principle, however. Certain methods of medical treatment, plants and animals other than microorganisms, and inventions that violate the *order public* or morality may be excluded from patentability at the option of the member state.[135]

WTO members also agreed that patentees shall have the right to exclude others from making, using, offering for sale, selling, or importing the patented invention.[136] The TRIPS Agreement again creates an exception to this broad principle, however, allowing member states to limit patent rights under certain circumstances. Article 30 of the TRIPS Agreement states:

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[132]North American Free Trade Agreement, Dec. 17, 1992, 32 I.L.M. 289; *see also* North American Free Trade Agreement Implementation Act, P. L. 103-182, 107 Stat. 2057 (1993).

[133]*See* Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Annex 1C, 33 I.L.M. 1197 (1994) [hereinafter "TRIPS Agreement"].

[134]TRIPS Agreement, Article 27(1).

[135]TRIPS Agreement, Article 27(2).

[136]TRIPS Agreement, Article 28.

> Members may provide limited exceptions to the exclusive rights conferred by a patent, provided that such exceptions do not unreasonably conflict with a normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of third parties.

WTO members further agreed that the term of patent protection available shall not end before the expiration of a period of 20 years counted from the filing date.[137] In addition, the TRIPS Agreement requires that member states must provide patent owners with the opportunity for judicial review of any decision to revoke or forfeit a patent.[138]

Part III of the TRIPS Agreement also addresses compulsory licenses. A compulsory license allows a competitor of the patent owner to use the patented invention without the patent owner's permission.[139] Although compulsory licenses have played only a minor role in the United States patent system,[140] many foreign patent statutes include such provisions.[141] These statutes typically require an interested party formally to request the compulsory license from the foreign government. Competent authorities then decide whether to grant the license as well as the terms of any granted license. Grounds for granting a compulsory license include the abusive exercise of patent rights, lack of domestic manufacture of the patented product, commercialization of the patented good that does not satisfy the needs of the local market and national emergencies.[142] While some accounts suggest that formal compulsory licensing proceedings are commenced only infrequently, the mere existence of a compulsory licensing statute may do much to encourage bargaining between a foreign patentee and domestic industry, on terms favorable to local manufacturers.[143]

The TRIPS Agreement places some limits upon the ability of WTO member states to award compulsory licenses for the use of another's patented invention. Among the most detailed provisions of the TRIPS Agreement, Article 31 imposes in part the following restrictions upon the issuance of compulsory licenses:

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[137]TRIPS Agreement, Article 33.

[138]TRIPS Agreement, Article 32.

[139]Sherwood, Robert, "Intellectual Property and Investment Stimulation: The Ratings of Systems in Eighteen Developing Countries," 37 *IDEA* (1997), 261.

[140]*Dawson Chemical Co. v. Rohm and Haas Co.*, 448 U.S. 176 n.21 (1980).

[141]Julian-Arnold, Gianna, "International Compulsory Licensing: The Rationales and the Reality," 33 *IDEA* (1993), 349.

[142]*Ibid.* For studies of specific compulsory licensing provisions of individual nations, see, for example, Baca, Rafael V., "Compulsory Patent Licensing in Mexico in the 1990's: The Aftermath of NAFTA and the 1991 Industrial Property Law," 8 *Transnational Lawyer* (1995), 33; Rosenthal, Robert E., "The Chinese Patent System," 17 *Law and Policy in International Business* (1985), 907; Wechkin, John M., "Drug Price Regulation and Compulsory Licensing for Pharmaceutical Patents: The New Zealand Connection," 5 *Pacific Rim Law & Policy Journal* (1995), 237.

[143]Boseley, Sarah, "Opinion: Pharmaceuticals move their battleground to Brazil to stem the tide of cheaper drugs," *Irish Times* (20 April 2001), 14.

- Each application for a compulsory license must be considered on its individual merits.

- The proposed user must have made efforts to obtain authorization from the patent owner on reasonable commercial terms and conditions and must demonstrate that such efforts have not been successful within a reasonable period of time. However, this requirement may be waived in the case of a national emergency or other circumstances of extreme urgency.

- Any such use shall be authorized predominantly for the supply of the domestic market of the member authorizing such use.

- The compulsory license must be revocable if and when its motivating circumstances cease to exist and are unlikely to recur.

- The patent owner must be paid adequate remuneration in the circumstances of each case, taking into account the economic value of the authorization.

- The legal validity of any decision relating to the authorization of such use shall be subject to judicial or other independent review.

WTO members agreed that patentees should be subject to certain conditions. In particular, the TRIPS Agreement requires that WTO member states "shall require that an applicant for a patent shall disclose the invention in a manner sufficiently clear and complete for the invention to be carried out by a person skilled in the art."[144]

The TRIPS Agreement also requires its signatories to comply with certain provisions of the Paris Convention, including its foreign priority system.[145] This requirement has led to a dramatic increase in the number of Paris Convention signatories.[146] Apparently realizing that they were already obliged to respect the Paris Convention, many WTO member states that were not previously Paris Convention signatories acceded to that treaty.

