PATENT REFORM SHOULD NOT LEAVE INNOVATION BEHIND

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ABSTRACT

The most recent push for patent reform established competing groups supporting individual agendas. In view of current economic difficulties, however, the focus on innovation should be ever more important. By enacting the Bayh-Dole Act in 1980, the federal government invested in innovation and unlocked American industrial potential through Universities. The current reform has provisions that limit disclosure and facilitate patent challenging which increases costs to inventors and adds responsibilities to an already overloaded patent office. This article addresses a number of the proposed reforms and the effect on University innovation.

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INTRODUCTION

Over the past several years, Congress has dedicated significant time and effort to modify United States patent law. During the 110th Congress (2007–2008), the House of Representatives passed a bill known as the “Patent Reform Act of 2007,” but the bill died in the Senate. In September 2008, a new bill was introduced in the Senate by Honorable Jon Kyl. The authors of the failed Senate bill and the proponents of patent reform vowed that reform legislation would be re-introduced and enacted in 2009. In the interim, between the close of the 110th Congress, the transfer of power to a new Congress with increased Democratic majorities and the historic inauguration of a new President, the world has seen a meltdown of the global financial markets unlike anything that has occurred since the Great Depression. On March 3, 2009, both the House and the Senate introduced strikingly similar patent reform bills, both entitled Patent Reform Act of 2009. As we write this article, the global financial crisis continues and most experts suggest that the U.S. economy will not begin to recover until at least the third quarter of 2009—if then. The economic environment is markedly different than that which existed just a few short months ago. Thus, it is fair to ask whether the urgency of patent reform or the types of reform that were being sought presented in 2008 are suitable for the new challenges.

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3 See S. 1145 (as placed on Senate Legislative Calendar No. 563, January 24, 2008).


6 See, e.g., Stephen Labaton, Obama Urged to Move Swiftly to Rescue Banks, N.Y. TIMES, Jan. 18, 2009, at A20 ("The financial meltdown is the most serious to confront a new president since Franklin D. Roosevelt entered the White House in 1933.").


9 Id.
this country now faces.10 Too little attention has been given to the adverse effect the proposed reforms have on innovation at a time when innovation is critical to economic recovery.11

The current effort to reform patent law saw its genesis in numerous scholarly articles and studies.12 More recently, the major driver for reform has been a coalition of large information technology and financial service companies acting collectively through the Coalition for Patent Fairness (“CPF”).13 The principal complaint of this coalition is that alleged dubious claims of patent infringement are being made which results in rising litigation costs for coalition members.14 The coalition contends that this circumstance is due to an increasing number of “low quality patents.”15 More


11 See IEEE-USA, PATENT REFORM: U.S. INNOVATION, ENTREPRENEURIALISM AND COMPETITIVENESS 3 (2009), http://www.ieeeusa.org/policy/positions/patentreform.pdf (last visited Mar. 30, 2009); see also SEED, REPORT FROM DUBAI, at 111 (Feb. 2009) (“Traditionally when the economy goes bad, everyone cuts down on science and R&D ... the message from this forum was this time it should be the other way around, that new knowledge and innovation are the way out of this crisis.”).


and more, according to the coalition, such litigation is being instigated by patent aggregators derisively referred to as “patent trolls.”

On the opposite side of the reform push are the Coalition for 21st Century Patent Reform and the Innovation Alliance. The former is comprised of a diverse group of industries but populated in significant part by representatives from the patent law associations and pharmaceutical and medical device industries. The latter is a diverse group including a large mobile phone manufacturer and technology-based companies. Both groups argued that the reforms being urged by the CPF would weaken patents and thereby harm innovation in this country.

Because of its unique position, the university community has been caught in the middle of the debate. As noted above, the genesis of the patent reform movement, in part, came out of the university community with the publication of articles by scholars in the economic and social science disciplines criticizing the patent system and reacting to an important study from the National Academy of Sciences. At the same time, universities have increasingly become users of the patent system. Almost 4% of the patents issued annually by the United States Patent and Trademark Office (“USPTO”) are owned by universities or patent licensing entities associated with universities, like the Wisconsin Alumni Research Foundation (“WARF”). University generated patents are licensed by existing companies or used as platform technologies to start companies. The revenues generated from them are an important source of unrestricted funds for universities struggling to survive in a time when State funding is declining. More importantly, beyond financial benefits, patenting and licensing is often the best or only way to ensure that the results of taxpayer-funded research are used to improve lives.

See supra note 12 and accompanying text.


Id. (statement of Philip S. Johnson, Chief Intellectual Property counsel, Johnson & Johnson).

Id. (statement of Taraneh Maghame, Vice President, Tessera, Inc.).

Id. (statements of Taraneh Maghame, Vice President, Tessera, Inc. & Philip S. Johnson, Chief Intellectual Property counsel, Johnson & Johnson).


Lemley, supra note 24, at 619–20 (explaining one billion dollars in licensing revenue help fund university research and education).

members of the university community have argued in favor of reform, others have been apprehensive that the proposed reforms will adversely affect the ability of universities to license inventions arising from their research for the public good.27

This article will examine: (1) the history and benefits of patenting and licensing the fruits of publicly-funded university research;28 (2) the characteristics of U.S. patent law that complement the university technology transfer environment;29 (3) the risks and benefits of current patent reform proposals on the effective transfer and utilization of university intellectual property;30 and (4) a proposal for positive change.31

I. THE NATION HAS BENEFITED FROM THE PATENTING AND LICENSING OF FEDERALLY FUNDED INVENTIONS

Following World War II, the United States government made a deliberate decision to adopt a national science policy, under which the federal government would be a primary source of funds for basic research at our public and private universities.32 This decision was a response to a 1945 report to President Franklin D. Roosevelt written by Vannevar Bush entitled, Science: The Endless Frontier.33 Coming on the heels of the war, Bush made the case that science was a proper concern of government and funding basic research was necessary to protect national security, enhance public health and welfare, and grow the economy.34

In the subsequent 30 years, federal funding became a large proportion of the basic University research budget.35 However, it was not until the enactment of the Bayh-Dole Act in 1980,36 together with its amendments in 198437 and augmentation in 198638 (collectively “Bayh-Dole”) that the government funding of research began to
fulfill the vision of Vannevar Bush. Bayh-Dole provided a right and an implied duty to commercialize the fruits of federally funded research. It permitted universities to take title to inventions arising from federally funded research, used the patent system to promote utilization of federally funded inventions, encouraged collaboration with industry, required a preference toward licensing to small business and U.S. manufacturers, required sharing royalties received from such licensing with inventors, and provided the velvet hammer of “march-in rights” if the technology was not so utilized.

