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Notes

WHAT'S THE DEAL NOW? A BUSINESS PERSPECTIVE ANALYSIS OF THE U.S. PATENT SYSTEM AND RECENT CHANGES TO THE PATENT LAWS

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*294 I. Introduction

"I hope that the Senate will . . . focus[] its energy on issues that create American jobs, protect American ingenuity, and improve the lives of the American people. One such issue . . . is as American as fireworks on the 4th of July. This is our nation's patent system. Patents are the life's blood of America's industry and economic strength."[1] With this in mind, this note proposes to analyze the patent system and the recent amendments to the patent laws from a business perspective.

The business analysis should be familiar to any CEO or MBA.[2] First, we need to define the core mission of the patent system. Fortunately, the Constitution provides us with the start we need. The core mission of the patent system is defined in Article I, section 8, clause 8.[3] Second, we need to define the goals of the patent system. Drawing from texts by Professor Goldstein and Judge Michel, three goals can be defined as follows: 1) create an incentive to invent; 2) create an incentive to disclose; and 3) create an incentive to risk capital.[4] Third, we must define the means to accomplish these goals. Congress lays out the means through the laws, in this case, in Title 35 of the United States Code (U.S.C.). Finally, we measure the results and make corrections where necessary.

In 1999, Congress legislated a number of changes to the patent laws.[5] Several of these changes will be considered. First, the most significant change is that patent ***295** applications will be published eighteen months after filing.[6] Second, inventors can receive provisional royalties from an infringer for the period from publication to issuance of the patent, assuming the patent finally issues.[7] Last, the patent term is guaranteed to be at least seventeen years from issue if the inventor diligently pursues the prosecution of the patent application.[8]

The goal of this note is to explore whether these changes were made in response to the measurement and correction step or due to some other motive. Regardless of Congress' motive, this note will explore whether the changes are consistent with the goals and, therefore, the core mission. Based on this determination, suggestions will be made for better achieving the goals. Finally, the business perspective will be suggested as the appropriate theoretical framework for the United States patent system to maintain its core mission in a rapidly changing, global economy.

II. Business Perspective Analysis of the U.S. Patent System

The Founding Fathers sought to encourage authors and inventors by including the Intellectual Property Law Clause in the Constitution.[9] Encouraging authors and inventors to create must have been considered vitally important to include it in the Constitution founding our country and providing the framework for our government.[10] The Federalist Papers made little mention of the clause, presumably because there was no disagreement among the Framers regarding the need for Congress to be able to promote science through the use of a patent system. In fact, the Framers deemed intellectual endeavors of such great importance that there was not even a debate on the issue when James Madison proposed the Intellectual Property Law Clause.[11] "As Chief Justice Marshall expressed it in words as ***296** pertinent now as when he wrote them--'(t)o promote the progress of useful arts, is the interest and policy of every enlightened government.'"[12]

Under the power granted Congress by the Intellectual Property Clause, the first patent law, Act of April 10, 1790, ch. 7, 1 Stat. 109-110, was enacted.[13] Major revisions to the Act occurred in 1793, 1836, and finally the Act of July 19, 1952, 66 Stat. 792.[14] Although no major revisions have occurred in the last fifty years, numerous amendments have been implemented. This note will critically discuss several of the most recent amendments. However, first it will be necessary to establish the

business perspective framework necessary for the analysis by examining the patent system prior to the recent changes.

A. Core Mission

The Intellectual Property Clause is unique from the rest of the Constitution[15] in that the clause states its core mission:[16] "promot[ing] the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."[17] Knowing the core mission logically leads to analyzing the effectiveness of this constitutional mandate from a business perspective. From the business perspective, stating the core mission is critical,[18] but not enough. Also required are: a statement of the goals, a statement of the means, and continual measurement and correction.[19] Much of this section will be devoted to defining the goals. The means for achieving the goals are the specific laws passed by Congress. Any changes to the means should be considered based on an analysis of the measurement and correction elements.[20]

*297 B. Goals

Although the system does not appear broken,[21] if adjustments can be made to the means (laws) to better achieve the goals, changes would be justified. Therefore, it is important to understand the goals of the patent system. We have the core mission directly from the Constitution. From the core mission, we should derive the goals.[22] The following three basic goals have been established: first, provide an incentive to invent; second, provide an incentive to disclose; and third, provide an incentive to risk capital.[23] It is important to understand specifically the scope and extent of each of the goals so everyone, especially Congress and the Patent and Trademark Office, works to accomplish the core mission in the same manner. The point of defining the goals is to get everyone "on the same page." In this regard, an exclusive list must be established to ensure that the goals can be adequately defined so as not to conflict with other goals. Goals not established may sound good in theory, but have unintended consequences on other goals.

1. Incentive to Invent

According to Abraham Lincoln, the only president to be issued a patent, "patents add the fuel of interest to the fire of genius."[24] In our capitalist economy, inventors, like most everyone else, need financial incentives to do what they do. "Individual reward is, of course, the inducement without which little 'Progress of Science and useful Arts' could be expected."[25] An inventor "will not sow if he won't be able to reap."[26] Financial gain is required to stimulate an inventor to work. Rewarding inventors with rights that can be sold or used for financial gain, is the most effective way to provide an incentive to invent. Although one study has not found any empirical evidence to confirm that patents promote the progress of society,[27] other studies have confirmed that financial gain motivates inventors.[28] In ***298** a study by Joseph Rossman, inventors most often cited "financial gain" and "part of work" as their motivation or incentive to invent.[29]

Indeed, the need to "reward inventors" has been almost universally recognized in the United States. The Supreme Court has noted the need to "reward inventors" in a number of cases.[30] Commentators have accepted the need to give people an incentive to invent as well.[31] Douglas Wyatt, past chair of the American Bar Association's section on Patent Trademark and Copyright Law, has stated: "[t]his country is built on having incentives for people to make inventions. . . ."[32] Judge Richard A. Posner, a noted writer on law and economics, has simply stated: "patent and copyright protection increases the incentive to create ideas. . . ."[33] Finally, and perhaps most importantly, the Federal Circuit[34] has recognized the goal of providing incentives to invent. The court in In re Alappat[35] stated: "Patents for inventions are now treated as a just reward to ingenious men, and as highly beneficial to the public . . . by holding out suitable encouragements to genius and talents and enterprise" .[36]

Why is inventing so important? According to Senator Leahy, "[o]ur nation's economic prosperity in the coming years will depend on our abilities to invent and protect those inventions through our intellectual property laws."[37] Technology is becoming increasingly vital to prospering in a global economy. A patent system that provides the proper motivation to inventors can keep America on the technological forefront--and keep America as the economic leader of the world.

*299 2. Incentive to Disclose

An incentive to invent is not enough. We need inventors to disclose their inventions so their knowledge can be added to the public pool. In order "to promote the progress of science," we want inventors to be able to learn from each other and then take the next step forward. Sir Isaac Newton once said, "[i]f I have seen far it is by standing on the shoulders of giants."[38] Never has this been truer than it is in today's high technology, dot-com world.[39]

In order to encourage inventors to disclose their inventions, the United States makes a "deal" with the inventor. Often this has been referred to as a contract between the inventor and the government.[40] The contract works like this: the government provides the inventor with the right to exclude others from making, using, or selling his invention for the statutory period.[41] In exchange, the patentee agrees to donate the knowledge of his invention to the public upon grant of the patent (so others may stand on his shoulders), and to donate his invention to the public at the expiration of the statutory period.[42] This "deal" with the government was recognized almost from the inception of patents.[43] Perhaps the Supreme Court best describes the contract:

> In return for the right of exclusion . . . the patent laws impose upon the inventor a requirement of disclosure. . . . When a patent is granted and the information contained in it is circulated to the general public and those especially skilled in the trade, such additions to the general store of knowledge are of such importance to the public weal that the Federal Government is willing to pay the high price of 17 years of exclusive use for its disclosure, which disclosure, it is assumed, will stimulate ideas and the eventual development of further significant advances in the art.[44]

The "deal" has symmetry. If you disclose, then you receive a monopoly on your invention.[45] If you do not disclose, you do not receive a monopoly.[46] Chief Justice Marshall noted many years ago:

> ***300** [A patent] is the reward stipulated for the advantages derived by the public for the exertions of the individual, and it is intended as a stimulus to those exertions. The laws which are passed to give effect to this purpose ought, we think, to be construed in the spirit in which they have been made; and to execute the contract fairly on the part of the United States, where the full benefit has been actually received. . . . The public yields nothing which it has not agreed to yield; it receives all which it has contracted to receive.[47]