National Enforcement Procedures. In addition to mandating certain substantive patent law standards, the TRIPS Agreement also designates intellectual property enforcement procedures that member countries are required to provide. Part III of the TRIPS Agreement details what procedures and remedies must be available for patent holders to obtain effective enforcement against infringers. The first section of Part III states general obligations: procedures concerning the enforcement of intellectual property rights must be fair, equitable, without unnecessary complications or costs, and absent unreasonable time-limits or unwarranted delays.[147]

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[144]TRIPS Agreement, Article 29.

[145]TRIPS Agreement, Article 2.

[146]Maskus, Keith E., *Intellectual Property Rights in the Global Economy* (Washington, D.C., Institute for International Economics, 2000).

[147]TRIPS Agreement, Article 41.

In the second section of Part III, the TRIPS Agreement requires the creation of certain civil and administrative procedures and remedies. Members must make available to patent owners civil judicial procedures for enforcement. These judicial authorities must have the power to grant certain remedies, including injunctions,[148] monetary damages[149] and destruction of infringing goods.[150]

The third section of Part III mandates that member states allow for the possibility of prompt and effective provisional measures to prevent infringements and preserve relevant evidence.[151] In the fourth section of Part III, the TRIPS Agreement mandates that member states establish border measures so that infringing imports may be prevented from circulating within the domestic market.[152]

Dispute Settlement Between Member Countries. As with other obligations imposed by the WTO, TRIPS Agreement obligations are subject to enforcement through the WTO Dispute Settlement Body (DSB).[153] If one WTO member state believes that another member state is in violation of the TRIPS Agreement, the member states may enter into consultation through the DSB. If the member states cannot resolve their dispute, the DSB will convene a panel to hear and resolve the dispute. Panel decisions are subject to review by the DSB Appellate Body. The WTO Agreement calls for compensatory trade measures in circumstances where the DSB finds a WTO member state to be in violation of the TRIPS Agreement, yet that member state does not amend its laws.[154]

Effective Dates. The effective date depends upon whether the WTO member state designates itself a developed, developing or least developed country. For WTO members other than developing and least developed countries, the compliance date for all requirements of the TRIPS Agreement was set to January 1, 1996.[155]

For signatory states designated as developing countries, the TRIPS Agreement set the general compliance date as January 1, 2000. However, there is one exception to this general date. If on January 1, 2000, a developing country did not extend patent protection to all areas of technology within the meaning of Article 27, that developing country may delay implementation of these provisions for an additional five years. Prior to the TRIPS Agreement, for example, many developing countries did not allow patents to issue on pharmaceuticals. The practical effect of this

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[148]TRIPS Agreement, Article 44.

[149]TRIPS Agreement, Article 45.

[150]TRIPS Agreement, Article 46.

[151]TRIPS Agreement, Article 50.

[152]TRIPS Agreement, Article 51.

[153]Understanding on Rules and Procedures Governing the Settlement of Disputes, Apr. 15, 1994, WTO Agreement, Annex 2, Legal Instruments--Results of the Uruguay Round vol. 31, 33 I.L.M. 1226 (1994).

[154]Clough, Mark, "The WTO Dispute Settlement System – A Practitioner's Perspective," 24 *Fordham International Law Journal* (2000), 252.

[155]TRIPS Agreement, Article 65.

additional transition period was that developing countries need not allow patents on pharmaceuticals until January 1, 2005.[156]

The TRIPS Agreement also allows a signatory state designated as a least-developed country to delay implementing the TRIPS Agreement until January 1, 2010. A showing of hardship may qualify least-developed countries for further delays and other concessions.[157]

The TRIPS Agreement does not oblige its signatories to protect subject matter that fell into the public domain prior to the time its obligations became effective.[158] For example, suppose that a particular developed country traditionally did not allow patents to issue on pharmaceuticals. If that developed country joins the WTO, it must amend its patent law to authorize pharmaceutical patents. The TRIPS Agreement requires only that patents be allowed on new products as of January 1, 1996, however, and does not mandate that patents be granted retroactively. As a result, patent protection need not be afforded pharmaceuticals that were known to the public prior to January 1, 1996, even if those pharmaceuticals were patented elsewhere.

The TRIPS Agreement includes two other transitional measures known as pipeline protection and exclusive marketing rights. Although the TRIPS Agreement allows developing countries to delay implementing their patent law obligations, it requires that they immediately establish so-called pipeline protection for pharmaceuticals. Some sources refer to pipeline protection as the "mailbox rule."[159] Under this requirement, countries that do not allow pharmaceutical patents to issue must nonetheless accept patent applications. These patent applications will essentially be held at the national patent office until it comes time for the patent application to be considered.

Pipeline protection is valuable because it allows inventors to establish a date of priority of invention. Although many years might pass between the application's filing date and the date on which it would be examined, the inventiveness of the claimed invention must be judged as of its filing date. Pipeline protection allows inventors to maintain their priority of invention in the face of subsequent technical advances.

The TRIPS Agreement also mandates that WTO member states award an Exclusive Marketing Right ("EMR") to inventors in specified circumstances. The holder of an EMR concerning a particular product is designated as the only entity authorized to distribute that product within the member state. The award of EMRs provides innovators with transitional, patent-like market exclusivity in member states that do not yet offer patent protection for pharmaceuticals.