Bayh-Dole has been an unqualified success. The Economist in 2002 referred to Bayh-Dole as “[p]ossibly the most inspired piece of legislation to be enacted in America over the past half-century.” This is because prior to Bayh-Dole, title to federally funded inventions rested with the federal government and incentives to utilize the technology were limited or even non-existent. Thus, Bayh-Dole unlocked the technological, industrial and economic potential of America’s national science policy. The Economist went on to say, “More than anything, this single policy measure helped to reverse America’s precipitous slide into industrial irrelevance.”

At the time Bayh-Dole was adopted, only a handful of universities were involved in patenting and licensing university inventions. Today over 200 universities have technology transfer offices. This increase is a direct consequence of the passage of Bayh-Dole, as the law requires recipients of federal research funding to have a mechanism in place to carry out the requirements of the Act. The most recent licensing survey of the Association of University Technology Managers (“AUTM”) indicates that in 2007, its member institutions received almost $50 billion of federal research funding, obtained over 3,600 patents, executed over 5,000 license or option agreements, started over 550 small companies, and had over 680 new products.


Id.

Id.

Id.

Id.


introduced. At least 27 universities earned more than $10 million in 2007 from licensing the rights to vaccines, drugs, medical devices and other technology innovations. Finally, over 3,800 small companies based on university research continue to operate, employing Americans and developing American technology.

Universities have long been generators for their local economies. But with the increase in federal research funding and the ability to use the patent system to transfer their inventions from the lab to the general public, American universities have become centers of innovation. Thomas L. Friedman, in his book *The World is Flat*, quotes Bill Gates:

> Our university system is the best . . . . [i]t is a great engine of innovation in the world, and with federal tax money, with some philanthropy on top of that, [it will continue to flourish] . . . . We will really have to screw things up for our absolute wealth not to increase. If we are smart, we can increase it faster by embracing this stuff.

But it is not simply the funding and the patent system that make American universities innovation engines; it is also the combination of a culture of openness, the availability of capital markets, the willingness of faculty entrepreneurs to take risk, and the strength of patents in the United States.

Universities generally do not have the ability to commercialize technology on their own. Moreover, the technology they produce is often at an early stage of development. This creates two realities: (a) Universities must rely on willing commercial partners, be they small start-ups or large established corporations; (b) because of the early stage of the technology, the amount of capital needed to commercialize technology is often very large, and the risk of failure is often very high.

In the vast majority of cases, the only thing that can justify the extraordinary expenditure of risk capital necessary to support university technology development is the promise of market exclusivity through a strong and robust patent portfolio.

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54 See id. at 44–48.

55 Id. at 11.

56 See *Innovation's Golden Goose*, supra note 46.


58 Id.

59 See, e.g., HENDERSON & SMITH, supra note 39, at 5 (exemplifying the unavailability of manufacturing to industry standards at universities).

60 See, e.g., Lemley, supra note 24, at 614 (describing universities as patenting the building blocks of technology).

61 See, e.g., HENDERSON & SMITH, supra note 39, at 5 (citing large university licensing to new companies and start-ups).


63 See, e.g., id. at 1135–36 (explaining how exclusive licenses to a technology can encourage investors to invest in the technology).
Indeed, in the experience of the authors, investors rely in large part on the strength of a start-up’s patent portfolio to gauge whether it is worth taking the risk of investing. These investors look to the promise of market exclusivity arising out of the company’s patents to determine whether they will have adequate time to make a reasonable return.

Indeed, the importance of a supportive environment for start-up companies and university technology grows each year. Companies in major industries are curtailing their internal research programs, recognizing that discovery is costly and high-risk. They have instead shifted this risk to universities and to small start-up companies. This is a fundamental change, which signals that university innovation, and strong patent protection to move it into the marketplace, are more important today than ever before.

II. CERTAIN CHARACTERISTICS OF UNITED STATES PATENT LAW COMPLEMENT THE UNIVERSITY TECHNOLOGY TRANSFER ENVIRONMENT

There are three important characteristics of United States patent law that complement the University technology transfer environment. The first is a bias in favor of disclosure rather than trade secret. The second is a unique system in which the first person to invent is accorded patent rights along with a generous one-year grace period for prior publication, use, or sale of the invention by the inventors. The third is a presumption of validity for issued patents and significant remedies for infringement, which encourage technology users to license intellectual property rather than infringe.

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64 See Clarisa Long, Patent Signals, 69 U. CHI. L. REV. 625, 653 (2002) (“Among venture capitalists, both the quantity and quality of patents have long been factors that are taken into consideration when deciding whether to invest in a company, particularly in its early stages.”).
65 See id.
69 See infra Part II.A.
70 See infra Part II.B.
71 See infra Part II.C.
A. Bias Favoring Disclosure

Universities are open environments. A principal goal of any university is to disseminate knowledge, typically through publishing research. Indeed, a successful record of publication is generally a requirement for obtaining tenure and funding. But there is a broader societal purpose in publication: to advance the research enterprise. Disclosure allows others to learn from discoveries and build upon them, thereby advancing the field—a virtuous cycle.

United States patent law is rooted in the U.S. Constitution at Article I, Section 8, clause 8 which grants Congress the power "[t]o promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries...". Thomas Jefferson, to whom this phrase is attributed, believed that the patent grant was necessary to induce inventors to disclose their inventions to the public. Only through disclosure could the public learn from the inventor and improve on the invention.

See, e.g., Bagley, supra note 24 at 236 (“[P]rofessors are attracted to the chance to pursue similar interests in an academic arena where they are also endowed with freedom to research topics of their choice.”).


U.S. CONST. art. I, § 8, cl. 8.


If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of every one, and the receiver cannot dispossess himself of it.

