TAKING INVENTORS' LUNCH MONEY: PROVIDE INCENTIVES FOR SENSITIVE TECHNOLOGY RESEARCH UNDER THE PATRIOT ACT

I. INTRODUCTION

The United States has long had a well developed system in place to protect the rights of inventors and encourage the development of new technologies.[1] The system was first put in place by the Patent Act of 1790 (the Patent Act), and the policies it embodies are clear.[2] One chief policy at play is the encouragement of the development of new technologies that provide social benefits on a broad scale.[3] The presence of a patent system encourages inventors to share their discoveries with the rest of the scientific community while guaranteeing them an economic return on their precious time and resources that are committed to the development process.[4] The right to profit from one's patented inventions should include the right to profit from the use of that invention overseas. Inventors run into a problem, however, when their inventions have potential national security implications. The Patent Act, in its current form, contemplates this dilemma and provides compensation for

1. The power of Congress to create the U.S. patent system was contemplated in the U.S. Constitution and was used to create the Patent Act of 1790 (the Patent Act). *See* MARTIN J. ADELMAN ET AL., CASES AND MATERIALS ON PATENT LAW 8–11 (2d ed. 2003).

2. *Id.* at 10.

3. Diamond v. Chakrabarty, 447 U.S. 303, 307 (1980); Graham v. John Deere Co., 383 U.S. 1, 6 (1966) ("Innovation, advancement, and things which add to the sum of useful knowledge are inherent requisites in a patent system which by constitutional command must 'promote the Progress of . . . useful Arts.' This is the *standard* expressed in the Constitution and it may not be ignored.").

4. *See* Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 481 (1974) ("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 [sic] that the Federal Government is willing to pay the high price of . . . exclusive use for its disclosure, which . . . will stimulate ideas and the eventual development of further significant advances in the art.").

inventors when their patent applications are denied for reasons of national security.[5]

A compensation system does not exist, however, when inventions are thwarted for national security reasons under the Patriot Act.[6] Instead, the government is essentially given a "free pass" to monitor and detect national security issues at will,[7] chilling development in technological fields that might tread on interests of national security.[8] The Patriot Act needs a compensation scheme to provide the incentives that would encourage private sector development of such technologies. While national security concerns should sometimes trump the privacy concerns in a world where terrorist threats are constant,[9] we live in a technological age where scientists are pushed toward the private sector as intellectual property regimes expand.[10]

II. BACKGROUND

The United States has laws that domestically govern the grant of patents to individuals for their inventions.[11]

5. 35 U.S.C. § 183 (2000).

6. Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA PATRIOT ACT) Act of 2001, Pub. L. No. 107–56, 115 Stat. 272 (codified in scattered titles of U.S.C.).

7. *See* Michael P. O'Connor & Celia M. Rumann, *Into the Fire: How to Avoid Getting Burned by the Same Mistakes Made Fighting Terrorism in Northern Ireland*, 24 CARDOZO L. REV. 1657, 1739 (2003) (discussing how the government has expanded monitoring and investigatory powers after the attacks of September 11, 2001).

8. *See* Diana Jean Schemo, *Scientists Discuss Balance of Research and Security*, N.Y. TIMES, Jan. 10, 2003, at A12 (chronicling scientists' discussion of how to balance the desire to share findings with national security concerns).

9. *See generally* WHITE HOUSE, THE NATIONAL SECURITY STRATEGY OF THE UNITED STATES OF AMERICA [hereinafter WHITE HOUSE I], http://www.whitehouse.gov/nsc/nss/2002/nss.pdf (discussing current threats to national security).

10. *See* Linda R. Cohen & Roger G. Noll, *Is U.S. Science Policy at Risk? Trends in Federal Support for R&D*, 19 BROOKINGS REV. 10, 10–15 (2001), *available at* http://www.brookings.edu/press/review/winter2001/cohen.htm (noting the trends in federal support and private industry support of technology development).

11. ADELMAN ET AL., *supra* note 1, at 10–11. These laws were originally enacted by the Patent Act and have since been modified multiple times in accordance with shifts in national and international intellectual property protection, as well as world events. *See id.* at 11–17 (discussing changes to the patent system since the Patent Act).