3. Incentive to Risk Capital

Investors will have an incentive to risk capital or invest in inventions only if they can expect to receive an appropriate financial return.[48] Substantial amounts of capital are generally required to create a patentable invention. As Judge Newman stated, "patent law is directed to . . . fostering technological progress, investment in research and development, capital formation, entrepreneurship, innovation, national strength, and international competitiveness."[49] For inventors to risk capital, whether that capital is time or money, they must believe they will be rewarded for the risk. The Supreme Court has noted that the patent laws offer an incentive "to risk the often enormous costs in terms of time, research, and development."[50]

The need to offer this incentive to risk capital is especially true with corporations. When making a capital[51] investment, corporations are always looking to increase reward with as little risk as possible.[52] This process of evaluating investment projects and choosing the projects with the most reward and least risk is called capital budgeting.[53] Many of today's high-tech inventions require a great deal of up-front investment in research with the projected payoff years in the future. ***301** This is especially true in the biomedical and medical device fields where a significant portion of venture capital is invested.[54] In 1997, nearly three billion dollars of venture capital[55] was invested in these fields.[56] In a letter to the Senate, The National Venture Capital Association, stated: "[T]o venture capitalists, patents play a fundamental and critical role in the availability of capital and our willingness to invest in biotechnology and medical devices. The reason for such dependency upon patents is that they provide the favorable economics required to justify substantial capital investment for successful product development."[57]

C. Means

The means by which the goals are accomplished are the laws and regulations established by the government.[58] Legislation (specifically Title 35) enacted by Congress supplies most of the means by which the goals are furthered. However,

regulations set by the Patent and Trademark Office ("PTO") (specifically 37 C.F.R.), decisions of the district courts, and especially, decisions of the Court of Appeals for the Federal Circuit also establish the means by which the goals are furthered. This note will focus on the recent changes enacted by Congress, as opposed to the regulations promulgated by the PTO or decisions of the courts. PTO regulations and judicial decisions should adhere to Congress' intent, however, so the note applies with equal force to these means as well.

D. Measurement and Correction

Amendments to the patent laws must be considered corrections to the means employed to further the goals. Extreme care should be exercised in "correcting" a system that has been so successful. Measuring the performance of the U.S. patent system, one commentator has recently stated: "[n]o one can question the success of the United States in luring out its dreamers, or the rewards that they receive for useful creative thinking--thus, the nation's patent law has remained basically unchanged for over 200 years. . . ."[59] The current patent law has motivated U.S. inventors to be the best in the world. United States inventors have developed almost ***302** twice the number of influential patents as the rest of the world combined.[60] If current measurements do not call for a correction, it is important to make sure that we are not fixing a system that is not broken. If current measurements do not call for a correction, it is also important to carefully analyze any proposed changes to the means to ensure the changes are consistent with the established mission and goals.

Measuring of the success of the patent system is not a simple numerical calculation, but as any CEO knows, determining the success of any program requires developing measurable criteria for success. For the U.S. patent system, a number of measurable statistics can be evaluated. The U.S. patent system can be compared to other industrialized nations in terms of number of patents issued or the number of influential patents. The system could be evaluated in terms of the number of new drugs developed with a patent, the number of new high-tech businesses started and funded based on a patent, and other measurements. The point is to determine measurable criteria believed to indicate the success in achieving the goals. Often in evaluating a program as complex as the U.S. patent system, the critical point is not exactly what is used as the measuring stick, but to measure something and not just to make changes based on feeling. As shown from the Congressional Record,[61] Congress changed the patent system based on feeling and a desire to harmonize, without even considering the goals, much less using any measurement of success.

Part III will provide an overview of the recent changes in patent law. Were these amendments corrections? If the business perspective analysis was properly applied, these amendments will modify the means in order to further the goals and the core mission of the patent system. Part IV will provide an analysis of the effect of the amendments on the goals of the patent system to determine if the changes were appropriate.

This note focuses on further promoting the progress of science without asking if there is too much incentive. It may be possible to surpass an optimal level of incentives to the detriment of society.[62] However, Congress has not considered the possibility that the current patent system provides too much incentive, thus, this note assumes the U.S. has not surpassed the optimal incentive level. Determining an "optimal" level is the subject of a different analysis. This note assumes that additional incentives, which further the goals and core mission of the patent system, would do so in a socially beneficial manner.

*303 III. Recent Changes in U.S. Patent Law

On November 29, 1999, President Clinton signed into law the Intellectual Property and Communications Omnibus Reform Act of 1999.[63] The Omnibus Act included the American Inventor's Protection Act[64] ("the Act"), which significantly amended the patent laws. For several years, Congress has hotly debated several of these amendments.[65] The Act amended the patent laws by: imposing a duty of disclosure on invention promoters,[66] adjusting the maintenance and application fees,[67] granting a prior user (first inventor) defense for business method patents,[68] guaranteeing the patent term,[69] providing for pre-grant publication,[70] granting provisional royalty rights,[71] granting third party rights to request and participate in an inter partes reexamination,[72] reorganizing the Patent and Trademark Office,[73] and enacting other miscellaneous provisions.[74] This note focuses on three of the statutory amendments: pre-grant publication, provisional royalty rights, and the patent term guarantee.

A. Pre-Grant Publication

The Domestic Publication of Foreign Filed Patent Applications Act modifies 35 U.S.C. § 122, effective November 29, 2000, to provide for publication of a ***304** patent application eighteen months after filing for the patent with the PTO.[75] The change has resulted in the publication of U.S. patent applications for the first time on March 15, 2001.[76] Published patent applications can be viewed and searched as images or text at http:// www.uspto.gov/patft/index.html.[77] Previously, patents were only published upon the patent being granted to the applicant.[78] If the patent was never issued, the application was never published. The change allowing for pre-grant publication has been called "one of the most fundamentally significant changes to the American Patent system in this century."[79]

Section 122, as modified, requires publication of the patent eighteen months from the earliest claimed filing date.[80] Certain exceptions apply. An application will not be published if the application is no longer pending,[81] subject to a secrecy order,[82] a provisional application,[83] or an application for a design patent.[84] However, the most significant exception to the pre-grant publication is that the application will not be published if the applicant certifies the patent application will not be filed in another country or filed under a multilateral international agreement that requires pre-grant publication.[85] This last exception may have been provided to address concerns of some inventors. Representative Rohrabacher believed the original provision, requiring all patents to be published eighteen months after filing, was being pushed by "U.S. and foreign corporations trying to repress the small ***305** scale inventor by stealing their ideas before the patents are granted."[86] Later, Senator Leahy introduced an amendment granting the exception to respond to the concerns of independent inventors.[87]

The concerns of small businesses are very important in the economy. In 1994, there were 22.1 million small businesses.[88] In 1995, small businesses created 1.25 million new jobs and employed 53% of the total U.S. workforce.[89] Small businesses are responsible for 75% of the economic growth.[90] Small business also created 55% of the innovations.[91]

B. Provisional Royalty Rights

Effective December 29, 2000, the Patent Term Guarantee Act also modifies 35 U.S.C. § 154 to provide for provisional royalty rights.[92] The provisional royalty rights provision was enacted in conjunction with the pre-grant publication to further address concerns with pre-grant publication.[93] The provisional royalty right grants the patentee "the right to obtain a reasonable royalty from any person who [infringes the patent] during the period beginning on the date of publication of the application . . . and ending on the date the patent is issued. . . ."[94] However, the accused infringer must have actual notice of publication,[95] the accused device (or process) must be substantially identical to the invention claimed in the published application,[96] and the patentee must file suit for the reasonable royalty within six years of the issuance of the patent.[97]

***306 C. Patent Term Guarantee**

The Patent Term Guarantee Act modifies 35 U.S.C. § 154 to provide for adjustment of the patent term for utility and plant patent applications filed after May 29, 2000.[98] In 1995, the patent term was changed from seventeen years from the issue date of the patent to twenty years from the filing date of the patent application.[99] Several years later, Congress passed the Patent Term Guarantee Act to guarantee inventors the original seventeen years of protection.[100] In order to understand the Patent Term Guarantee Act, the 1995 amendment must be understood. The term change in 1995 was made to harmonize the U.S. patent term with the patent term of other countries.[101] The change was agreed to during the negotiations of the Trade Related aspects of Intellectual Property (TRIP's) portion of the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) treaty in 1994.[102] GATT was slated for "fast track" legislation, thus congressmen were forced to either accept the treaty or reject it.[103] Some reluctantly accepted the treaty,[104] setting up the need for the Patent Term Guarantee Act to address their concerns.