Id. at 180. Some commentators suggest that patents are not necessary for innovation and to a limited extent that is true. See, e.g., Samson Vermont, Taming the Doctrine of Equivalents in Light of Patent Failure, 16 J. INTELL. PROP. L. 83, 105 (2008) (“[P]atents outside chemistry and pharmaceuticals actually discourage innovation and that most innovators would be better off with no patent system than with the one we have.”). Innovators will innovate whether a patent system exists or not. See, e.g., id. The issue, however, is whether and how innovators will disclose their innovations so that others may learn from them. Letter from Thomas Jefferson, supra note 75, at 181. In other words an innovator can keep the innovation as a trade secret and use it primarily for private benefit. As a consequence, the public benefit will be more limited and innovation will be compromised. This is because disclosure, which is rewarded by the present patent system, allows the public to learn of and improve on innovation thus promoting the progress of the useful arts. Id. at 180.
Thus, the Constitution provides a “tit for tat” exchange. U.S. patent law requires full disclosure of how to make and use the invention,\[^{79}\] including the best mode for using it.\[^{80}\] In return for this disclosure, the government grants the right to exclude others from making, using, selling and importing the invention during the term of the patent, provided the other requirements of patentability are met.\[^{81}\]

Thus, the choice of disclosure through patenting over trade secret translates into the ability to enforce one’s patent rights against an infringer.\[^{82}\] This is true even if an infringer independently discovered the same invention and had been secretly using it before the patent was issued.\[^{83}\] In contrast, an inventor has no recourse under trade secret law against another entity that independently develops the same invention.\[^{84}\]

Overall, the bias in our Constitution against trade secrets aligns with the spirit of the university environment. One cannot concurrently hold a patent and keep a trade secret covering the same invention.\[^{85}\] Universities, generally, do not harbor or benefit from trade secrets.\[^{86}\] With students coming and going, collaboration amongst researchers with publication as an expectation, the university environment is not conducive to confidentiality.\[^{87}\]

Outside of the United States, however, the bias is tipped in favor of trade secrets.\[^{88}\] Almost all foreign jurisdictions permit “prior user rights” which allow the continued use of a patented invention by one who had been using it as a trade secret from before the date for which the patent was applied.\[^{89}\] The continued use is limited, not transferable and requires a royalty payment\[^{90}\], but it does dilute the

\[^{79}\] 35 U.S.C. §§ 112, 113 (2006) (requiring an inventor to provide detailed written descriptions and illustrations to facilitate the understanding of the patented idea).

\[^{80}\] Id. § 112.

\[^{81}\] Id. § 154(a)(1).


\[^{83}\] See 35 U.S.C. § 154(a)(1) (granting the right to exclude all others); Gillman v. Stern, 114 F.2d 28, 31 (2d Cir. 1940) (“Just as a secret use is not a ‘public use,’ so a secret inventor is not a ‘first inventor.’”). But see 35 U.S.C. § 273(b)(1) (giving prior user rights for business method patents).

\[^{84}\] See Beckerman-Rodau, supra note 82, at 383-84 (explaining that trade secret protection ends with “independent development by a third party”).

\[^{85}\] Compare 35 U.S.C. § 112 (requiring a patent specification to include a written description of the invention to “[e]nable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same”), with UNIF. TRADE SECRETS ACT § 1(4)(ii) (amended 1985), 14 U.L.A. 538 (2005) (requiring that a trade secret “is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.”).

\[^{86}\] See generally ACADEMIC FREEDOM, supra note 73, at 3 (maintaining publication and freedom of publication as a principle in universities).

\[^{87}\] See id.


\[^{89}\] See, e.g., id. at 526 (“Virtually all countries with patent systems, with the exception of the United States and the Philippines, have FTF systems.”).

scope of exclusivity of the patent owner. More importantly it rewards secrecy, which ultimately delays advancement of the "useful arts."

Given our country's long held bias in favor of disclosure, and the extraordinary technological innovation in this country over its history, it is no surprise that efforts to incorporate prior user rights into U.S. patent law have failed, except to a limited extent applied to business method patents.

Ultimately, the bias against trade secrets encourages collaboration, particularly between universities and the private sector. Congress has recognized that such collaboration furthers the goals of United States patent law. To that end, Congress passed the CREATE Act of 2004. One of the principal benefits of the CREATE Act is that it eliminates the threat that secret prior art of individual collaborators can be used to invalidate the patented inventions coming out of a pre-established, written, joint research agreement. Consequently, both patent law's bias against trade secret and the CREATE Act encourage collaborators to be more open with one another, thereby increasing the likelihood that the joint research will bear fruit.

B. First to Invent and the Grace Period

Two provisions that are unique to United States patent law are very important to the open environment of the university. The first is that the United States awards patent rights to the first person to invent, rather than the first person to file a patent application. The second is the provision of a grace period, whereby an inventor is not barred from obtaining a patent even if he or she has made the invention available to the public through publication, use, or sale during the year prior to filing.

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91 See, e.g., Brownlee, supra note 88, at 534 (stating that prior user rights "provide a right for the first inventor to continue use concurrently with the patentee.").
92 See id. ("With no public awareness of the invention, there is no contribution to the art on which to build further invention.").
94 See 35 U.S.C. § 200 (promoting collaboration between universities and commercial entities by using the patent system).
96 See CONG. REC. S11,775 ("The CREATE Act corrects a provision in the Bayh-Dole Act which, when read literally, runs counter to the intent of that legislation."); CREATE Act sec. 2 (codified as amended at 35 U.S.C. § 103(c)).
97 150 CONG. REC. S11,775 ("Ensuring that non-public information is not considered 'prior art' when the information is used in a collaborative partnership under the Bayh-Dole Act."); CREATE Act sec. 2 (codified as amended at 35 U.S.C. § 103(c)) (deeming ownership of prior art to all parties in an effective joint research agreement).
98 See 35 U.S.C. § 112 (requiring disclosure of the invention in order to receive patient rights); Id. § 103(c) (permitting collaboration on research).
99 Id. § 102(a).
100 Id. § 102(b).
The first-to-invent and grace period provisions compliment the university culture of publishing swiftly and frequently.\textsuperscript{101} While publication may bar an inventor from obtaining patent rights under a foreign first-to-file system, in many cases the same inventor can still secure a U.S. patent.\textsuperscript{102} Because the U.S. is an enormous market, there remains considerable value in choosing to publish quickly, then obtain a U.S. patent, rather than guard one's discovery in order to secure a foreign patent.\textsuperscript{103}

These provisions also facilitate a university's ability to operate effectively on limited resources. University inventions are usually very early-stage technologies.\textsuperscript{104} The grace period allows the inventor to better understand the invention and the university to make an informed decision about whether it is worth expending resources to file a patent application.\textsuperscript{105} Because university technology transfer offices often have limited support and personnel, the grace period provides much needed time to adequately weigh the costs and benefits of filing.\textsuperscript{106}

Most importantly, the first-to-invent system prevents a race to the patent office.\textsuperscript{107} Unlike foreign first-to-file systems, inventors are not pushed to file hastily in order to obtain United States patent rights.\textsuperscript{108} This is important because Universities are frequently on the leading edge of complicated technologies, which may require significant time to evaluate.\textsuperscript{109} Yet universities often operate with slow or limited resources as explained above.\textsuperscript{110} Thus, valuable patent opportunities could be lost if inventors and universities did not act quickly enough, or alternatively, resources could be wasted on unnecessary or unproductive filings.\textsuperscript{111}

\section{C. Significant Infringement Remedies and the Presumption of Validity Benefit Universities by Encouraging Licensing and Innovation}