Additionally, it has entered into multinational agreements to help further protect the rights conferred by the U.S. Patent and Trademark Office (USPTO) abroad.[12] A cursory examination of the laws and agreements is important in trying to understand the effects of the Patriot Act on the patent system. Primarily, it is of importance to discuss the current laws in place that grant patent rights in sensitive technologies, as well as their potential enforceability overseas, assuming the patents are available to provide for a commercial benefit.

A. The Patent Act and Its Consideration of National Security-Affecting Patents

Title 35 of the U.S. Code is the current embodiment of the Patent Act.[13] The Patent Act confers on inventors a fixed-duration monopoly for the use and manufacture of their inventions.[14] The driving force behind the Patent Act (as well as the driving force behind the various revisions to it) was to promote and encourage the creation of new inventions.[15] The execution of this purpose is carried out in at least two ways. First, granting inventors a monopoly, even for the finite period of twenty years, provides inventors with an opportunity to reap the rewards of their research and labor.[16] In an ideal world, this incentive would not be necessary, and inventors would simply

12. *See id*. at 17.

13. 35 U.S.C. §§ 1–376 (2000). An invention is only patentable if it is of patentable subject matter and exhibits utility, novelty, and nonobviousness. *Id.* §§ 101–103.

14. A patent protects the invention for "20 years from the date on which the application for the patent was filed in the United States . . . ." *Id.* § 154.

15. ROBERT P. MERGES ET AL., INTELLECTUAL PROPERTY IN THE NEW TECHNOLOGICAL AGE 24 (3d ed. 2003).

16. *See* Sears, Roebuck & Co. v. Stiffel Co., 376 U.S. 225, 229–30 (1964) ("Patents . . . are meant to encourage invention by rewarding the inventor with the right, limited to a term of years fixed by the patent, to exclude others from the use of his invention. During that period of time no one may make, use, or sell the patented product . . . .").

invent for the sake of invention.[17] In a capitalist economy, however, such an incentive is necessary to effectively encourage new development.[18] Second, a patent grant from the USPTO is conditioned on publication of the invention.[19] This publication includes the composition of the invention (identified through its patent claims),[20] its intended use, and other detailed specifications that dictate the operation of the patent and its best form.[21] Because the information is available to the public, other inventors have access to the patent and are able to use it, licensed or not,[22] to further the art in the particular field.[23] Both the grant of exclusivity and the publication requirement

17. *See* Evan L. Schwartz, *Sparking the Fire of Invention: One of the Most Radical Business Ideas of the 21st Century May Be the Creation of a New Method of Invention—Individualistic, Global, and not Bound to Corporate Missions*, TECH. REV. 34 (2004), *available at* http://www.crv.com/NewsEvents/News/ISFTechReview5-04.pdf (discussing how even wealthy corporations do not want to put money into new inventions, but more and more companies are nonetheless dedicated to pursuing invention for their own sake).

18. *Bioshield II: Responding to An Ever-Changing Threat: Hearing Before the S. Comm. on Health, Education, Labor, & Pensions and S. Comm. on the Judiciary*, 108th Cong. 1 (2004) [hereinafter *Bioshield II*] (testimony of Jeffrey P. Kushan, Partner, Sidley Austin Brown & Wood, LLP), *available at* http://www.senate.gov/comm/judiciary/general/testimony.cfm?id=1327&wit_id=3895.

19. *See* 35 U.S.C. § 122(b)(1)(A) (2000) (mandating that "each application for a patent shall be published[] . . . promptly after the expiration of a period of 18 months."). A publication "shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention." *Id.* § 112.

20. *See* ADELMAN ET AL., *supra* note 1, at 525–26.

21. *See* 35 U.S.C. § 112.

22. *See Bioshield II*, *supra* note 18 (discussing patent litigation). Because the information is published, it is available for use in legal and illegal manners. *See id.* ("The patent must describe . . . the invention so completely [as to] allow someone of ordinary skill in the art to replicate [it] without difficulty."). Infringing uses could result in litigation, but the information is still available for all to benefit from via the generation of new ideas or otherwise. *See id.* (citing litigation as the only means of enforcing patents).

23. Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 480–81 (1974).

together encourage development and production of new inventions.[24]

Counterbalancing the goal of patent law of promoting the development of new ideas and inventions is the U.S. government's rationale from keeping some inventions out of the public eye, both domestically and internationally.[25] Specifically, some patents received by the USPTO involve technologies that potentially could be adverse to national security interests.[26] These situations are governed by 35 U.S.C. § 181, and provide the Commissioner of Patents the responsibility for identifying such inventions.[27] Upon identification, the patent application for the invention in question is then made "available for inspection to the Atomic Energy Commission, the Secretary of Defense, and the chief officer of any other department or agency of the Government designated by the President as a defense agency of the United States."[28] In essence, one government department's discretionary authority gives way to another's discretionary authority. If, in the particular agency or department's opinion, the invention could be a potential threat to national security, the patent is withheld.[29] The inventor of the sensitive technology

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24. *See, e.g.*, James E. Rogan, Remarks at the Hearings on Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy (Feb. 6, 2002), *available at* http://www.ftc.gov/opp/intellect/rogan.htm (explaining that the patent system, by requiring full disclosure of inventions, opens them up for inspection, thus allowing others to make improvements and further innovations).

25. *See* 35 U.S.C. § 181 (2000); Hornback v. United States, 36 Fed. Cl. 552, 553–54 (1996), *aff'd*, 405 F.3d 999 (Fed. Cir. 2005).

26. 35 U.S.C. § 181; U.S. PATENT & TRADEMARK OFFICE, MANUAL FOR PATENT EXAMINING PROCEDURE § 115 (Rev. 5 Aug. 2006) [hereinafter REVIEW OF APPLICATION], *available at* http://www.uspto.gov/web/offices/pac/mpep/mpep_e8r5_0100.pdf; FEDERATION OF AMERICAN SCIENTISTS, INVENTION SECRECY ACTIVITY, *available at* http://www.fas.org/sgp/othergov/invention/stats.html (last visited Apr. 1, 2007).

27. 35 U.S.C. § 181. The Commissioner of Patents runs the patent arm of the U.S. Patent and Trademark Office (USPTO). U.S. Patent & Trademark Office, *Patent Organization*, http://www.uspto.gov/web/offices/pac/index.html (last visited Apr. 1, 2007).

28. 35 U.S.C. § 181. Under the Homeland Security Department created by President George W. Bush, this is a concept that is expansive considering the broad reach into many areas of government that are justifiably linked together because of national security interests. White House, Department of Homeland Security, http://www.whitehouse.gov/omb/budget/fy2005/homeland.html (last visited Apr. 1, 2007).

29. 35 U.S.C. § 181. *See, e.g.*, Mark A. Lemley & Kimberly A. Moore, *Ending Abuse of Patent Continuations*, 84 B.U. L. REV. 63, 72 n.29 (2004).

then would not receive the benefits conferred by the grant of a patent, including the exclusive right to commercially produce and sell the invention domestically or internationally.[30] This effectively removes the incentive for nongovernment employees to develop new and potentially highly useful art in the field. To deal with negative incentives, 35 U.S.C. § 181 is coupled with 35 U.S.C. § 183, entitled "Right to compensation."[31] It affords an individual whose patent has been withheld under an order of secrecy the right to apply to the head of the agency or department "for compensation for the damage caused by the order of secrecy and/or for the use of the invention by the Government, resulting from his disclosure."[32] After this power has expired, the right to compensation is still enforceable via suit in the U.S. Claims Court.[33]

The Patent Act is the embodiment of the longstanding U.S. social policy to foster invention and scientific progress.[34] Its foundation of domestically enforceable rights includes situations where the government's interest in national security heavily outweighs the individual's right to leverage his or her invention to the greatest extent possible during the patent's monopoly

30. If the patent application is withheld for national security reasons, then the inventor will be denied the limited monopoly period they would otherwise be afforded under the current regime. *See* 35 U.S.C. § 181.

31. 35 U.S.C. § 183 (2000).