The purpose of the Patent Term Guarantee Act "is to make sure the patentee [was] not shortchanged by administrative delays in the PTO which would delay issue and, therefore, reduce the patent's term."[105] To accomplish this goal, Congress amended 35 U.S.C. § 154 to provide for the term of the patent to be extended one day for each day of delay attributable to the PTO.[106] Specifically, the patent term can be extended if the PTO fails to accomplish the following: 1) issue a rejection or notice of allowance within fourteen months of filing the application;[107] 2) respond to an office action response or appeal within four months;[108] 3) act on an ***307** application within four months of a decision by the Board of Patent Appeals and Interferences or by a Federal court;[109] or 4) issue a patent within four months of the payment of the issue fee.[110] The statute provides a guarantee that the term will be extended for every day the patent is not issued after three years from the date of filing.[111] In this way, Congress ensured that every applicant should receive at least a seventeen-year monopoly on their patent as they did

before the 1995 GATT harmonization amendment. This appeared to be a concern of inventors, as the PTO was overwhelmed with tens of thousands of applications in the weeks before the 1995 amendment went into effect.[112]

The statute also provides a guaranteed adjustment for delays due to an interference proceeding,[113] imposition of a secrecy order,[114] or appellate review by the Board or by a federal court.[115] The patent term length adjustment can be adjusted down if the applicant fails to make reasonable efforts to conclude prosecution of the application,[116] such as failing to respond to an office action for more than three months.[117]

IV. Analysis

If the 1999 amendments discussed above had been implemented employing a business analysis, then the amendments should have been implemented based on the measurement and correction steps.[118] Congress has touted the advantages of these amendments to the inventor, attempting to make it appear as if the amendments actually were implemented based on a correction need.[119] This, ***308** however, is not the case. In 1994, the United States and Japan agreed to profoundly change their patent systems to harmonize the patent systems of the two countries.[120] The Agreement of August 16, 1994 required eighteen-month publication of U.S. patent applications by the USPTO.[121] The change brought the U.S. into harmony with other major patent systems, all of which currently publish patent applications after eighteen months.[122] This and other changes in the patent system are a result of globalization and the perceived need to harmonize U.S. patent laws with the laws of other countries.[123]

Patent issues are often a major portion of modern day treaty negotiations.[124] Patent law harmonization "drove the European Community into its first union in the European Patent Office."[125] However, how do these changes affect the U.S. patent system's mission? The following sections analyze each of the three patent law changes discussed in Part III, supra, to determine the effects on the goals and the mission of the patent system as discussed in Part II, supra.

A. Pre-Grant Publication

1. Incentive to Invent

The patent system needs to provide the incentive to invent to many different types of people, including large corporations, universities, independent inventors, and small entrepreneurs. Large companies have driven the prospect of pre-grant publication.[126] Large companies see pre-grant publication as addressing a number of their patent concerns. The concerns include: duplicative research, cost of litigation, faster commercialization of technology, and foreign filing.[127] Fortune 500 companies, however, receive only sixty percent of the patents going to U.S. ***309** nationals.[128] Pre-grant publication may address the concerns of these large corporations, but pre-grant publication does not help the universities, independent inventors, and small entrepreneurs. These small entities do not have the resources to take advantage of the ability to search a larger pool of prior art. More prior art can create opportunities if you have the resources to take advantage of the opportunity. Small entities do not have these resources. They use the patent system defensively to protect their work. Although pre-grant publication may assist large corporations in building on discovered technology faster than without the information, is it providing the corporations with a greater incentive to invent? The concerns of the large corporations deal mainly with increasing their ability to invent, not with an incentive to invent. Large corporations want to get the technology to the market faster and to reap the rewards of being the market leader. The benefits of being the market leader often provide enough incentive for large corporations. These concerns do not implicate a need for additional incentives, but rather a need for additional ability--an ability to further use the patent system as a sword. Addressing these concerns within the patent system loses sight of the goals, and therefore the constitutionally mandated core mission.

An often-cited benefit of pre-grant publication by large corporations is the elimination of submarine patents.[129] Submarine patents gained notoriety with the Jerome Lemelson cases.[130] In one instance, Mr. Lemelson first filed a patent on robots in the early fifties, the granting of which was delayed so long that he was able to sue General Electric Corporation (GE) in the nineties.[131] Mr. Lemelson intentionally caused the application to languish in the PTO so that when the patent issued he could reap the tremendous rewards from years of GE's unknown infringement.[132]

Representative Rohrabacher noted that only 13 possible submarine patents per year could be found after studying 2.3 million applications.[133] Does it make sense to allow an isolated problem to change our system? In addition, pre-grant publication will

not eliminate this problem. Patent infringement is determined based on the ***310** claims in the patent.[134] "The claims are the metes and bounds of the inventor's property right."[135] The patent claims can be amended as the patent works through the prosecution process. Pre-grant publication will allow a potential infringer to know what will be in the specification when the patent issues, but the potential infringer will not know the final scope of the claims.[136] The claims are often narrowed during prosecution, so if reviewing the patent application has any effect, the effect will be to deter the cautious from pursuing innovation in areas which need further development.

Finally, if submarine patents are a problem, the problem can be dealt with through the length of the monopoly granted to the patent. Mr. Lemelson's tactic only worked because previously the U.S. patent system established a seventeen-year term from issue, regardless of how long it took to prosecute the patent. The change in 1995 to a patent term of twenty years from filing instead of a term from issue eliminates the patentee's ability to submarine a patent, bring it up later, and sink unsuspecting infringers. The Patent Term Guarantee Act allows for extensions on the term only if the inventor diligently pursues the patent.[137] Pre-grant publication, therefore, was not necessary to deal with patent submariners such as Mr. Lemelson.

2. Incentive to Disclose

The "incentive to disclose" is the goal most affected by pre-grant publication. The "deal" or contract between the government and the inventor is no longer valid. The patent application will be published regardless of whether the applicant receives a patent. The contract is no longer guaranteed. The applicant is expected to disclose the invention, but may never receive a monopoly in exchange. Proponents of pre-grant publication argue that it furthers the promotion of science because it places more inventions in the public domain for other inventors to build upon and further improve.[138] Pre-grant publication also places more art in the public domain to be considered prior art[139] by the PTO. This, however, is trying to accomplish the core mission without considering the goals. This is exactly how problems can occur when specific goals are not communicated. Although there may be a consensus on the core mission, this does not mean that everyone will pursue the core mission ***311** through common goals.[140] It is important to develop a clear consensus on the goals derived from the core mission.[141]

The goals established in Part I, supra, do not include attempting to have as much prior art in the public domain as possible. Perhaps Professor Goldstein and Judge Michel have not recognized this as a goal because that is putting "the cart before the horse." Only by creating an incentive for inventors to disclose can inventions be placed in the public domain. The goal of creating an incentive to disclose will move inventions into the public domain. When a step is skipped because the goals are not understood, the mission will not be achieved.

Proponents of pre-grant publication might argue that under the law as passed, the application may only be published if the patent would have been published abroad anyway.[142] Other applicants can file for the exception to pre-grant publication to avoid having their application published.[143] This exception is of little value, however, because 70% to 80% of all applications are filed abroad[144] due to the increasingly global nature of the economy. Even for the few inventors who can use the exception, pre-grant publication reduces the incentive to disclose. The cost of publishing patent applications will be considerable and that cost will have to be passed on to all patent applicants. The few applicants that can use the exception to avoid pre-grant publication will be paying increased fees just like the patent applicants being published. This will further reduce the incentives to apply for patent protection.

The additional flaw in the proponents' argument that pre-grant publication does not hurt inventors because their patent will be published abroad anyway is that the argument fails to recognize the fundamental difference between the U.S. patent system and the patent systems used by the rest of the world. The rest of the world grants priority to the patent based on a first to file system. The U.S. has always maintained a first to invent system. Under a first to file system, pre-grant publication has no effect on claiming ownership of the invention.[145] "The U.S. however has a first to invent system, and early publication presents many opportunities to challenge the validity of the patent not found in a first to file system."[146] A third party can file a request at any time on the basis of any prior art to require the patentee to endure inter partes reexamination procedures.[147] The third party can become involved in the prosecution of the patent and challenge the claim ***312** to ownership. This creates additional challenges to successfully receiving a patent that the inventor previously did not have to endure until s/he had obtained the patent. This problem of pre-grant publication hurts the small entity and independent inventors. They do not have the resources to respond to the challenge. Under previous rules, a large corporation could not mount such a challenge until after the inventor had been granted the patent. By that time, the patent had value and the inventor and other investors now interested had an incentive to risk capital to respond to any reexamination challenge. When examined against the backdrop of pre-grant publication, each detail, twist, and turn reduces the incentives to use the patent system.

Pre-grant publication will only affect those who never receive their end of the bargain. For those who receive a patent, the average time from pendency to issue is 20.8 months.[148] Therefore, on average, the patentees who receive the benefit of their bargain only have their patents available to the public 2.8 months earlier than the patent would have been without pre-grant publication[149]--not much additional time to build upon or be used as prior art by the PTO. This is certainly not enough time to offset the cost of the decrease in incentives for the small entity and independent inventors. Pre-grant publication becomes an issue for those who are not certain whether they will receive a patent and cannot afford to lose their invention to the public. Aren't those the inventors we want to give an incentive to disclose to?