U.S. patent law provides a strong incentive to obtain a license and avoid infringement.\textsuperscript{112} Infringement can be a costly activity.\textsuperscript{113} Damages are often uncertain in amount, and can be increased if the infringement is found to be willful.\textsuperscript{114} Infringers also face the prospect of injunction against the infringing

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\item \textsuperscript{101} See, e.g., Margo A. Bagley, The Need for Speed (and Grace): Issues In a First-Inventor-To-File World, 23 BERKELEY TECH. L.J. 1035, 1058 (2008) ("[A] one-year grace period is beneficial and important for small entity inventors, including academic researchers.").
\item \textsuperscript{102} See id. at 1056, 1058: 35 U.S.C. § 102(b).
\item \textsuperscript{103} See Bagley, supra note 101, at 1051–56.
\item \textsuperscript{104} Lemley, supra note 24, at 614.
\item \textsuperscript{105} See Bagley, supra note 101, at 1051.
\item \textsuperscript{106} See id. at 1046.
\item \textsuperscript{108} See Kieff, supra note 107, at 96–98.
\item \textsuperscript{109} See Bagley, supra note 101, at 1046.
\item \textsuperscript{110} Id.
\item \textsuperscript{111} Id. at 1047.
\item \textsuperscript{112} See 35 U.S.C. §§ 273, 284–85 (2006) (stating the grounds for infringement, the availability of treble damages upon a finding of infringement, and the award of attorneys fees for "exceptional cases").
\item \textsuperscript{113} See id. § 284.
\item \textsuperscript{114} See id.
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manufacture, use, sale or importation of the invention. Moreover, the presumption of patent validity under U.S. law increases the challenge of defending against a charge of infringement. Thus, it is often much more cost-effective and certain to prospectively obtain a license.

This incentive to license is particularly important for a university technology transfer office. While universities obtain many patents, they do not themselves typically make products. Instead they depend on the ability to license patents to established or start-up companies to commercialize their inventions. If patents are weak and the damages for infringing are low, or at least no greater than the cost of licensing, it becomes much less attractive for a company to take a license.

Strong patents and a high cost for infringing also stimulate innovation. If the cost of infringement is high, and a license is not available or that cost is also too high, the alternative is to design-around the patent. Designing around is both legal and desirable to further innovation. The design-around may result not just in an incremental improvement, but in the creation of disruptive innovative technology that leapfrogs pre-existing technology.

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115 See 35 U.S.C. §§ 273, 283 (stating the grounds for infringement, and allowing injunctive relief for patent infringement “in accordance with the principles of equity”).
116 See 35 U.S.C. § 282 (presuming the validity of patents); Avia Group Int’l, Inc. v. L.A. Gear Cal., Inc., 853 F.2d 1557, 1562 (Fed. Cir. 1988) (placing the burden on a challenger to disprove the validity of a patent with clear and convincing evidence).
117 See Assoc. of Univ. Tech. Managers, supra note 53, at 34 (stating that licensing is the primary responsibility of technology transfer offices and “[i]s the process that provides the institution the guarantee that a given technology will be used to further the public good and, perhaps, generate revenue for the institution.”).
118 See Diana Marrero, Drug-Makers, High-Tech Companies Clash Over Patents: Debate on Reform Plan Before Congress has Big Implications For State Investors, MILWAUKEE J. SENTINEL, May 27, 2008, at Al (citing statistics of the numbers of patents granted to and licensing agreements entered into by WARF).
120 See Einer Elhauge, Do Patent Holdup and Royalty Stacking Lead to Systematically Excessive Royalties?, 4 J. COMPETITION L. & ECON. 535, 538 (2008) (“For weak patents, [the odds the patent will be found valid and infringed] is so low that, pending patent litigation, [a downstream monopolist] would without a license make more expected profits by selling the product without redesigning it, because the odds are sufficiently low that the patent holder will win . . . .”).
121 See Dana W. Hayter, When a License is Worse Than a Refusal: A Comparative Competitive Effects Standard to Judge Restrictions in Intellectual Property Licenses, 11 BERKELEY TECH. L.J. 281, 284 (1996) (noting that a patent holder’s refusal to license create more incentive in others to invent around the invention).
123 See id. ("[D]esigning new and possibly better or cheaper functional equivalents is the stuff of which competition is made and is supposed to benefit the consumer." (quoting State Indus., Inc. v. A.O. Smith Corp., 751 F.2d 1226, 1235–36 (Fed. Cir. 1985))).
III. RISKS AND BENEFITS TO UNIVERSITY TECHNOLOGY TRANSFER UNDER THE PROPOSED PATENT REFORM

As stated above, the present patent system fosters the university technology transfer environment in three ways: 1) it promotes disclosure and is biased against trade secret; 2) it is a first-to-invent, rather than a first-to-file system that provides a one year grace period to the inventor; and 3) it provides significant infringement remedies and a presumption of validity for issued U.S. patents. The most recent patent reform proposals would retain the bias against trade secret by continuing to exclude prior user rights; however, they would create significant uncertainty for universities by converting the United States to a first-to-file system and diminishing infringement remedies.

The remainder of this paper will analyze selected provisions of the 111th Congress patent reform proposals, and discuss their potential impact on university interests. As mentioned above, the Patent Reform Act of 2007 (“H.R. 1908”) passed in the House of Representatives, but stalled in the Senate (“S. 1145”). The Patent Reform Act of 2008 (“S. 3600”) was introduced in September 2008 and referred to Committee during the 110th Congressional Session, but never passed into law. The 111th Congressional Session House and Senate Patent Reform Acts of 2009, are very similar to each other and to the Patent Reform Act of 2007 passed by the House. The Patent Reform Act of 2007, which was passed by the House, created a tremendous amount of commentary from representatives of a variety of industries including universities. A number of provisions in S. 3600 were included...
to address the concerns expressed over the 2007 bill and it is expected that a Senate bill substantially similar to the 2007 bill will be introduced in the 111th Congressional Session to address the Senate Patent Reform Act bill of 2009.\textsuperscript{133} Table 1 contains a point-by-point comparison of selected provisions in H.R. 1145, and S. 3600.\textsuperscript{134}

A. The Costs and Benefits of a First-to-File System Are Uncertain for Universities

One of the main goals of the 110th Congress patent reform proposals has been to convert to a first-to-file system in order to abolish the United States’ status as the only country practicing a first-to-invent system.\textsuperscript{135} Several university organizations supported switching to the first-to-file system.\textsuperscript{136} However, this support was conditioned on the inclusion of three provisions: an effective grace period for filing that allows scientists to maintain their culture of collegial discussion and preserve the peer review process, a strong inventor’s oath or declaration requirement, a continuation of provisional applications and elimination of prior user rights.\textsuperscript{137}

Though S. 3600 (as introduced by Senator Kyl) incorporates these provisions, it still presents potential problems for universities. To begin, the Bill would abolish interference proceedings, which are currently used to determine priority of inventorship.\textsuperscript{138} Instead, the USPTO would conduct “derivation” proceedings to determine if an applicant derived an invention from the petitioner.\textsuperscript{139} Challengers would have only one year from the date the application is published in which to petition for the derivation proceeding.\textsuperscript{140} Given that universities often do not have sufficient staff or budget to monitor third-party filings, this one-year window could create a substantial hardship.\textsuperscript{141} Also, if universities do not file first or petition for a


\textsuperscript{133} See infra TABLE I.