32. *Id.*; *see also* REVIEW OF APPLICATION, *supra* note 26 (nothing the government's ability to withhold publication and issue a secrecy order for a patent that might be adverse to national security). The applicant has six years after notification that the patent is going to be withheld to apply for compensation and must do so through the government agency that declared the invention adverse to national security interests, not through the USPTO. 35 U.S.C. § 183.

33. 35 U.S.C. § 183. One could infer that such a right is in furtherance of the Takings Clause (derived from the Fifth Amendment of the U.S. Constitution) by affording recovery from such takings where the value of their patent may not be realized until after some period of development in the art that makes their invention realizable. *Cf.* Ruckelshaus v. Monsanto Co., 467 U.S. 986 (1984) (demonstrating that trade secret taking by forced disclosure of research testing data to the Environmental Protection Agency could qualify as a taking of property—although it was held not to be a taking in this situation—potentially enforceable under the Takings Clause).

34. Diamond v. Chakrabarty, 447 U.S. 303, 307 (1980).

period.[35] Compensation still remains as an incentive to invent under such circumstances and should not be ignored as a casualty of the interests of national security that 35 U.S.C. § 181 seeks to protect.[36] Economic interests have helped give the United States the dominant position it currently enjoys,[37] and the United States should not turn its back on those interests even in light of current world politics.

B. International Agreements Affecting the Transferability of Intellectual Property Rights

While the United States has protected patent rights within its borders through the Patent Act,[38] it has also entered into multinational agreements with the World Trade Organization (WTO) to ensure the validity of those rights overseas and make it easier for inventors to obtain protection in foreign countries.[39] Entering into these agreements shows a firm understanding of the importance of transferability of these technologies across international borders as part of the conferred set of patent rights.[40] This understanding is undisturbed by the fact that

35. In these instances, 35 U.S.C. allows for compensation by the government agency or department which sought to withhold the patent application through the USPTO. 35 U.S.C. § 183. The Federal Circuit has held that the remedy provided for by 35 U.S.C. § 183 is the exclusive remedy available for patent applications that have been withheld under a secrecy order. Hornback v. United States, 91 Fed. App'x 679, 681–83 (Fed. Cir. 2004). Further, they held this compensation also extinguishes any claim the inventor may present under the Takings Clause. *Id.* at 682.

36. 35 U.S.C. § 181 (2000).

37. *See* World Bank, Total GDP 2005, http://siteresources.worldbank.org/DATASTATISTICS/Resources/GDP.pdf (last visited Apr. 1, 2007). The patent system strikes "a careful balance between the need to promote innovation and the recognition that imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy." ADELMAN ET AL., *supra* note 1, at 4.

38. *See* discussion *supra* Part I.A.

39. World Trade Organization, *Understanding the WTO—Intellectual Property: Protection and Enforcement*, http://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm7_e.htm (last visited Apr. 1, 2007).

40. Matt Nesvisky, *Intellectual Property Rights and International Technology Transfer*, NBER DIGEST, Sept. 2005, at 5, 5–6, *available at* http://www.nber.org/digest/sep05/sep05.pdf.

other countries, whether participants to the agreements or not, still do not fully recognize the rights of U.S. patentees.[41]

1. The Patent Cooperation Treaty (PCT)

The PCT, a treaty created by the WTO, was agreed upon in 1970.[42] It provides inventors with a one stop application process for the filing of patents with treaty signatories.[43] Previously, inventors were required to submit patent applications individually to each country,[44] whereas the new administrative process, managed by the World Intellectual Property Organization (WIPO), allows for a singular point of entry—in the patent's country of origin.[45] The PCT greatly eased the application process for inventors by unifying the procedures and reducing the costs of protecting intellectual property rights in foreign countries.[46] As a treaty signatory, the United States committed to ensuring the right of transferability as an

41. Patent regimes vary from country to country, and this variance carries into the way that different countries treat the relevant laws of other countries. *See* Elizabeth M. Nimmo, *United States Policy Regarding Technology Transfer to the People's Republic of China*, 6 NW. J. INT'L L. & BUS. 249, 272–74 (1984) (stating that China's patent regime as it relates to foreign intellectual property); Andrew Kramer, *Starbucks' Move on Moscow Market is Stymied by a Trademark Squatter*, INT'L HERALD TRIB., Oct. 12, 2005, at F3; *Tensions with China: The New Face of Globalisation*, ECONOMIST, Nov. 17, 2005, at 50 ("*China is notorious for tolerating rampant intellectual-property theft.*").