Finally, it is again the small businesses and independent inventors who will be discouraged from disclosing their inventions and will attempt to seek other alternatives to receive financial gain. Large corporations have considerably more resources than small businesses and independent inventors. Small businesses and independent inventors fear that large corporations can use their resources to "steal" their inventions or develop improved technology that would make their invention less valuable.[150] Large corporations will have the resources to review the published patent applications looking for valuable innovations they can use. The resources of a large corporation will allow the corporation to use the almost two years that a patent is pending to beat the small inventor to the market. If the inventor is unsuccessful in prosecuting the patent, the large corporation will be able to obtain the innovation at no cost. Even if the small inventor eventually receives the patent, the cost of litigating against the legal resources of a large corporation profiting from the invention will deter obtaining a reasonable royalty from the large corporation.

The law of trade secret protection[151] in conjunction with the pre-grant publication requirement also decreases the incentive to disclose. Previously, an ***313** inventor could apply for a patent, and the application would be confidential. If the patent was never granted, the inventor could still rely on trade secret law to ensure that his invention was not wrongfully appropriated. Although trade secret protection does not provide the advantages of patent protection (e.g. reverse engineering is permitted), at least it was an alternative. Now, with pre-grant publication, the inventor voluntarily discloses the invention. If the inventor does not receive a patent, not only does s/he fail to obtain patent protection, but s/he gives up any trade secret protection s/he may have had as well.[152]

This may have an effect on how technology is licensed. Previously the approach of Aronson v. Quick Point Pencil Co.[153] was an attractive method of technology licensing when a patent was pending.[154] The Aronson approach allowed the inventor to negotiate a license before the patent issued; a license that was good for both the licensee and the inventor.[155] The license would provide for one royalty rate if the patent issued and another royalty rate based on the invention being a trade secret.[156] Given that patent applications will be published, it appears the "fallback" on trade secret law will no longer be available.[157] Presumably, this form of licensing will no longer be available as well. Previously, licensees were able to negotiate in advance of the patent office granting the patent, knowing they would get a jump on the market at no additional cost. If the patent issued, then the licensee would end up licensing a patent just like anyone else interested in the technology. If the patent did not issue, then the licensee would be licensing a trade secret just like anyone else interested in the technology. Licensees will now be unwilling to make the deal knowing that they may be able to learn the technology for free if they wait a while to see if the patent issues. If the patent does not issue, then the potential licensee gets the technology for nothing. If the patent does issue, the licensee is in no worse of a bargaining position for waiting than they would have been in an Aronson negotiation. If they do not wait and their competitors do wait, then the potential licensee must now pay for something under an Aronson agreement that their competition may receive for nothing. Inventors will have to wait on the Patent Office to license their inventions--a development that will certainly slow the progress of science.

*314 3. Incentive to Risk Capital

The problem here is will someone want to risk capital when they may not receive a monopoly and someone else can "steal" their technology? This will be a problem especially for small start-ups and independent inventors looking for venture capital. "The independent inventors, universities, and small entrepreneurial companies are usually not going to get a license or get any venture capital to back them if there's a threat that somebody is going to find out about their invention before they get it on the market."[158] Often, small entrepreneurial companies and independent inventors receive venture capital precisely because they have secured a patent with expected value.[159] As the past chair of the ABA's section on Patent Trademark and Copyright Law has stated, "If you're going to publish in eighteen months, you are cutting the legs out from under those people who want to start up a new business, because you cannot start a new business in eighteen months . . ., it is at least a five-year project."[160]

B. Provisional Royalty Rights

1. Incentive to Invent

The patent system has been successful for over 200 years by offering the "carrot" of a limited monopoly with rights to exclude others. The truth is that provisional royalty rights were likely offered by Congress to blunt the negative effects of the pre-grant publication provision. But, is it really plausible that an offer of a reasonable royalty if the patent issues will provide the same incentive to invent? It is highly unlikely. The small entity and independent inventors will not have the resources to litigate infringement for only a reasonable royalty. In addition, if someone "steals" their invention, then small entities and independent inventors may lose their most profitable period of the invention's marketable life--the market introduction stage.[161] In addition, many of the problems with pre-grant publication occur because the inventor is forced to disclose and the patent may never issue. If the patent is never granted, then provisional royalty rights are irrelevant. Provisional royalty rights cannot blunt these effects.

*315 2. Incentive to Disclose

Provisional royalty rights do not restore the contract that the inventor is supposed to receive for disclosing his invention. If the inventor never receives the patent, provisional royalty rights have no effect. Congress clearly recognized that they were ripping up the previous contract and provided provisional royalty rights as a substitute. Provisional royalty rights, however, cannot tape the contract back together. The bargain no longer exists. The only way provisional royalty rights ever come into play is if the patent issues. The inventor is forced to provide consideration while nothing is promised in return. This is not a bargain.[162] Contract law would recognize the disclosure as a pre-condition necessary for the government to perhaps give the inventor a monopoly as a gift.[163] Note that the monopoly must now be considered a gift to the inventor, because the inventor has already disclosed the invention as a pre-condition for the government to consider granting the monopoly. No bargained-for-exchange occurs even if the patent issues. Certainly, no bargained-for-exchange takes place if the patent does not issue. The government and subsequent inventors receive the benefit of the disclosed invention without giving anything in return.

3. Incentive to Risk Capital

Provisional royalty rights are supposed to fix any problem with the incentive to risk capital created by pre-grant publication.[164] If your invention is "stolen" from the published application, you can bring suit for a reasonable royalty. Will provisional royalty rights accomplish this? A reasonable royalty[165] should be the minimum damages a patentee receives from an infringer.[166] The patentee does not have the right to exclude others from making, using, selling, or offering to sell the patented invention until the patent issues.[167] The patentee is essentially forced to give up the knowledge of the invention and grant a compulsory license to anyone who "steals" the invention from the patent application after publication. The patentee may now lose the economic benefits of being first to market. Often, the benefits that the patentee receives from being first to market provide the small ***316** entity and independent inventors with the resources to defend their rights against infringers. The pre-grant publication system allows a large company to fight the grant of the patent (forcing the patent applicant to spend additional resources to obtain the patent) and then fight any infringement liability with the profits made from stealing the invention and reaping the economic benefits of being first to market. The only risk to the "thief" is they may have to pay a reasonable royalty out of the profit if the patent issues. The current speed of technological development often means the only profitable period is the initial marketing of the product because something will quickly come along that is better, faster, and cheaper. Meanwhile, the patentee must prove that the infringer had actual knowledge of the published application[168] and that the infringer's invention is identical[169] to even receive the reasonable royalty. Proving these elements will require costly litigation.

In addition, although reasonable royalties may be obtained, we again have created problems for the small businesses and independent inventors. If a large corporation steals the inventors' invention, the independent inventor may not have the resources to pursue the statutory remedy. The median legal cost of patent infringement litigation is at least three hundred thousand dollars and can be as much as three million dollars.[170] Small businesses and independent inventors cannot afford this cost for a "reasonable royalty," and the large corporations will know they can simply outspend the independent inventor on

legal fees. As one commentator has noted: "Well, this is indeed the fair, Full Employment Act for patent lawyers."[171]

C. Patent Term Guarantee

The recent change of the Patent Term Guarantee Act is included in this note because it is an excellent example of what can happen when Congress fails to undertake the business analysis when changing the means (laws) of the patent system.[172] When the patent term was amended to be twenty years from the filing date, the Patent Office was inundated by tens of thousands of applications just before the change took effect on June 8, 1995.[173] Inventors recognized that Congress was potentially decreasing the value of a patent[174] and, therefore, ***317** decreasing the incentive to invent as well. This change in patent term protection was implemented to harmonize with the rest of the world.[175]

Just four years later, Congress realized this was a mistake and had to take steps to amend the legislation. The result is the Patent Term Guarantee Act. Congress failed to look at the 1995 amendment from the inventor's point of view. Congress failed to consider the effect on the incentive to invent, incentive to disclose, and incentive to risk capital. Inventors recognized that Congress accepted a poorly negotiated treaty that forced domestic changes in the U.S. patent laws for the goal of harmonization. Why was the U.S. following the leadership of industrialized nations who have failed to achieve the success that the U.S. has enjoyed in encouraging inventors? Properly considered, Congress would have recognized that the U.S. should not be conforming to the rest of the world. Rather, the U.S. system should be seen as the model system for "promot[ing] the Progress of Science and useful Arts."[176] The waste of legislative resources through changing the law and then changing it back only four years later could have been prevented if the proposal had been analyzed under the appropriate framework--a business perspective analysis.