\textsuperscript{134} See H.R. 1908 § 3 (establishing and defining the right of the first inventor to file): S. 3600 § 2 (same).


\textsuperscript{136} Id. (proposing amendment to 35 U.S.C. § 135(a)(1)).

\textsuperscript{137} Cf ASSOC. OF UNIV. TECH. MANAGERS, supra note 53 at 17–8 (stating that U.S. University technology transfer programs depend on the staff and resources available to the program and indicates that most offices have between seven to fourteen staff members); Bagley, supra note 101 at 1046 (stating that Technology Transfer Offices have limited funds).
derivation proceeding, experimental university research could be stifled by assertions of infringement given the very limited protection provided by the experimental use defense after the Federal Circuit's decision in Madey v. Duke.142

The proposed patent reforms do favor early disclosure, however, by exempting prior art that arises during a one-year grace period after the applicant publishes the invention regardless of whether the prior art was derived from the applicant.143 To that extent, the bills compliment the university technology transfer environment and furthers the Constitutional purpose of U.S. patent law.144

B. The Proposed Reforms Diminish Infringement Remedies and Patent Strength

1. Apportionment of Damages

The two principal patent reform bills from the 111th Congress contained sections aimed to curb damage awards in infringement cases.145 University organizations generally agreed that the bills introduced an inflexible methodology for the calculation of damages.146 They feared that inappropriately low damage awards would result, thus reducing the deterrent effect that comes from a judgment of infringement.147 Some even contended that the bills would make a finding of infringement no more costly than negotiating a license ex ante, or worse, that it would equate to the grant of a compulsory license.148 Universities feared that the provision would reduce the incentive to license and invest effort and resources in commercializing university-developed inventions.149 Instead, universities maintained that courts should continue to have discretion in determining which economic principles should apply to damages calculations based on the facts of each case.150

142 See Madey v. Duke Univ., 307 F.3d 1351, 1361 (Fed. Cir. 2002) (concluding that the experimental use defense is very narrow); see also ASSOC. OF AMERICAN UNIVS. ET AL., supra note 136, at 5 (“We believe that the Committee should give careful consideration . . . to inclusion of an experimental research exemption in any patent reform legislation that is enacted.”).
144 Compare S. 515 § 2 (eliminating a statutory bar due to publication under 35 U.S.C. § 102(a) and granting a one year grace period), and S. 3600 at § 2 (same), with U.S. CONST. art. I, § 8, cl. 8 (granting a limited monopoly for disclosure “[t]o promote the progress of science and useful arts.”), and ACADEMIC FREEDOM, supra note 73, at 3 (maintaining publication and freedom of publication in the university setting).
147 Id.
148 See, e.g., WSU Letter, supra note 132, at 2.
149 See, e.g., id.
150 See Big Ten Letter, supra note 132, at 1: ASSOC. OF AMERICAN UNIVS. ET AL., supra note 136, at 4.
The damages provisions of S. 3600, the Patent Reform Act of 2008, introduced in the waning days of the 110th Congress by the Honorable Jon Kyl are an improvement but still contain rigid and unfavorable limitations. For example, there are severe limits on when a finder of fact can consider "a standard or average ratio or division of profits, an industry average rate for royalties, or other method that are not based on the particular benefits or advantages of the use of the invention" or a "comparison to royalties paid for patents other than the patent in suit." Market negotiations for patent licenses normally rely on industry standards and exemplary transactions. The parties consider this information, and then make adjustments up or down based on the unique features of the deal. This includes not just the nature of the patents at issue, but also the nature of the licensor, the industry, and the product or service. Under the criteria set out in the S. 3600, it would be difficult for patentees to present evidence of industry standards and comparable deals. For example, one of the triggers to apply a standardized measure is that "the use of the invention is the primary reason for the infringing product or process." This is rarely the case for universities, which perform basic research that is often used to enable the creation of a product. As another example, to rely on a rate from a "comparable patent," S. 3600 requires that the patent is "found to be economically comparable to the patent in suit." There will likely be arguments over what patents are "economically comparable" and, even if two patents are not of comparable value, knowing the market price for the first can help a finder of fact determine the market price for the second. For example, if the industry charges a royalty rate of 10% for a patent of only limited value, this information is powerful evidence that the price of a much more important patent in the industry should be greater than 10%. The applicability of such data seems to be prohibited under S. 3600. The complex set of criteria for applying industry standards and comparable rates, even if they do not bar outright the use of these metrics, will likely proliferate the number of challenges to a reasonable royalty analysis and potentially increase appeals regarding damages.

S. 3600 also implements a procedural change unfavorable to patent holders: either party to litigation can force bifurcation of the liability and damages phases of the trial. Bifurcation usually increases the costs of litigation by extending the

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153 See, e.g., id. at 424–25.
154 See, e.g., id.
155 S. 3600 § 4 (proposing amendment to 35 U.S.C. § 284(d)(1)).
156 See, e.g., Marrero, supra note 118 at A1 (citing statistics of the numbers of patents granted to and licensing agreements entered into by the Wisconsin Alumni Research Foundation).
157 S. 3600 § 4(e) (proposing amendment to 35 U.S.C. § 284(e)(1)).
158 See Hagelin, supra note 152, at 424–25.
159 See id.
160 See S. 3600 § 4(d)–(e) (stating that "[a] reasonable royalty shall not be determined by the use of an average ratio for the division of profits, an industry average rate for royalties" or "by comparison to royalties paid for patents other than the patent in suit" unless the party asserting the claim demonstrates certain requirements).
161 See id. at § 4(g) (proposing amendment to 35 U.S.C. § 284(g)).
length of trials. Because Universities are often resource-limited, increasing the complexity and length of litigation does not favor the university community. 161