In order for an enterprise to obtain an EMR in one WTO member state, that enterprise must obtain both a patent and marketing approval on that pharmaceutical

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[156]*Ibid.*

[157]TRIPS Agreement, Article 66.

[158]TRIPS Agreement, Article 70.

[159]Giust, John E., "Noncompliance with TRIPS by Developed and Developing Countries: Is TRIPS Working?," 8 *Indiana International and Comparative Law Review* (1997), 69.

in another WTO member state. That enterprise must also take two additional steps within the jurisdiction in which an EMR is sought. First, the enterprise must obtain marketing approval for the pharmaceutical. Second, that enterprise must file a patent application claiming that pharmaceutical. Upon completing these two steps, the enterprise may obtain an EMR with a maximum duration of five years. The EMR will expire prior to the expiration of five years if either the marketed product is patented, or the local patent office rejects the enterprise's patent application.

Debate on the TRIPS Agreement. The TRIPS Agreement has generated controversy. Some commentators predict that the TRIPS Agreement will lead to large transfers of wealth from poor countries to the developed world, and in particular to the United States.[160] Others believe that deleterious public health consequences will result from the TRIPS Agreement requirement that patents issue on pharmaceuticals.[161] Still others have contended that the introduction of patents into the developing world restricts sustainable development and perpetuates their dependence upon developed nations.[162]

Proponents of the TRIPS Agreement instead believe that the introduction of full-fledged patent systems around the globe will provide needed incentives for investment and innovation.[163] Such efforts could promote solutions to problems that are particular to the developing world, including the provision of nutritional needs and cures for diseases not common in the developed world.[164] Supporters also observe that the TRIPS Agreement was one component of a multi-faceted WTO agreement, and believe that the developing world obtained trade benefits in exchange for protecting intellectual property.[165] An exchange of views may soon occur before the WTO, where certain officials have reportedly suggested that the TRIPS Agreement may be the subject of further consideration and possible reforms.[166]

Challenges for Innovative Firms

The preceding discussion suggests that an inventor seeking patent protection in many countries may face a complex and expensive task. Although the TRIPS Agreement confirms the international priority mechanism established by the Paris Convention over a century ago, it did little to ease the everyday mechanics of international patent acquisition. A true global patent system, where one patent

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[160] *See* Maskus, *supra* note 146.

[161] *See* Correa, Carlos M., "Public Health and Patent Legislation in Developing Countries," 3 *Tulane Journal of Technology and Intellectual Property* (2001), 1.

[162] *See* Oddi, A. Samuel, "TRIPS – Natural Rights and a 'Polite Form of Economic Imperialism,'" 29 *Vanderbilt Journal of Transnational Law* (1996), 415.

[163] *See* Su, Evelyn, "The Winners and the Losers: The Agreement on Trade-Related Aspects of Intellectual Property Rights and Its Effects on Developing Countries," 23 *Houston Journal of International Law* (2000), 169.

[164] *Ibid.*

[165] *Ibid.*

[166] *See* Reddy, C. Rammanohar, "TRIPS Under Scrutiny at WTO," *The Hindu* (18 Oct. 2000).

granting procedure leads to rights effective worldwide, is essentially a theoretical possibility at present.[167]

Multinational patent enforcement may present an even more daunting task. No international treaty directly addresses the litigation of patent rights. Although patents held in different countries may be identical, their legal independence and territorial limitations compel patent holders to bring suit in each country individually. Even where a single multinational entity infringes parallel patents by marketing the identical technology in several jurisdictions, piecemeal remedies from individual national courts provide the only traditional possibility for relief.

One example of repetitive national patent litigation is *Cuno Inc. v. Pall Corp.*[168] In this patent case tried in the United States District Court for the Eastern District of New York, the court observed that the parties had just completed litigation of a parallel British patent. In his opinion, Judge Weinstein stated:

> It is a quiddity of our law that a well and thoroughly reasoned decision reached by a highly skilled and scientifically informed justice of the Patent Court, Chancery Division, in the High Court of Justice of Great Britain after four weeks of trial must be ignored and essentially the same issues with the same evidence must now be retried by American jurors with no background in science or patents, whose average formal education will be no more than high school. This curious event is the result of the world's chauvinistic view of patents.
>
> The law's absurdity as revealed by this case lends force to recommendations for a universal patent system that recognizes that ours is a worldwide technological and economic community.[169]

Other observers are less sanguine about the desirability of a global patent system, believing that the U.S. patent system should focus upon protecting U.S. inventors rather than achieving legal harmonization.[170] Whether or not these recommendations for a global patent system bear fruit, inventors seeking effective patent protection abroad will face a number of difficulties. In addition to the apparent difficulties associated with travel, language barriers and cultural differences, foreign patent prosecution and litigation raise unique challenges. This report identifies and discusses six issues of special relevance to the entrpreneurial community: expense, delay, professional representation, differences in national patent laws, inconsistent results, and the particular problems of the developing world.

Expense

The expenses associated with multinational patent acquisition, including patent office assessments, professional representation fees, and translation costs, can be

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[167]*See* Sabatelli, Anthony D. & Rasser, J.C., "Impediments to Global Patent Harmonization," 22 *Northern Kentucky Law Review* (1995), 579.