V. Conclusion

A business perspective is the proper analysis for Congress to employ whenever a bill proposes to modify the means or laws intended "to promote the Progress of Science and useful Arts."[177] Using this approach will further the core mission as laid out by our Founding Fathers. We need to be very careful about changing a system that has spurred American inventors to create almost twice as many influential patents as Japan, Italy, the U.K., France, and Germany combined.[178] The U.S. patent system has either directly produced the vast majority of Nobel Prize winners in science[179] or at least created the environment that has stimulated and provided "the shoulders" for these scientists' discoveries.

This business approach should be familiar to the current President,[180] and it is time for Congress to embrace this approach as well. No other country in the world provides for patent protection in their constitution.[181] America should be the leader ***318** and provide the model system on granting patent protection; America should not be a follower sacrificing a system that has kept the U.S. on the technological frontier.

Harmonization should not be ignored, however, but should be a factor in the analysis. As the economy becomes more and more global, patent harmonization will factor into the business analysis. Harmonization should be part of the measurement and correction steps, not a goal of the patent system. The Patent Term Guarantee Act illustrates the problems that can affect the mission of the patent system when an inconsistent goal such as harmonization is formally pursued.

Congress has shown favor to the business model with the passage of the American Inventors Protection Act. Part of the Act reorganized the Patent and Trademark Office ("PTO") as an independent agency within the Department of Commerce.[182] The goal was to make the PTO in more of a corporate image.[183] The Act also created a patent public advisory committee to advise the Director on PTO policies and goals.[184] The American Intellectual Property Law Association (AIPLA)[185] strongly endorses this change, because it believes, "the PTO [can] function more efficiently and effectively, and provide users with higher quality and more responsive products and services if it were properly transformed into a government corporation."[186]

Congress must tread carefully in the patent law area. The patent system is vital to the economic health of the nation. In addition, inventors do have alternatives. The law of trade secrets may become more and more attractive to inventors given the recent changes to the patent laws. Judge Richard A. Posner speaks of the law of trade secrets in this way:

> [Trade secret] is frequently an alternative to patenting. A manufacturer who is confident that he can keep his manufacturing process a secret for longer than the period for which he could protect it by a patent may decide to rely on trade secrecy law and forego seeking a patent. He will save costs and avoid the

> uncertainties of the patent route; and he will not have to disclose the process, as he would in a patent application, thereby enabling his competitors to duplicate it once the patent expires.[187]

With the recent changes to the patent laws, the "costs . . . [and] . . . uncertainties of the patent route" in Judge Posner's analysis have considerably increased. How much does this shift the balance toward the trade secret alternative for an inventor weighing the options of the weaker ***319** trade secret route or the uncertain patent route in which he could now lose any possible financial reward?

Judge William Bryson of the Court of Appeals for the Federal Circuit has also shown concern for the inventors' need to have certainty and predictability in patent law.[188] Given the additional "uncertainties of the patent route" and the disclosure of the patent application, it is likely that more inventors will choose to hide their inventions and rely on trade secret. Time will only tell how many inventors choose this source of protection. However, as the patent term change in 1995 illustrated, inventors will react to the recent patent law changes. The patent law changes make things equally unclear for competitors and other inventors as well. With enough resources, competitors and other inventors can now take advantage of the uncertainty. One thing is clear: Under a business perspective analysis, an analysis employed by inventors, the patent system is headed in the wrong direction to fulfill its Constitutional mission. Hopefully, Congress will recognize the appropriate approach when considering future changes to the patent system.

Footnotes

a1 J.D. candidate 2002, The University of Texas School of Law; Master of Business Administration with a concentration in International Business, 1998, Xavier University, Cincinnati, Ohio. The author wishes to thank the Dallas office of Sidley Austin Brown & Wood LLP for their continued sponsorship of the Texas Intellectual Property Law Journal Best Note competition; Professor R. Anthony Reese at the University of Texas School of Law, and the members of his Spring 2001 Intellectual Property Law Theory Seminar for their critiques and comments on this note; the members of the Texas Intellectual Property Law Journal; Megan Harbison for her patience and support during the writing of this note; and my parents for a lifetime of support, inspiration, and encouragement.

1 144 Cong. Rec. S7934-01 (daily ed. July 10, 1998) (statement of Sen. Leahy).

2 See generally Arthur A. Thompson Jr. & A.J. Strickland III, Strategic Management chs. 1-3 (Irwin / McGraw Hill Multimedia Business Library Comprehensive Edition CD-ROM, Aug. 2001) (explaining the strategy-making, strategy-implementing process for business management).

3 U.S. Const. art. I, § 8, cl. 8.

4 See Part II. B., infra.

5 S. 1948; Pub. L. 106-113, Div. B, § 1000(a)(9), Nov. 29, 1999, 113 Stat. 1536, 1501A-521 (The changes to the patent system are contained in The American Inventors Protection Act. The American Inventors Protection Act is Title IV of the Omnibus Act. The text of the bill cannot actually be found in S. 1948 or Pub. L. 106-113. The text was not included because the bill was only introduced two days before its enactment. However, S. 1948 was based on bills which had been debated by Congress for the last several years. The previous bills must be read to determine the legislative history of these amendments.). See Gregory Hayden, Patent Reform, Trademark Cyberpiracy, and Satellite Television Measures Enacted, 18 NO. 2 Intell. Prop. L. Newsl. 41 (Winter 2000).

6 See Domestic Publication of Foreign Filed Patent Applications Act of 1999, Pub. L. No. 106-113 Stat. 1501A-561 (2000).

7 See Domestic Publication of Foreign Filed Patent Applications Act of 1999, Pub. L. No. 106-113 Stat. 1501A-561 (2000).

[8] See Patent Term Guarantee Act of 1999, Pub. L. No 106-113, Stat 1501A-588 (2000).

[9] See U.S. Const. art. I, § 8, cl. 8 ("The Congress shall have Power To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.").

[10] Black's Law Dictionary 306 (7th ed. 1999) (defining "constitution" as "1. The fundamental and organic law of a nation or state, establishing the conception, character, and organization of its government, as well as prescribing the extent of its sovereign power and the manner of its exercise.").

[11] Aimee Boss, Comment, The Twenty-First Century Patent System Improvement Act: Is It Really an Improvement?, 32 J. Marshall L. Rev. 725, 729 n.15 (1999) (citing William H. Francis & Robert C. Collins, Cases and Materials on Patent Law: Including Trade Secrets, Copyrights and Trademarks 71-72 (4th ed. 1995)).

[12] Howes v. Great Lakes Press Corp ., 679 F.2d 1023, 1027, 216 U.S.P.Q. (BNA) 1049, 1053 (2nd Cir. 1982) (quoting Grant v. Raymond, 31 U.S. 217, 240 (1832)).

[13] See Paul Goldstein, Copyright, Patent, Trademark and Related State Doctrines 382-83 (4th ed. 1999). See also Grant v. Raymond, 31 U.S. 217, 241 (1832) (noting the patent law "was among the first which followed the organization of our government. It was taken up by the first congress at its second session[.]").

[14] See Goldstein, supra note 13, at 382-83.

[15] See U.S. Const. art. I (establishing the legislative branch), Article II (establishing the executive branch), Article III (establishing the judicial branch) and The Bill of Rights (guaranteeing certain rights to citizens).

[16] See Edgar Shein, Organizational Culture and Leadership in Managing Organizational Systems, 98 (Dr. Andrew Eutis & Mr. William Law eds.) (1995) (stating that every organization, including governmental organizations, must define its core mission or "reason to be").

[17] U.S. Const. art. I, § 8, cl. 8.

[18] See Shein, supra note 16, at 98 (stating that "every organization must define and fulfill its core mission or it will not survive.").

[19] See id.

[20] See Part III., infra, for a description of recent changes in the means (laws).

[21] See Part II. C., infra.

[22] See Shein, supra note 16, at 97-98.

[23] See Kimberly Pace Moore, Hon. Paul R. Michel & Raphael V. Lupo, Patent Litigation and Strategy 4 (1999) (stating "There are three basic incentives that the patent laws provide: the incentive to invent; the incentive to disclose; and the incentive to risk capital."). See also Goldstein, supra note 13, at 16 (citing Report on the President's Commission on the Patent System 1-3 (1966)).

[24] 144 Cong. Rec. S7934-01 (daily ed. July 10, 1998) (statement of Sen. Leahy).

[25] Howes, 679 F.2d at 1027, 216 U.S.P.Q. at 1053.

[26] Richard A. Posner, Economic Analysis of Law 43 (1998).

[27] See F. Machlup, An Economic Review of the Patent System 79, Sen. Jud. Comm., Study No. 15, 85th Cong., 2d Sess. (1958).