2. Post-Grant Review

Another feature of the 110th Congress patent reform bills is the increased opportunity for post-grant review of issued patents. Proponents of post-grant review generally argue that such review, in the form of an administrative procedure at the USPTO, would be a cheaper alternative to litigation. University groups generally supported a revised post-grant review procedure in the H.R. 1908 and S. 1145 for this reason. More specifically, universities supported the “first-window” provision therein, which allowed a challenge to patents within the first 12 months of issuance through an administrative procedure. However, universities had serious concerns about the open-ended “second window,” which permitted a broad range of challenges to patents over their lifetimes. Specifically, some university groups contended that this second window introduced a high degree of uncertainty into patent licensing by precluding any element of finality in the patenting process, thereby negatively affecting the presumption of validity. In addition, the second window created yet another venue in which Universities would be forced to defend themselves against larger corporate entities looking for strategic leverage once involved in district court patent litigation. The groups recommended that at a minimum, Congress should limit the second window to consideration of


163 See BYU Letter, supra note 132, at 4 (indicating that universities have limited resources are “[m]ore likely to fold in the face of suffocating legal fees.”); see also Rochester Letter, supra note 132, at 2 (“Educational institutions such as ours have limited budgets with which to protect our intellectual property . . . .”).


166 See UNIVERSITY VIEWS, supra note 146, at 3 (supporting only the post-grant review “first window”); see also Letter from Nathaniel F. Wienecke, Assistant Secy for Legislative and Intergovernmental Affairs for U.S. Dep’t of Commerce, to Patrick J. Leahy, Chairman, Senate Comm. on the Judiciary, at 4 (Feb. 4, 2008) (supporting establishment of post-grant patent review procedures) (hereinafter DoC Letter); WSU Letter, supra note 132, at 2 (opposing “second window” post grant review, but stating “Wayne State University, like many universities, sees few benefits for itself in allowing oppositions to patents, but believes improved patent quality and certainty and time and cost savings resulting from a reduction in the number of patent challenges after issuance are valuable to the system and could adjust”).

167 See, e.g., UNIVERSITY VIEWS, supra note 146, at 3.

168 See id. at 3; see also Big Ten Letter, supra note 132, at 1 (“Legislation should not allow any ‘second window’ for reconsideration of patents.”); Rochester Letter, supra note 132, at 2 (“[A]llowing an indefinite ‘second window’ for administrative oppositions creates an incentive for the infringer to repeatedly challenge the patent they are infringing.”); WSU Letter, supra note 132, at 2 (“We are, however, adamantly opposed to any ‘second window’ right.”).

169 See BYU Letter, supra note 132, at 3 (stating that the “second window” will “[m]ake patents less certain and more difficult to rely upon after issuance.”); WSU Letter, supra note 132, at 3 (“[S]econd window opportunity is a disincentive to innovate and introduces a high degree of uncertainty into patent licensing . . . .”).

170 See e.g., BYU Letter, supra note 132, at 4.
published prior art, insert an estoppel effect to prevent serial challenges, and include a presumption of validity for all issued patents.¹⁷¹ Multiple windows, coupled with an ongoing potential for litigation, poses a potentially costly and lengthy process for universities whose main goal is to simply license their technology.¹⁷²

S. 3600 retains a first window during which the USPTO can consider all requirements of patentability. This provision includes a presumption of patent validity and seems to be an improvement over H.R. 1908 and S. 1145.¹⁷³ There are, however, still areas of concern in the design of the first window. The USPTO can consider questions of enablement and written description in the first window, but broadening amendments are prohibited.¹⁷⁴ Unlike prior art rejections, a patentee may not be able to overcome these 35 U.S.C. § 112 validity rejections by simply narrowing the claims.¹⁷⁵ For example, in certain instances a written description rejection can only be overcome by removing a limitation, potentially rendering the claim broader.¹⁷⁶ Constraining the types of amendments available in the post-grant review may inhibit a patentee’s ability to protect the full scope of its invention. In contrast, in a reissue application a patentee can broaden claims as long as the proceeding commences within 2 years of the issuance of the patent.¹⁷⁷

The design of the second window in the S. 3600 is more favorable to patentees than that of H.R. 1908 and S. 1145.¹⁷⁸ Unlike the open-ended second window in H.R. 1908 and S. 1145, S. 3600 limits second window challenges to novelty and obviousness in light of published prior art and sets a deadline for initiation of second window challenges.¹⁷⁹ However, questions remain about whether multiple opportunities for review plus the potential for litigation ultimately benefits infringers more than patent holders, particularly those infringers for whom increased time and expense are not deterrents.¹⁸⁰

¹⁷¹ See ASSOC. OF AMERICAN UNIVS. ET AL., supra note 136, at 3 (recommending estoppel); UNIVERSITY VIEWS, supra note 146, at 3 (recommending limiting the scope of the “second window” to prior art); Rochester Letter, supra note 132, at 2 (recommending the presumption of validity be upheld for patents under review).

¹⁷² See, e.g., UNIVERSITY VIEWS, supra note 146, at 2–3.


¹⁷⁴ See S. 3600 § 5 (proposing amendment to 35 U.S.C. 332(c)).

¹⁷⁵ See id. (prohibiting the enlargement of the scope of claims).

¹⁷⁶ See U.S. PAT. & TRADEMARK OFFICE, U.S. DEP’T OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE § 2163.05 (6th rev. 2007) [hereinafter MPEP]: In re Peters, 723 F.2d 891, 893–94 (Fed. Cir. 1983) (reversing the USPTO Board of Appeals’ rejection of claims in a reissue application that were broadened by removing an unnecessary limitation because this did not violate the written description requirement).


¹⁷⁹ S. 3600 § 4 (proposing amendments to 35 U.S.C. § 322 (a), (c)).

¹⁸⁰ See JOHN R. THOMAS & WENDY H. SCHACHT, CONG. RESEARCH SERV., PATENT REFORM IN THE 110TH CONGRESS: INNOVATION ISSUES 11, 29 (2007) (“[C]oncerns have arisen over oppositions because they too may be costly, complex, and prone to abuse as a means for harassing patent owners.”).
The post grant review proposals do contain estoppel provisions, which could limit subsequent claims against previously raised issues. The estoppel provisions in all three bills apply to the first and second windows of post-grant review. The S. 3600 estoppel provision is broader, however, in that it applies to petitioners, real parties in interest, and their privies, while the provisions in H.R. 1908 and S. 1145 applied only to petitioners. In addition, the S. 3600 provision prevents subsequent challenges based on any issue that the petitioner actually raised in the first or second window, or could have raised in the second window, whereas H.R. 1908 and S. 1145 barred only issues that were actually raised in either window. Still, the S. 3600's estoppel provisions are more lenient than the current standard for inter partes reexamination proceedings. First window estoppel in S. 3600 applies only to issues that were actually raised, while inter partes reexamination estoppel applies to issues that were or could have been raised at any point in the reexamination proceeding.