[168]*Cuno Inc. v. Pall Corp.*, 729 F. Supp. 234 (E.D.N.Y. 1989).

[169]*Ibid* at 239.

[170]*See* Roberts, Bill, "The Muddle of Invention," 26 *Electronic Business Today* (1 Jan. 2000), 72.

considerable. In a 1996 study, Erwin F. Berrier, Jr., patent counsel for the General Electric Company, concluded that the cost of obtaining and maintaining patents in 52 countries on a single invention was $472,414.[171] Other studies have offered comparable figures.[172] Given that 162 countries are members of the Paris Convention, and that the top U.S. patent recipient, the IBM Corporation, obtained 2,886 U.S. patents during the 2000 calendar year alone,[173] the sums that certain multinational enterprises must devote towards patent acquisition and maintenance must be considerable. Even a much smaller enterprise that seeks extensive multinational patent protection may face formidable expenses, even without accounting for the costs of litigation.

Delay

Patent rights arise only when an administrative agency formally allows a patent application to issue as a granted patent. The preparation and prosecution of a patent application can consume significant periods of time. With global trends towards an increasing number of filed applications, more complex technologies, and less generous budgets, application pendency periods at the world's patent offices appear to be rising. According to the USPTO, the average U.S. patent issues about 26 months after an application is filed, compared with 21 months in 1996. The USPTO reportedly projects that average patent pendency will increase to more than 38 months by 2006.[174]

Patent application pendency periods at other patent offices sometimes exceed those of the USPTO. For the calendar years 1997, 1998 and 1999, the average processing time at the European Patent Office was 50.2, 44.7 and 46.2 months, respectively. Although the Japanese Patent Office does not currently provide figures on the total pendency of Japanese patent applications, the average time for an initial response from the Japanese Patent Office was 21.0, 19.0 and 19.8 months in 1997, 1998 and 1999, respectively.[175] A 1993 General Accounting Office report indicated that the average pendency at the Japanese Patent Office was from 6 to 7 years.[176]

Differences in patent examination procedures and data reporting techniques among patent offices make direct comparison of these pendency periods suspect.[177]

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[171]Berrier, Erwin F., "Global Patent Costs Must Be Reduced," 36 *IDEA: The Journal of Law and Technology* (1996), 473.

[172]E.g., Franklin Pierce Law Center's Sixth Biennial Major Problems Conference, 37 *IDEA: The Journal of Law and Technology* (1997), 623; Helfgott, Samson, "Patent Filing Costs Around the World," 75 *Journal of the Patent and Trademark Office Society* (1993), 567.

[173]Kenward, Michael, "Field Notes: Intellectual Property," *National Post* (4 July 2001), C2.

[174]Hoover, Kent, "Patent backlog grows, approval time soars to 38 months," *Memphis Business Journal* (29 June 2001), 11.

[175]Trilateral Statistical Report (available at http://www.european-patent-office.org /tws/tsr99/tsr.htm).

[176]General Accounting Office, *supra* note 117.

[177]General Accounting Office, *Intellectual Property: Enhancements Needed in Computing*

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These data do reveal that obtaining patent protection is often a time-consuming task. Especially in industries where product cycle times are short, patents that were long delayed in prosecution may be obsolete by the time they issue. Commenting about the software industry, patent attorney George F. Wheeler said that "by the time we get a patent issued, the infringers are done; and we are already on the next product."[178] Patent acquisition delays may discourage inventors from using the patent system at all, instead preferring the immediate protection available under the trade secret law.

Professional Representation

Given the complexity and specialized nature of patent acquisition procedures, most inventors obtain the assistance of a patent professional. Patent-issuing states generally require that patent applicants obtain local representation to prosecute applications. As a result, domestic inventors most often cannot rely upon their U.S. patent attorney to represent them before foreign patent offices. They must instead obtain the services of foreign patent counsel.

Some observers believe that obtaining competent foreign patent representation can sometimes be a difficult proposition. The practice of patent law is a specialized discipline that requires both legal and technological qualifications. This mix tends to limit the number of persons eligible to join the ranks of patent professionals. In addition, individuals seeking to represent others before a national patent office often must pass a difficult patent bar examination. In the United States, the pass rate for this examination has fluctuated, ranging from 62.4% for the examination administered during November 1999, to 37.0% for the October 2000 examination.[179] In other countries, the pass rate is even lower. For example, the 1999 Japanese patent bar examination had a pass rate of 4.9%.[180] The 1999 European Patent Office bar examination pass rate was 44% of first-time examination takers, in comparison with 33.5% of those repeating the exam.[181]

In the United States, at the start of 2001 approximately 25,785 individuals were licensed to practice patent law. In contrast, the number of licensed patent professionals is much smaller in other jurisdictions. Japan currently features approximately 4,200 patent attorneys,[182] while 6,106 professional representatives

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[177](...continued)
and Reporting Patent Examination Statistics (RCED-96-190) (July 1996).