[28] See Joseph Rossman, Industrial Creativity: The Psychology of the Inventor 152 (University Books) (1931) (showing results that when inventors were asked "What motives or incentives cause you to invent?", "financial gain" and "part of work" combined were cited more often than "love of inventing," "desire to improve," "desire to achieve," "prestige," and "altruistic reasons.").

[29] See id.

[30] See Graham v. John Deere Co., 383 U.S. 1, 7-9, 148 U.S.P.Q. (BNA) 459, 463-64 (1966) (discussing letters by Thomas Jefferson, who the Court noted might well be called the 'first administrator of our patent system'). The Court stated "[Jefferson] rejected a natural-rights theory in intellectual property rights and clearly recognized the social and economic rationale of the patent system. The patent monopoly was not designed to secure to the inventor his natural right in his discoveries. Rather, it was a reward, an inducement, to bring forth new knowledge."), Id. at 9. See also Universal Oil Prod. Co. v. Globe Oil & Refining Co., 322 U.S. 471, 484, 61 U.S.P.Q. (BNA) 382, 388 (1943). See also Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 480, 181 U.S.P.Q. (BNA) 673, 678 (1974); Scott Paper Co. v. Marcalus Mfg. Co., 326 U.S. 249, 255, 67 U.S.P.Q. (BNA) 193, 196 (1945).

[31] John F. Duffy et al., Early Patent Publication: A Boon or Bane? A Discussion on the Legal and Economic Effects of Publishing Patent Applications After Eighteen Months of Filing, 16 Cardozo Arts & Ent. L.J. 601, 631 (1998).

[32] Id.

[33] Posner, supra note 26, at 734.

[34] See Goldstein, supra note 13, at 383 (The United States Court of Appeals for the Federal Circuit was created by The Federal Courts Improvements Act of 1982. A primary goal of Congress in creating the Federal Circuit and removing patent jurisdiction from the twelve regional courts of appeals was to harmonize patent law. The Court of Appeals for the Federal Circuit has exclusive jurisdiction over appeals from district court decisions in patent cases).

[35] 33 F.3d 1526, 31 U.S.P.Q.2d (BNA) 1545 (Fed. Cir. 1994).

[36] Id. at 1571, 31 U.S.P.Q.2d at 1580 (Newman, J. concurring) (citing Blanchard v. Sprague, 3 F. Cas. 648, 650 (C.C.D. Mass. 1839)).

[37] 144 Cong. Rec. S6877-01 (daily ed. June 23, 1998).

[38] Suzanne Scotchmer, Standing on the Shoulders of Giants: Cumulative Research and the Patent Law, 5 J. Econ. Persp. 1, 29 (Winter 1991).

[39] See id.

[40] Grant v. Raymond, 31 U.S. 217, 242 (1832).

[41] See 35 U.S.C. § 271(a) (Supp. V 1999).

[42] See Thomas Lizzi, From Benevolent Administration to Government Employee Inventions: Human Genomes, and Exclusive Licensing: Is Government Ownership of Patents Constitutional? 34 Duq. L. Rev. 299, 302 (1996); Michael P. Chu, Note, An Antitrust Solution to the New Wave of Predatory Patent Infringement Litigation, 33 Wm. & Mary L. Rev. 1341, 1346-48 n. 4 (1992).

[43] See Cartwright v. Arnott, Easter Term, 1800, cited in Harmer v. Playne, (1809), 11 East. 101, 107 Lord Eldon ("That they [patents]were to be considered as bargains between the inventors and the public, to be judged of on the principle of keeping good faith, by making a fair disclosure of the invention[.]").

[44] Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 480-81, 181 U.S.P.Q (BNA) 673, 678 (1974) (internal citations omitted).

[45] Duffy et al., supra note 31, at 603 (statement of John F. Duffy). Dr. Robert Rines also noted "[T]he whole constitutional purpose of granting a patent is so you won't keep your invention secret; you will teach the invention to the public. And when you agree to do that, we'll give you ... a limited period of the right to exclude others from using your invention." Id. at 613 (internal footnotes omitted).

[46] Id.

[47] Grant, 31 U.S. at 242.

[48] See Stanley M. Besen & Leo J. Raskind, An Introduction to the Law and Economics of Intellectual Property, 5 J. Econ. Persp. n.1, 5 (1991) (The authors note, "Whether producers [investors] will have the correct incentives depends on their ability to appropriate at least some of the value that users place on those works. If potential innovators are limited in their ability to capture this value, they may not have enough incentive to invest ... in innovative activity."); Duffy, supra note 31, at 603.

[49] Hilton Davis Chem. Co. v. Warner-Jenkinson Co ., 62 F.3d 1512, 1536, 35 U.S.P.Q.2d (BNA) 1641, 1660 (Fed. Cir. 1995) (Newman, J., concurring) (emphasis added).

[50] Kewanee Oil, 416 U.S. at 480, 181 U.S.P.Q. at 678.

[51] See Pamela P. Peterson, Financial Management Analysis 346 (1994) (defining "capital" as "a firm's resources and the funds committed to those resources").

[52] See William A. Sahlman, How to Write a Great Business Plan, Harv. Bus. Rev., July-Aug 1997, at 98, 105 (stating "One of the greatest myths about entrepreneurs is that they are risk seekers. All sane people want to avoid risk.").

[53] See Peterson, supra note 51, at 348 (defining "capital budgeting" as "the process of identifying and selecting investments in long-lived assets, where long-lived assets are assets expected to produce benefits over more than one year."). See generally Kermit D. Larson, Fundamental Accounting Principles ch. 23 (Irwin / McGraw Hill Multimedia Business Library Comprehensive Edition CD-ROM, Aug. 2001).

[54] 144 Cong. Rec. S6877-01 (daily-ed. June 23, 1998) (letter from National Venture Capital Association to Sen. Shelby).

[55] Black's Law Dictionary 200 (7th ed. 1999) (defining "venture capital" as "Funds invested in a new enterprise that has a high risk and the potential for high return.").

[56] See 144 Cong. Rec. S6877-01 (daily ed. June 23, 1998) (letter from National Venture Capital Association to Sen. Shelby).

[57] See id (emphasis added). See also 144 Cong. Rec. S8377-01 (daily ed. June 18, 1998) (letter from Biotechnology Industry Organization stating "Patents as (sic) an incentive for this critical research. Without patents this research would stop because no investor will fund this research without patents.").

[58] See Grant, 31 U.S. at 242 ("laws ... are passed to give effect to this purpose.").

[59] John Paul Baremore, Don't Shoot the Messenger: Congress and the Prospect of Patent Harmonization, 44 Loy. L. Rev. 761, 761 (1999).

[60] See Duffy et al., supra note 31, at 612-13, 613 n.50 (comments of Dr. Robert Rines).

[61] See generally 143 Cong. Rec S7860-61 (daily ed. July 22, 1997) (statement of Sen. Leahy).

[62] See Posner, supra note 26, at 44 (noting that one cost of the patent system may be "inducing potentially excessive investment in inventing").

[63] S. 1948; Pub. L. 106-113, Div. B, § 1000(a)(9), Nov. 29, 1999, 113 Stat. 1536, 1501A-521 (The text of the bill cannot actually be found in S. 1948 or Pub. L. 106-113. The text was not included because the bill was only introduced two days before its enactment. However, S. 1948 was based on bills which had been debated by Congress for the last several years. The previous bills must be read to determine the legislative history of these amendments.). See Gregory Hayden, Patent Reform, Trademark Cyberpiracy, and Satellite Television Measures Enacted, 18 NO. 2 Intell. Prop. L. Newsl. 41 (Winter 2000).

[64] See id. (The American Inventors Protection Act is Title IV of the Omnibus Act. The Omnibus Act also enacted the Trademark Cyberpiracy Prevention Act (Title III), Rural Local Television Signals Act (Title II) and Satellite Home View Improvement Act (Title I)).

[65] See Jim Abrams, Bill to Change Patent Laws Brings Strong Opposition, Associated Press, April 16, 1997, available at 1997 WL 2517370. The bills Congress has debated include: S. 1854, 103d Cong. (1994); S. 2488 103d Cong. (1994); H.R. 1733, 104th Cong. (1995); H.R. 3460, 104th Cong. (1996); S. 1961, 104th Cong. (1996); H.R. 400, 105th Cong. (1997); H.R. 811, 105th Cong. (1997); S. 507, 105th Cong. (1997).

[66] See Inventor's Rights Act of 1999, 113 Stat. 1501A-552 (2000).

[67] See Patent and Trademark Fee Fairness Act of 1999, Pub. L. No. 106-113, Stat 1501A-567 (2000).

[68] See First Inventor Defense Act of 1999, Pub. L. No. 106-113 Stat. 1501A-572 (2000).

[69] See Patent Term Guarantee Act of 1999, Pub. L. No 106-113, Stat 1501A-588 (2000).