Another serious problem with the proposed post-grant review in all three bills is that it increases the workload of an already overworked USPTO. One of the purported reasons for patent reform was to increase patent quality. That is also the stated reason for the enhanced post-grant review provisions. Reduced patent quality, however, is symptomatic of an overworked USPTO. Even stronger evidence of the USPTO's problems is the serious backlog of patent applications which continues to grow in spite of the Office's attempts to add staff. This suggests that rather than enhance patent quality, the post-grant review provisions may simply exacerbate the difficulties faced by the USPTO in addressing a growing backlog.

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183 S. 3600 § 5 (proposing amendment to 35 U.S.C. § 322(d)).
184 S. 1145 § 6 (proposing amendments to 35 U.S.C. §§ 334); H.R. 1908 § 6 (same).
185 Compare S. 3600 § 5 (proposing amendment to 35 U.S.C. § 322(d), with 37 C.F.R. § 1.907(b)-(c) (prohibiting subsequent inter partes reexamination once a final decision has been entered), and MPEP, supra note 176, § 2601 (discussing statutory estoppel upon subsequent review of an inter partes reexamination).
186 See 37 C.F.R. § 1.907(b)-(c); MPEP, supra note 176 § 2601.
187 See generally UNIVERSITY VIEWS, supra note 146, at 3 (noting their concern with the post grant second window).
188 See S. 3600 (proposing amendments such that the USPTO will conduct post-grant review); S. 1145 (same); H.R. 1908 (same); Chris J. Katopis, Perfect Happiness?: Game Theory as a Tool for Enhancing Patent Quality, 10 YALE J.L. & TECH. 360, 367 (2007) (discussing the PTO’s “enormous workload”).
190 See id.
191 See id. at S2,707.
192 Katopis, supra note 188, at 367.
193 See Chief Judge Michel Address, supra note 15, at 2–4. (discussing that deferred examination by the USPTO which “is already overwhelmed by ex parte examinations with average pendencies of over three years” as a means of “[w]eeding out bad patents is unconvincing.”).
Post-grant review increases the opportunity for multiple challenges to the validity of a patent in addition to litigation. This decreases the strength of U.S. Patents, which may have the effect of deterring the contribution of risk capital to start-up companies whose sole or primary asset is intellectual property.

IV. PROPOSAL FOR POSITIVE CHANGE

As mentioned earlier, support for individual issues included in the Patent Reform Acts largely reflect the concerns of specific industries, which are affected differently by different aspects of U.S. patent laws. Additionally, many of the purported reasons for such reform are not supported by actual data and the "remedies" presented may ultimately benefit only a few contingents at the expense of patent holders generally. For example, claims that too many "low quality patents" issue in the United States rarely are accompanied by any objective parameters about what constitutes a low quality patent, or metrics demonstrating an increase in the issuance of low quality patents. Patent reform's solution to the perception of low quality patents is additional opportunity for post-grant review, which may ultimately decrease the initial value of all issued patents. Thus, this "solution" to a problem that is not well defined seems ill targeted, overly broad and detrimental to the value that strong patents create for universities and their licensees.

Other issues cited in support of patent reform are the increasing costs of enforcement, escalating and unreasonable damage awards and lack of harmonization. Increasing costs of enforcement are a concern to universities but there is little in the proposed reform that appears to address this. In fact the reform would add numerous proceedings to challenge a patent and the various proceedings cumulatively could in fact significantly increase the cost of patent ownership and enforcement. As far as the argument that reform is needed in order to harmonize the patent law, there is little in the reform patent that leads to harmonization. Even the first inventor to file has a derivation proceeding that would be unique to U.S. law and hardly accomplishes harmonization.

In the last few years several decisions from Federal Courts have worked fundamental changes in the patent system that have, to a good extent, also
addressed many of the issues of which advocates of patent reform were complaining. The following precedential court decisions will have effects on the examination process within the U.S. Patent and Trademark Office, which will become more evident in time.

In eBay Inc. v. MercExchange LLC, the Supreme Court of the United States confirmed that the traditional four-factor test for awarding permanent injunctive relief applies to patent disputes. The Court rejected the Federal Circuit’s general rule “that a permanent injunction will issue once infringement and validity have been adjudged” and that an injunction “should be denied only in the ‘unusual’ case, under ‘exceptional circumstances’ and ‘in rare instances... to protect the public interest.’” This ruling has made it more difficult to obtain injunctions against infringers, and to stop infringers from making or selling unlicensed products.

In In re Seagate Technology, LLC, the Federal Circuit established a new standard for willful patent infringement. The court overruled its previous standard, which required merely a failure to exercise “due care” to avoid infringement, and instead implemented a requirement of clear and convincing evidence of “objective recklessness.” Only upon this showing does an infringer’s subjective beliefs become relevant. This ruling has decreased findings of willfulness in district courts.

In KSR International Co. v. Teleflex Inc., the Supreme Court rejected the Federal Circuit’s strict teaching-suggestion-motivation (“TSM”) test for obviousness under 35 U.S.C. § 103. The Federal Circuit’s test required a suggestion to combine references in the actual references themselves. Instead, the Supreme Court instructed courts to apply a more flexible TSM test based on the inquiry set forth in Graham v. John Deere, Co. The ruling inspired the USPTO to introduce strict new rules for obviousness, making it more difficult to obtain patents. It has also increased findings of obviousness in district court proceedings.

203 Id. at 394.
204 Id. at 393–94.
205 Id. at 394 (requiring application of four-factor test in lieu of guaranteed injunction).
207 Id. at 1371.
208 Id.
209 Id.
212 Id. at 419.
213 Id. at 407, 418.
214 Id. at 419 (citing Graham v. John Deere, Co., 383 U.S. 1 (1966)).
In MedImmune, Inc. v. Genentech, Inc.\textsuperscript{217} the Supreme Court ruled that a patent licensee is not required to terminate its license in order to seek a declaratory judgment that the patent is invalid, unenforceable, or not infringed.\textsuperscript{218} The ruling also forced the Federal Circuit to abandon its “reasonable apprehension of suit” requirement for obtaining standing to bring a declaratory judgment action.\textsuperscript{219} This ruling makes it much easier for parties, particularly licensees, to challenge the validity of patents.\textsuperscript{220}

In \textit{In re Bilski},\textsuperscript{221} the Federal Circuit stiffened the requirements for patenting business methods under 35 U.S.C. § 101, which defines patentable subject matter.\textsuperscript{222} The court ruled that the only applicable standard for determining patentability under § 101 is the “machine-or-transformation” test, whereby a method or process is only patentable if it is tied to a particular machine or apparatus or transforms an article into a different state or thing.\textsuperscript{223} Applying this as the sole test under § 101 will make it much more difficult to obtain patents on business methods and processes.\textsuperscript{224}

In summary, the above decisions have: (1) made it easier for the USPTO and the Federal Courts to invalidate or refuse to issue patents;\textsuperscript{225} (2) made it easier for aggrieved parties to challenge patents in court;\textsuperscript{226} (3) made the risks of a finding of an infringement significantly lower.\textsuperscript{227} In light of these fundamental changes, perhaps a more prudent course of action at this point is to see how the patent system will function on a going forward basis.