[178]Hernandez, Nathanial, "Patent Attorneys Travel the Fast Lane to Keep Pace with Global Changes," *Chicago Lawyer* (April 2001), 8.

[179]United States Patent and Trademark Office, Office of Enrollment and Discipline, Examination Reports (available at www.uspto.gov/web/offices/dcom/olia/oed).

[180]Revelos, *supra* note 104.

[181]European Patent Office, 1999 Annual Report.

[182]Watts, Jonathon, "Seeking More Creativity, Japan Overhauls IP Laws," 43 Research-Technology Management (1 Sept. 2000), 45.

were authorized to practice before the European Patent Office at the close of 1999.[183] Some observers believe that the comparatively smaller number of foreign patent professionals acts to the detriment of U.S. industry. According to these observers, the lack of competition can lead to delays and higher fees for patent-related services.[184]

In addition to the difficulties associated with obtaining representation before a foreign patent office, engaging a qualified attorney-at-law to handle foreign patent litigation may also be problematic. In contrast to the United States, in many foreign countries few individuals admitted to the patent bar also hold qualifications as general attorneys-at-law. Some of these problems result from the differing nature of the educational and legal systems in the United States as compared to other countries. In the United States, individuals most often obtain their legal education as a graduate degree. The majority of individuals who have passed the U.S. patent bar examination possess undergraduate degrees in technical disciplines, accompanied by a law degree. As a result, most individuals who have passed the U.S. patent bar have also passed a state bar examination and are qualified as general attorneys-at-law.

In contrast, in many other countries the law degree is obtained at the baccalaureate level. Having obtained one bachelor's degree, few individuals return to obtain a second in a technical discipline. As a result, most foreign patent attorneys are not qualified as general attorneys-at-law, and few attorneys-at-law possess expertise in patent matters. In some countries, many attorneys-at-law who are experienced in patent matters are engaged by domestic firms as full-time consultants. Some observers believe that such relationships make it difficult for U.S. firms to find competent counsel. An inability to find an attorney-at-law with intellectual property experience can make patent enforcement difficult.[185]

Out of recognition of some of these concerns, the Japanese Diet passed a new Patent Attorney Law that became effective January 6, 2001. The Diet intended this law to increase the availability of legal services related to intellectual property in Japan.[186] This legislation may serve as a model for other countries. In addition, intellectual property law has recently been subject to increased public exposure around the world, potentially leading more young people into the field. The training of patent professionals remains a time-consuming process, however, and it is possible that growing demand for patent-related services may outstrip the availability of qualified practitioners.

Differences in National Patent Laws

The TRIPS Agreement and predecessor international agreements have contributed to patent harmonization. For example, prior to the TRIPS Agreement,

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[183]European Patent Office, 1999 Annual Report.

[184]General Accounting Office, *supra* note 117.

[185]*Ibid.*

[186]*See* Rousso, Lee, "Japan's New Patent Attorney Law Breaches Barrier Between the 'Legal' and "Quasi-Legal' Professions: Integrity of Japanese Patent Practice At Risk?", 10 *Pacific Rim Law and Policy Journal* (2001), 781.

patent term varied considerably in different countries. Once implementation of the TRIPS Agreement is complete, all WTO member states will have a patent term of at least 20 years from the date the patent application was filed. However, significant differences remain between the patent laws of the United States and those of other countries.[187] The effect of three of these differences, relating to the priority mechanism, grace period and patentable subject matter, are discussed below.

Priority principle. Recall that every patent system except for that of the United States employs a first-to-file priority principle. Under this regime, the first patent applicant is presumptively entitled to the patent whether or not he was actually the first individual to complete the invention in the field. The U.S. patent system instead employs a first-to-invent priority principle, which instead awards the patent to the first applicant that actually completed the invention.[188]

Differences between these priority systems could lead to the award of different national patents to different parties on the same invention. For example, suppose that inventor A synthesizes an inventive chemical compound on August 1, 2001, and files a patent application at the USPTO on October 1, 2001 claiming that compound. Invoking the Paris Convention, inventor A then files a patent application at the German Patent Office on September 1, 2002. Suppose further that inventor B invents the same compound on August 15, 2001, files a patent application at the USPTO on September 15, 2001, and then files a patent application at the German Patent Office on September 1, 2002. Under this simple example, inventor A would be awarded the U.S. patent under the first-to-invent principle. Inventor B would obtain the German patent under the first-to-file principle, based upon his earlier U.S. filing date.

The impact of this legal situation upon such factors as the rate of innovation, industry concentration and commercialization of new technologies is difficult to predict. In the above example, it may be that because neither inventor has exclusive rights in both countries, neither would possess sufficient incentives to commercialize or further develop the patented technology. On the other hand, perhaps patent rights in a single country would suffice to stimulate both inventors to sell and improve upon the inventive compound, and leading to a more diverse and competitive industry at the time the patents expire.

Grace Period. Although the U.S. patent law allows inventors a one-year grace period to file patent applications, other patent systems have more limited grace periods. As a result, activities such as public uses, sales and publications that would defeat patentability in Europe, Japan and other jurisdictions do not prejudice U.S. patent applicants.[189] This distinction may effectively allow more patents to be granted in the United States than in other countries. In addition, domestic inventors who take advantage of the full grace period under the U.S. patent law may be prejudiced when they attempt to obtain patent protection overseas.