[70] See Domestic Publication of Foreign Filed Patent Applications Act of 1999, Pub. L. No. 106-113 Stat. 1501A-561 (2000).

[71] See Domestic Publication of Foreign Filed Patent Applications Act of 1999, Pub. L. No. 106-113 Stat. 1501A-561 (2000).

[72] See Optional Inter Partes Reexamination Procedure Act of 1999, Pub. L. No. 106-113. Stat. 1501A-567 (2000).

[73] See Patent and Trademark Office Efficiency Act of 1999, Pub. L. No. 106-113 Stat. 1501A-572 (2000).

[74] See Miscellaneous Patent Provisions, Pub. L. No. 106-113, Stat. 1501A-588 (2000).

[75] See Domestic Publication of Foreign Filed Patent Applications Act of 1999, Pub. L. No. 106-113 Stat. 1501A-561 (2000).

[76] Press Release, United States Patent and Trademark Office, USPTO Publishes First Patent Application (March 15, 2001), available at http:// www.uspto.gov/web/offices/com/speeches/01-13.htm.

[77] See id. (The number of applications published to date is minimal, however it is expected that within the next eighteen months roughly 3500 patent applications will be published every week.).

[78] 35 U.S.C. § 122 (1994) (formerly reading: "Applications for patents shall be kept in confidence by the Patent and Trademark Office and no information concerning the same given without authority of the applicant or owner....").

[79] Robert A. Clarke, Patent and Trademark Law and Procedure after the Intellectual Property and Communications Omnibus Reform Act of 1999, SF84 ALI-ABA 127, 129 (November 2000). See also Press Release, United States Patent and Trademark Office, USPTO Publishes First Patent Application, (March 15, 2001), available at http://www.uspto.gov/web/offices/com/speeches/01-13.htm (statement of Nicholas Godici, acting Under Secretary of Commerce and acting Director of the USPTO, that "Publication of patent applications before a patent is granted is one of the most fundamentally significant changes to the U.S. patent system in over 100 years....").

[80] See 35 U.S.C. § 122(b)(1)(A) (Supp. V 1999). "[T]he 'effective filing date' of a patent is the earlier of the actual filing date of the application for the patent or the filing date of any earlier United States, foreign, or international application to which the subject matter at issue is entitled under section 119, 120, or 365 of this title." 35 U.S.C. § 273(a)(4) (Supp. V 1999).

[81] See 35 U.S.C. § 122(b)(2)(A)(i) (Supp. V 1999).

[82] See 35 U.S.C. § 122(b)(2)(A)(ii) (Supp. V 1999).

[83] See 35 U.S.C. § 122(b)(2)(A)(iii) (Supp. V 1999).

[84] See 35 U.S.C. § 122(b)(2)(A)(iv) (Supp. V 1999).

[85] See 35 U.S.C. § 122(b)(2)(B)(i) (Supp. V 1999).

[86] Abrams, supra note 65.

[87] See 143 Cong. Rec. S7860-01 (daily ed. July 22, 1997) (statement of Sen. Leahy).

[88] Patent Law Changes, Remarks of B.N. "Biff" Kramer, The Alliance for American Innovation, before Subcommittee on Government Programs and Oversight of the Committee on Small Business, United States House of Representatives April 24, 1997, on H.R. 400 the 21st Century Patent System Improvement Act, Cong. Testimony, 1997 WL 228041 (F.D.C.H.) (No Page) (citing source of data as SBA Office of Advocacy Facts About Small Business--1996).

[89] Id.

[90] Id.

[91] Id.

[92] See Domestic Publication of Foreign Filed Patent Applications Act of 1999, Pub. L. No. 106-113 Stat. 1501A-561 (2000).

[93] See Gregory J. Lavorgna, Patent and Trademark Law and Procedure after the Intellectual Property and Communications Omnibus Reform Act of 1999, SF84 ALI-ABA 1, 5 (November 2000).

[94] 35 U.S.C. § 154(d)(1) (Supp. V 1999).

[95] See 35 U.S.C. § 154(d)(1)(B) (Supp. V 1999).

[96] See 35 U.S.C. § 154(d)(2) (Supp. V 1999).

[97] See 35 U.S.C. § 154(d)(3) (Supp. V 1999).

[98] Karin L. Tyson, Patent and Trademark Law and Procedure after the Intellectual Property and Communications Omnibus Reform Act of 1999, SF84 ALI-ABA 51, 53 (2000).

[99] Id.

[100] See 35 U.S.C. § 154(b)(1)(B) (Supp. V 1999) (Guarantee of no more than 3-year application pendency) .

[101] Baremore, supra note 59, at 766.

[102] See id. (The TRIP's agreement was negotiated. The lead negotiator for the U.S. was then USPTO Commissioner Bruce Lehman.).

[103] See id. at 766-67.

[104] See Hon. Dana Rohrabacher, Pennies For Thoughts: How GATT Fast Track Harms American Patent Applicants, 11 St. John's J. Legal Comment. 491, 494-95 (1996) (stating "I personally feel betrayed that the GATT agreement did not include a term of 17 years from grant or 20 years from filing. I voted for the GATT fast-track authority. GATT did not require our country to diminish the patent protection enjoyed by our citizens. This 20-year-from-filing term was placed in the implementing legislation in hopes of passing this major change in patent law with neither full debate nor full scrutiny. I was denied the right even to review the language of the proposed legislative change until shortly before the vote was scheduled.") (footnotes omitted).

[105] Lavorgna, supra note 93, at 4.

[106] See 35 U.S.C. § 154(b)(1)(A) (Supp. V 1999).

[107] See 35 U.S.C. § 154(b)(1)(A)(i) (Supp. V 1999).

[108] See 35 U.S.C. § 154(b)(1)(A)(ii) (Supp. V 1999).

[109] See 35 U.S.C. § 154(b)(1)(A)(iii) (Supp. V 1999).

[110] See 35 U.S.C. § 154(b)(1)(A)(iv) (Supp. V 1999).

[111] See 35 U.S.C. § 154(b)(1)(B) (Supp. V 1999) ("[I]f the issue of an original patent is delayed due to the failure of the United States Patent and Trademark Office to issue a patent within 3 years after the actual filing date of the application in the United States ... the term of the patent shall be extended 1 day for each day after the end of that 3-year period until the patent is issued.") .

[112] See Rohrabacher, supra note 104, at 494.

[113] See 35 U.S.C. § 154(b)(1)(C)(i) (Supp. V 1999).

[114] See 35 U.S.C. § 154(b)(1)(C)(ii) (Supp. V 1999).

[115] See 35 U.S.C. § 154(b)(1)(C)(iii) (Supp. V 1999).

[116] See 35 U.S.C. § 154(b)(2)(C)(i) (Supp. V 1999), 35 U.S.C. § 154(b)(2)(C)(iii) (Supp. V 1999) ("The Director shall prescribe regulations establishing the circumstances that constitute a failure of an applicant to engage in reasonable efforts to conclude processing or examination of an application.").

[117] See 35 U.S.C. § 154(b)(2)(C)(ii) (Supp. V 1999).

[118] See Business Analysis Method discussed in Part II., supra.

[119] See 143 Cong. Rec S7860-61 (daily ed. July 22, 1997) (statement of Sen. Leahy) (regarding the Omnibus Patent Act of 1997); 144 Cong. Rec. S7934-35 (daily ed. July10, 1998) (statement of Sen. Leahy) (regarding the Omnibus Patent Reform Act of 1997); 144 Cong. Rec. S8377 (daily ed. July 16, 1998) (statement of Sen. Leahy) (regarding the Omnibus Patent Reform Act of 1997); 144 Cong. Rec. S10716-19 (daily ed. Sept. 22, 1998) (statement of Sen. Leahy) (regarding the Omnibus Patent Reform Act of 1997); 144 Cong. Rec. S8252-54 (daily ed. July 12, 1999) (statement of Sen. Leahy) (regarding Intellectual Property Bills).

[120] James E. Hudson III, The U.S.-Japan Agreement for Eighteen Month Publication of U.S. Patent Applications: How Should it be Implemented?, 5 J. Int'l L. & Prac. 87 (1996).

[121] See id.

[122] See id.

[123] See Duffy et al., supra note 31, at 602-03 (statement of John F. Duffy) (Mr. Duffy notes in regards to pre-grant publication, "[p]rior to the 1960's, most countries followed the unbroken practice of the U.S. Patent Office, which is to keep applications secret while they are pending. In 1964, the Dutch were the first to adopt the process of publishing applications eighteen months after filing. Germany followed soon after, then Japan, and then almost every other industrialized nation. Today, the United States is one of the last holdouts of secret applications in the world.") (internal footnotes omitted).

[124] See generally Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Annex 1C, LEGAL INSTRUMENTS--RESULTS OF THE URUGUAY ROUND, vol. 31 33 I.L.M. 81 (1994) [TRIPs].