Indeed, if there is more work to be done on improving patents, perhaps the solution is to increase the resources of the USPTO so that it can effectively apply the rigorous standards for validity and patentability by \textit{KSR} and \textit{Bilski}. The USPTO has a backlog of 750,000 applications that is growing at a rate of 200,000 applications each year.\textsuperscript{228} As a consequence of the backlog, pendency for patent applications is alarmingly high; the average pendency for reexamination proceedings in the USPTO...
now stands at 24 months. There is little if anything in the present patent reform package to help the USPTO with what it really needs: the resources to effectively examine patents in a reasonable period of time. On the contrary, the proposed reforms will merely exacerbate the difficulties the Office already faces.

A number of groups have begun to speak out about the need to help the USPTO succeed. The most urgent need is to provide adequate and permanent funding to the Office for hiring, retention and training. Beyond that there are a number of proposed rule changes that could be implemented to assist the Office in examining and issuing high quality patents. These proposals for improving the Office would require a legislative change of a kind much different than the recently proposed Patent Reform Acts, and should be examined.

The need to assist the Office also has to be embraced by the users of the Office. As with patent reform, every group with an opinion also has its own agenda. This has made producing a workable, cohesive legislative product almost impossible. However, all user groups should agree on the need to assist the Office in issuing high quality patents in a timely fashion. This, more than anything, will raise the confidence of the American public in the patent system and help to energize innovation.

Finally, if Congress is intent on passing patent reform, continued success of university innovation will require a change in the provisions for remedies and post grant review to continue the current incentives to license rather than infringe. Namely, there needs to be a continued presumption of validity for issued U.S. patents as well as significant remedies for the patent owner in the event his or her patent is infringed. This could be most easily accomplished by dropping the remedies provisions and eliminating the second window of post-grant review.

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<td>First-to-File</td>
<td>Section 2: Changes the U.S. system from first to invent to first to file.</td>
<td>Section 2: Similar to S. 1145.</td>
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<td>• Eliminates interference proceedings and introduces new &quot;derivation&quot; proceedings to determine whether the first to file is the true inventor. § 103(h), (i), and (j).</td>
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<td>• Applicant's own publication or disclosure, and disclosure by others based on information obtained from the applicant, will not constitute prior art within one year of filing. § 102(a)(1).</td>
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<td>• Measures prior art from the filing date of the application and includes all art “available to the public.” § 102(a)(1).</td>
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<td>• Contains a prior art exception for subject matter invented pursuant to a joint research agreement. § 102(b).</td>
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<td><strong>Damages</strong></td>
<td>Section 4: Codifies method for determining reasonable royalty.</td>
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<td>• The judge determines whether the basis for calculation will be “entire market value,” “marketplace licensing” or, if neither applies, the economic value attributable to the claimed invention’s specific contribution over the prior art. § 284(c).</td>
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<td>• Allows the court to consider other relevant factors under applicable law in determining reasonable royalty. § 284(c).</td>
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<td>• Detailed criteria for establishing willful infringement. § 284(c).</td>
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<td>Section 4: Codifies method for determining a reasonable royalty based on methodologies distinct from S. 1145.</td>
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<td>• Defines “reasonable royalty” based on a “hypothetical negotiation” between the infringer and claimant. § 284(b).</td>
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<td>• Allows the court or jury to consider any relevant factors in determining reasonable royalty. § 284(c).</td>
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<td>• With limited exceptions, prohibits the use of “a standard or average ratio for the division of profits, an industry average rate for royalties, or other methods that are not based on the particular benefits or advantages of the use of the invention.” § 284(d).</td>
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<td>• Exception if the invention’s use is the primary reason for market demand of the product or process, there is already an established royalty, an industry average is used to confirm an estimate of reasonable royalty, or no other method is reasonably available. § 284(d)(1)-(4).</td>
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<td>• Strictly limits the use of royalties for comparable patents to determine reasonable royalty. § 284(e).</td>
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<td>• Bifurcation of liability and damages trials if requested. § 284(g).</td>
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<td>• Provides rules for the presentation of expert testimony regarding a reasonable royalty. § 284(h) &amp; § 299A.</td>
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| Post-Grant Review | Section 5: Repeals *inter partes* reexamination procedures and enables any third party to challenge a patent by filing petition for Post-Grant Review. § 303(a)-(c).  
| | - Provides for a “first window” challenge filed within 12 months of patent issue. § 322(1).  
| | - Provides for a “second window” challenge filed at any time with consent of the patent owner or within 12 months of receiving notice of infringement if the challenger can show a likelihood of significant economic harm from the continued existence of the patent claim(s). § 322(2)-(3).  
| | - Eliminates the presumption of patent validity during the first window, but retains it during the second window. § 331.  
| | - Does not limit basis of challenge. § 322(2); § 323.  
| | - Requires challenger to prove invalidity by a preponderance of the evidence in the first window, and clear and convincing evidence in the second window. § 331.  
| | - Contains an estoppel provision. § 337-338. | Section 5: Similarities to S. 1145 include  
| | - Repeal of *inter partes* reexamination procedures. § 303(b).  
| | - Two windows for challenging patents. § 321(b)-(c).  
| | - Preponderance of the evidence standard in the first window. § 331(b).  
| | - Clear and convincing evidence standard in the second window. § 331(b).  
| | Differences from S. 1145 include:  
| | - The first window requires the challenger to have a “substantial economic interest adverse to the patent,” and expires within 9 months of patent issue. § 321(a)-(b).  
| | - The second window challenge may be filed at any time within 9 months of the grant of patent or the date of termination of a first window proceeding, requires a “substantial economic interest adverse to the patent,” and only allows for a challenge based on novelty and obviousness in light of printed publications, patents, and patent applications. § 321(a) and (c).  
| | - The presumption of patent validity applies to the first and second windows. § 331.  
| | - Limits *ex parte* reexaminations to actions by a patentee. § 303(a).  
| | - More stringent estoppel provision. § 322(d). |