Patentable Subject Matter. Recall that the range of subject matter for which patent protection is available is much broader in the United States than in other

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[187] *See supra* notes 61-102 and accompanying text.

[188] *See supra* notes 72-78 and accompanying text.

[189] *See supra* notes 79-84 and accompanying text.

countries.[190] As a result of these differences in local patent laws, foreign inventors may obtain U.S. patents on certain biotechnologies, business methods and other inventions not associated with traditional heavy industry. However, U.S. inventors may not obtain foreign patents on such inventions. This disparity in international patent law standards my act to the detriment of U.S. industry.[191]

Inconsistent Results

Patent acquisition and enforcement often raises conceptual, legal and technological issues of great difficulty. In 1841, U.S. Supreme Court Justice Joseph Story described patents, along with copyright, as belonging "to what may be called the metaphysics of the law, where the distinctions are, or at least may be, very subtle and refined, and, sometimes, almost evanescent."[192] Patent cases sometimes raise advanced technological issues as well. As explained by former USPTO Director Q. Todd Dickinson, "the complexity of some of these applications is almost unimaginable. For example, we received a DNA sequence listing as part of a patent application that, had it been submitted on paper, would have totaled more than 400,000 pages."[193]

In an environment containing such complex issues, it is unsurprising that different national authorities have often differed in their judgments of the identical patent issues. It is quite possible that the same patent application could be allowed by one patent office examiner, rejected on a particular ground by a second examiner, and rejected on a different ground by a third examiner. During patent enforcement, courts may also take different view of the validity of the patent and the scope of patent rights.

The result may be a climate in which entrepreneurship could suffer. A patchwork of patent rights could make it difficult for any one inventor to obtain a return on investment sufficient to justify marketing the innovative product. Given the ease with which goods move in the international economy, a patentee might experience difficulties policing the entry of infringing goods into one market when a competitor has established production facilities elsewhere.

Problems of the Developing World

The TRIPS Agreement obliges WTO member countries to develop an intellectual property regime by 2005, absent special concessions. In countries that have not previously known a patent law, or where patent services are offered by a small number of specialized practitioners, this requirement may prove both costly and difficult. Economists Michael Finger and Philip Schuler reportedly estimate that the

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[190]*See supra* notes 85-96 and accompanying text.

[191]North, *supra* note 90 at 111.

[192]*Folsom v. Marsh*, 9 F. Cas. 342, 344 (C.C.D. Mass. 1841) (No. 4,901).

[193]Testimony Before the Subcommittee on Courts and Intellectual Property, Committee on the Judiciary, U.S. House of Representatives (13 July 2000).

total cost of implementing the TRIPS Agreement is $150 million per country.[194] Training industry, legal practitioners and jurists in intellectual property law may prove onerous in countries that are facing more compelling national needs.

To fully convey the magnitude of this problem, the situation in the United States should be contrasted with some members of the developing world. The USPTO has an annual budget of $1 billion and a staff of more than 3,300 highly-trained scientists, engineers and legal experts to examine patent applications. The U.S. intellectual property regime also features the Court of Appeals for the Federal Circuit, which possesses exclusive jurisdiction over patent appeals; dozens of law schools with advanced course offerings in patent law; a community of experienced patent professionals; an extensive antitrust authority that can deal with overreaching by patent owners; and an established customs service that can address the importation of infringing goods. Some least-developed countries are reported to have, at best, a handful of patent examiners.[195] To the extent some portions of the developing world lack an effective intellectual property infrastructure, any resulting burdens will likely fall most heavily upon private enterprise attempting to obtain and enforce patent rights there.

Legislative Issues and Options

Legislation addressing some of the issues involving multinational patent acquisition and enforcement has been introduced in the 107th Congress. Proposals and a number of legislative options are explored below.

Financial Support

Costs provide one challenge for innovative firms seeking patent protection abroad.[196] One approach for addressing this issue is to offer direct financial support to innovative enterprises. This technique might be subject to criticism on the ground that it could principally subsidize translators, patent attorneys and patent offices based overseas, and might discourage these entities from controlling their fees. Should Congress choose to pursue this concept, issues to be considered include determining whether the support would be provided through loans or grants; setting the maximum government contribution; determining which expenses are subject to support (selecting expenses arising from patent acquisition, maintenance, enforcement and other activities); and identifying the pertinent enterprises that would be eligible to participate.

Legislation has been introduced in the 107th Congress that would implement this policy. On August 2, 2001, Senator John Kerry introduced S. 1323, titled the "SBIR

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[194]Panagariya, Arvind, "Yes to IPRs, but not under WTO," *The Economic Times* (26 Jan. 2000).

[195]"The right to good ideas: How patents help the poor: Intellectual-property rights are not just for the rich world. Carefully constructed, they can help the poorest too," *The Economist* (23 June 2001).