[125] Duffy et. al., supra note 31, at 611 (statement of Dr. Robert Rines).

[126] See id. at 617 (comments of Herbert Wamsley). See generally Letters to Congress, entered into the Congressional Record at Congressional Record--Senate Proceedings and Debates of the 105th Congress, Second Session, Tuesday June 23, 1998; Congressional Record--Senate Proceedings and Debates of the 105th Congress, Second Session, Friday July 10, 1998; Congressional Record--Senate Proceedings and Debates of the 105th Congress, 144 Cong. Rec. S8377-01 (daily ed. July 16, 1998).

[127] See Duffy et. al., supra note 31, at 618-19.

[128] See id. at 618.

[129] See id. at 620. A patent submariner is one who intentionally delays the issuance of the patent in order to prolong the duration of confidentiality. Donald S. Chisum, The Harmonization of International Patent Law, 26 J. Marshall L. Rev. 437, 445 (1993).

[130] See Duffy et. al., supra note 31, at 623 (citing Don Clark, Motorola Agrees to Unusual Settlement in Patent Suit with Inventor Lemelson, Wall St. J., Aug. 22, 1994, at B4; Bernard Wysouth, Jr., Royalty Rewards: How Patent Lawsuits Make a Quiet Engineer Rich and Controversial, Wall St. J., Apr. 9, 1997, at A1). See generally http://www.lemelson.org (providing information on The Lemelson Foundation and biographical information on Jerome Lemelson).

[131] See Duffy et. al., supra note 31, at 625 (comments of Douglas Wyatt).

[132] Cf. id.

[133] See Patent System Overhaul: Hearing on Patent Bills S. 507 and H.R. 400 Before the Senate Judiciary Comm., 105th Cong., 1997 WL 10571184 (1997) (statement of Rep. Dana Rohrabacher) (no page available).

[134] Smith Int'l, Inc. v. Hughes Tool Co ., 718 F.2d 1573, 1579 fn.2 (stating "It is elementary that the metes and bounds of a patent right are defined by the claims of the patent, and that if the accused matter falls within the claims, literal infringement is made out.").

[135] See Moore et. al., supra note 23, at 181.

[136] See Duffy et. al., supra note 31, at 625 (comments of Douglas Wyatt).

[137] See Part III. C., supra.

[138] See Duffy et. al ., supra note 31, at 605 (comments of Hayden Gregory).

[139] Black's Law Dictionary 106 (7th ed. 1999) (defining "prior art" as "Knowledge that is available, including what would be obvious from it, at a given time to a person of ordinary skill in an art; esp., the body of previously patented inventions that the patent office or court analyzes before granting or denying a patent to a comparable invention.").

[140] See Shein, supra note 16, at 99-101.

[141] See id.

[142] See 35 U.S.C. § 122(b)(2)(B)(i) (2001).

[143] Id.

[144] Boss, supra note 11, at 743.

[145] See Patent Law Changes, Remarks of B.N. "Biff" Kramer, supra note 88, at 16.

[146] Id.

[147] See 35 U.S.C. § 311-318 (2000).

[148] Duffy et. al., supra note 31, at 628 (statement of Dr. Robert Rines).

[149] See id.

[150] Lisa Biank Fasig, Legislators Discover Twists of Patent Reform Key Issues: Secrecy, 3rd-Party Re-Examination, Cincinnati Enquirer, Aug. 31, 1997, available at 1997 WL 5466286.

[151] See generally Restatement (Third) of Unfair Competition §§ 39-45 (1995) (providing general restatement of the law of trade secrets).

[152] See Boss, supra note 11, at 743. See generally David Silverstein, Will Pre-Grant Publication Undermine United States Trade Secret Law?, 23 AIPLA Q.J. 695 (1995) (discussing state trade secret protection and federal patent policy in the years following the Supreme Court decision in Kewannee).

[153] 440 U.S. 257 (1979).

[154] See Ronald G. Bliss, Strategies and Consequences of the 18-Month Publication Provisions of the "American Inventors Protection Act of 1999", SF84 ALI-ABA 123, 125 (2000).

[155] See id.

[156] See id.

[157] See id.

[158] Duffy et. al., supra note 31, at 611 (statement of Dr. Robert Rines).

[159] See Patent System Overhaul: Hearing on Patent Bills S. 507 and H.R. 400 Before the Senate Judiciary Comm., 105th Cong. (1997) (statement of Rep. Dana Rohrabacher) (stating "Under the current law, U.S. inventors do not have to publish the details of their patent until it is granted. At that time, the independent inventor has an intellectual property of recognized collateral value to use in securing financing required for commercialization.").

[160] Duffy et. al., supra note 31, at 625 (statement of Douglas Wyatt).

[161] Cf. Dr. William D. Perreault, Jr. & E. Jerome McCarthy, Basic Marketing: A Global Managerial Approach part 7 (Irwin / McGraw Hill Multimedia Business Library Comprehensive Edition CD-ROM, Oct. 2001) (stating that a company may maximize profits for an innovative product by selling at a high price during the market introduction phase while there is little competition).

[162] Cf. Restatement (Second) of Contracts § 71(2) (1981) (defining a "bargain").

[163] See Kirksey v. Kirksey, 8 Ala. 131 (1845).

[164] See Patent System Overhaul: Hearing on Patent Bills S. 507 and H.R. 400 Before the Senate Judiciary Comm., 105th Cong. (1997) (statement of Rep. Dana Rohrabacher).

[165] Black's Law Dictionary 1330 (7th ed. 1999) (defining "reasonable royalty" as "A royalty that a licensee would be willing to pay the inventor while still making a reasonable profit from use of the patented invention."). No case law is yet available to know how the courts will calculate the pre-grant reasonable royalty. Presumably, the reasonable royalty would be calculated based on existing case law and the factors laid down in Georgia-Pacific Corp. v. U.S. Plywood-Champion Papers, Inc., 318 F. Supp. 1116, 1119, 166. U.S.P.Q. (BNA) 235, 238 (S.D.N.Y. 1970) modified, 446 F. 2d 295, 170 U.S.P.Q. (BNA) 369 (2d Cir. 1971). See Ronald G. Bliss, Strategies and Consequences of the 18-Month Publication Provisions of the "American Inventors Protection Act of 1999", SF84 ALI-ABA 123, 125 (2000).

[166] See 35 U.S.C. § 284 (2000).

[167] See 35 U.S.C. § 271 (Supp. V 1999) (defining what constitutes infringement of a patent).

[168] See 35 U.S.C. § 154(d)(1)(B) (Supp. V 1999).

[169] See 35 U.S.C. § 154(d)(2) (Supp. V 1999).

[170] See American Intellectual Property Law Association, Report of Economic Survey 1997, 72.

[171] Duffy et. al., supra note 31, at 611 (statement of Dr. Robert Rines).

[172] See Part II. C., supra for a discussion on the means Congress uses to accomplish the goals and mission of the patent system.

[173] See Rohrabacher, supra note 104, at 494. See also Patent Law Changes, Remarks of B.N. "Biff" Kramer, supra note 88.

[174] See Kenneth Parks et. al, U.S. Patent Term Developments, 2 J. Proprietary Rts. 32 (1995) (statement of Michael Kirk, former Patent Commissioner, indicating that inventors filing after June 8, 1995 may receive shorter patent terms).

[175] See Part III. C., infra.

[176] U.S. Const. art. I, § 8, cl.8.

[177] Id.

[178] See Hudson III, supra note 120, at 104. Data is from 1993. Influential patents are those of significant value. See id.

[179] See Patent System Overhaul: Hearing on Patent Bills S. 507 and H.R. 400 Before the Senate Judiciary Comm., 105th Cong. (1997) (statement of Rep. Dana Rohrabacher).

[180] See Richard L. Berke, Bush is Providing Corporate Model for White House, New York Times, March 11, 2001, at A1.

[181] See Rohrabacher, supra note 104, at 492.

[182] See Patent and Trademark Office Efficiency Act of 1999, Pub. L. No. 106-113 Stat. 1501A-572.

[183] See id.

[184] See id.

[185] The American Intellectual Property Law Association is a 10,000 member, national bar association constituted primarily of lawyers.

[186] See Patent Law Changes: hearing on H.R. 400 The Twenty-First Century Patent System Improvement Act and H.R. 811 Patent Term Restoration Act of 1997, Cong. Testimony, 1997 WL 10570182 (No Page).

[187] Posner, supra note 26, at 45.

[188] See Judge William C. Bryson, Address at the University of Texas Intellectual Property Law Journal and Intellectual Property Law Society Symposium "Emerging Trends in Intellectual Property Law" (Mar. 20, 2001). S ee also http://www.callaw.com/stories/judes/fedcir.html.