[196]*See supra* notes 171-73 and accompanying text.

and STTR Foreign Patent Protection Act of 2001." This bill would establish a 5-year pilot program at the Small Business Administration to provide one-time grants of up to $25,000 for certain small businesses. These grants could be used to file overseas patent applications on technology developed under the Small Business Innovation Research Program (SBIR) and the Small Business Technology Transfer Program (STTR). Grant recipients would be required to pay a royalty fee to the Small Business Administration based upon export sales receipts or licensing fees that result from the patented technology. Any royalty payments received would be deposited to a Foreign Patent Protection Grant Fund and should be used to provide further grants. S. 1323 additionally authorizes to be appropriated $2.5 million for the Fund for the fiscal year 2003, scaling up to $10 million annually in fiscal years 2006 and 2007.

Legal Harmonization

Legal harmonization has long served as a point of contention within the patent community. Supporters of legal harmonization believe that the U.S. patent system has long been an outlier in the international patent regime, given its unique adherence to such principles as the first-to-invent priority system.[197] Harmonization advocates point out that certain other components of the U.S. patent law, including the so-called "best mode" requirement[198] and the *Hilmer* rule[199] are also not observed by other major patent-granting states. These advocates contend that a common set of ground rules would ease the burden of multinational patent acquisition and enforcement.[200] They also propose that U.S. representatives could negotiate with other countries for concessions that would favor U.S. inventors, in exchange for changes to U.S. law.[201]

Opponents of legal harmonization believe that the U.S. patent system has evolved over many years to achieve the proper balances of rights and responsibilities for inventors, their competitors and the public.[202] Some harmonization opponents believe that changes to the U.S. patent system would favor larger firms and act to the disadvantage of smaller, innovative enterprises.[203] Others contend that legal changes would aid foreign industry at the expense of U.S. industry.[204]

Neither side in this debate is able to point to much objective evidence supporting their views. Although the federal patent system was introduced in 1790, this long

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[197]Baremore, John Paul, "Don't Shoot the Messenger: Congress and the Prospect of Patent Harmonization," 44 *Loyola Law Review* (1999), 761.

[198]*See supra* note 39 and accompanying text. *See also* Jacobs, Jr., Albert J., "The Best Mode Requirement: What the Law Is and What It Should Be," 16 *Houston Journal of International Law* (1994), 533.

[199]*See* Neifeld, Richard A., "Viability of the *Hilmer* Rule," 81 *Journal of the Patent and Trademark Office Society* (1999), 544.

[200]Baremore, *supra* note 197.

[201]*Ibid.*

[202]*See* Roberts, Bill, "The Muddle of Invention," 26 *Electronic Business Today* (1 Jan. 2000), 72.

[203]*Ibid.*

[204]*Ibid.*

experience has yielded a paucity of rigorous analytical methods for analyzing the effect of changes to the patent laws. The relationship between innovation and patent rights remains poorly understood, and current economic and policy tools do not allow us to calibrate the patent system precisely in order to produce an optimal level of investment in innovation. Notably, the United States has recently taken some steps in the direction of patent harmonization through such measures as adopting a 20-year patent term and, to some degree, authorizing pre-grant publication of patent applications.[205] Whether this project should be continued or abandoned likely depends upon the observer's point of view.

Should Congress review these issues and believe that legal harmonization is the more appropriate course, a number of steps could be taken. First, Congress could promote dialogue between the United States and other patent-issuing nations on patent law reform. Second, Congress could encourage the drafting and promulgation of patent harmonization treaties through such fora as the World Intellectual Property Organization. Finally, Congress could enact changes to the U.S. patent statute on a unilateral basis that bring the U.S. patent law closer to those of other nations.

Patent Office Worksharing Initiatives

Many commentators have recognized that the world's patent offices are to some degree engaged in redundant efforts.[206] The same invention may be subject to multiple, parallel prior art searches and substantive examinations as various national or regional patent applications are reviewed at patent offices around the world. Although the Patent Cooperation Treaty (PCT) takes some steps to rationalize multinational patent acquisition, not all applicants choose to use the PCT. Some observers also believe that some patent offices do not fully respect earlier prior art searches and examinations conducted by other patent offices through the PCT.[207]

Believing that a true global patent system may be at best a distant prospect, some commentators propose that patent offices rationalize their efforts through worksharing.[208] Under a proposal offered by the Japanese Patent Office, patent offices would agree to recognize a previously completed prior art search.[209] As a result, examiners could save time and resources by examining an application for patentability based upon the prior art previously identified by a foreign examiner. Additional proposals call for recognition of substantive examination results as well. Under these proposals, once a patent application had been allowed to issue by one

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[205]*See supra* notes 97-102 and accompanying text.

[206]Sherwood, Robert M., *et al.*, "Promotion of Inventiveness in Developing Countries Through a More Advanced Patent Administration," 39 *IDEA: Journal of Law and Technology* (1999), 473.

[207]*See supra* notes 125-27 and accompanying text.

[208]Wegner, Harold C., "TRIPS Boomerang – Obligations for Domestic Reform," 29 *Vanderbilt Journal of International Law* (1996), 535.

[209]Japan Patent Office. Annual Report 2000 at 32-33.

patent office, an application claiming the same invention would be allowed to issue by other patent offices without an additional search or examination.[210]

Commentators have recognized a number of practical difficulties with these proposals. Allowing a foreign examiner to complete a conclusive prior art search, not to mention a binding substantive examination, may be considered a concession of sovereign power to a foreign administrative agency. Prior art searches and examination completed overseas may be difficult to monitor and of uncertain quality. Differences in national patent laws may also render difficult a universal search and examination.

Should Congress review these issues and believe that patent office worksharing is a viable option, a number of possibilities could be explored. First, Congress could encourage the USPTO to continue ongoing technical cooperation programs with other patent offices. Second, Congress could commission industry, technical and legal research that could discern whether worksharing is supported by industry, feasible in light of the capabilities of particular patent offices, and compatible with governing U.S. law. Finally, patent law harmonization could be advanced to the extent that it would expedite worksharing possibilities.

Technical Assistance

At the present time, a number of entities have attempted to aid the developing world in implementing intellectual property regimes. The World Intellectual Property Organization offers technical assistance to countries trying to draft intellectual property legislation or set up their patent offices.[211] The Japanese Patent Office has implemented various projects that promote the establishment of intellectual property systems, principally in the Asia-Pacific region.[212] The European Patent Office too has established cooperation programs with patent offices around the world, often in countries where the patent system has yet to become firmly rooted.[213] These projects have involved legal training, technical training and assistance in developing patent office automation systems. To the extent these efforts have promoted legal, technical and administrative infrastructure in developing local patent systems, such projects may assist U.S. innovative firms in the future.

Should Congress agree to support such technical assistance, the authorizing statutes might promote the involvement of U.S. institutions in these endeavors. The USPTO, universities, intellectual property foundations and other entities could be funded and directed to provide technical assistance to the patent systems of the developing world.

Jurisdiction and Enforcement of Judgments

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[210] *Ibid.*

[211] Abbott, Frederick M., "The Future of the Multilateral Trading System in the Context of TRIPS," 20 *Hastings International and Comparative Law Journal* (1997), 661.

[212] Japan Patent Office, Annual Report 2000 at 45-57.

[213] European Patent Office, 1999 Annual Report.

Like some other forms of complex international commercial litigation, multinational patent enforcement can be an expensive, time-consuming and repetitive process.[214] Recognizing the problems associated with multinational litigation, the Hague Conference on Private International Law has recently proposed a Private International Law Convention on Jurisdiction and the Recognition of Foreign Judgments. The so-called "Hague Convention" would establish international rules among signatory countries to govern rules of jurisdiction, as well as recognition and enforcement of foreign judgments in civil and commercial matters.[215] If the Convention is ultimately promulgated and joined by the major patent-granting states, it might take some steps towards resolving some of the problems associated with multinational patent enforcement.[216] The Convention is geared toward general civil litigation, however, and some commentators believe that it will require modification to account for multinational intellectual property litigation.[217]

Some legal commentators have suggested more dramatic proposals than would be provided by the most recent draft of the Hague Convention. One such proposal would allow one tribunal to handle consolidated multinational patent litigation. For example, the owner of parallel U.S., Japanese and German patents could commence a single enforcement litigation against an accused multinational infringer in one forum. Such a tribunal could be a national court or a specialized international patent tribunal.[218]

If Congress believes that reform of multinational patent enforcement is appropriate, several measures could be explored. First, Congress could contribute to the formation of the Hague Judgments Convention or another international agreement delineating jurisdiction and recognition of judgments in this field. Another possibility is the rationalization of the domestic patent litigation process with an eye towards international harmonization. Finally, promotion of international arbitration and other alternative dispute resolution methods could be considered.[219]

Concluding Observations

Globalization and technology have been viewed as increasingly prominent influences upon the U.S. economy. This perception has led to renewed attention towards the pragmatic aspects and policies of multinational patent acquisition and enforcement. Although the international patent system has recently been subject to significant legal reforms brought by the TRIPS Agreement, the basic mechanisms for

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[214]*See supra* notes 168-69 and accompanying text.

[215]Juenger, Friedrich K., "A Hague Judgments Convention?", 24 *Brooklyn Journal of International Law* (1998), 111.

[216]Dreyfuss, Rochelle C., "An Alert to the Intellectual Property Bar: The Hague Judgments Convention," *University of Illinois Law Review* (2001), 421.

[217]*Ibid.*

[218]*See* Thomas, *supra* note 5.

[219]*See* Fernandez, Carmen Collar & Spolter, Jerry, "International Intellectual Property Dispute Resolution: Is Mediation A Sleeping Giant?", 53 *Dispute Resolution Journal* (Aug. 1998), 62.

procuring and enforcing patent rights remain unchanged since the introduction of the Paris Convention in the nineteenth century. With U.S. innovative industry seeking multinational patent protection at a rapidly growing rate, many commentators believe that the multinational patent system should be subject to continuing modernization.[220] Congress could be confronted with difficult legal, practical and policy issues, but also with apparent possibilities for rationalizing the legal regime that has long been recognized as an engine of innovation in the United States and throughout the world.

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[220] *E.g.*, Mossinghoff, Gerald J. & Kuo, Vivian S., "World Patent System Circa 20xx A.D.," 80 *Journal of the Patent and Trademark Office Society* (1998), 523.