42. Patent Cooperation Treaty, June 19, 1970, 28 U.S.T. 7645, 1160 U.N.T.S. 231.

43. *Id.* art. 3–4.

44. Christopher D. DeCluitt, *International Patent Prosecution, Litigation and Enforcement*, 5 TULSA J. COMP. & INT'L L. 135, 137–38, 141 (1997) (contrasting the periods before and after the Patent Cooperation Treaty).

45. *See* WORLD INTELLECTUAL PROP. ORG., PROTECTING YOUR INVENTIONS ABROAD: FREQUENTLY ASKED QUESTIONS ABOUT THE PATENT COOPERATION TREATY (PCT) 4 (2002), http://www.wipo.int/pct/en/basic_facts/faqs_about_the_pct.pdf. The "singular point of entry" for patent applicants is the inventor's national patent office (assuming that the country of origin is a PCT participant). Diana L. Oleksa, *The Advantages of Using the Patent Cooperation Treaty*, EXPORT AMERICA, Jan. 2002, at 16, *available at* http://www.ita.doc.gov/exportamerica/TechnicalAdvice/ta_PCT.pdf.

46. *Patent Law: Going Global*, ECONOMIST, June 15, 2000, at 83. Previously, an inventor had to file for a patent in all the representative countries to effectuate intellectual property interests in each of them. GRAIN, *WIPO Moves Toward 'World' Patent System* (July 2002), http://www.grain.org/briefings_files/wipo-patent-2002-en.pdf.

essential element of patentees' right to profit from their invention not only domestically, but also internationally.[47]

An inventor can only file a patent application under the PCT if the subject matter of the patent is not blocked by the national security concerns of the nation of origin.[48] This allows U.S. government agencies and departments to block applications under the authority of 35 U.S.C. § 181 for what they deem as a threat to national security.[49] The national security restrictions embodied in the PCT simply adopt whatever national security measures the patent systems of the participating countries had previously adopted.[50] Without enforceable rights of exclusion for their inventions, the chance of inventors recouping research and development costs are greatly diminished.[51] While 35 U.S.C. § 183 protects these financial interests domestically, it does not account for inventors' financial rights from an international transferability perspective.[52]

47. Patent Cooperation Treaty, *supra* note 42, at 7648.

48. *Id.* art. 27(8).

49. According to the language of the PCT, "nothing in this Treaty and the Regulations is intended to be construed as limiting the freedom of any Contracting State to apply measures deemed necessary for the preservation of its national security or to limit, for the protection of the general economic interests of that State, the right of its own residents or nationals to file international applications." *Id.* Such inventions meet the description of 35 U.S.C. § 181 (2000).

50. *See* Nuno Pires de Carvalho, *From the Shaman's Hut to the Patent Office: In Search of a TRIPS-Consistent Requirement to Disclose the Origin of Genetic Resources and Prior Informed Consent*, 17 WASH. U.J.L. & POL'Y 111, 133 (2005).

51. Victor Song, *DNA Sequences as Unpatentable Subject Matter*, Apr. 13, 2001, http://leda.law.harvard.edu/leda/data/380/Song.html.

52. Nothing in the language of 35 U.S.C. § 183 suggests what criteria are to be used in evaluating the amount of compensation due for the withholding. *See* 35 U.S.C. § 183 (2000). Departmental provisions enabled by 35 U.S.C. § 183, such as those describing functions under the Atomic Energy Act of 1954, make no mention of it either and leave it up to the board in question to either include or exclude international transferability concerns. *See* 10 C.F.R. § 780.53(d) (2005) (outlining considerations to be taken into account while determining compensation without mentioning international transferability).

2. Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)

In an effort to help standardize patent registration and enforcement internationally twenty four years after the PCT, the TRIPS agreement was adopted by the WTO.[53] It was adopted to ease the transferability of these rights amongst the participating nations.[54] Prior to the agreement, and still to a large extent today, intellectual property rights regimes vary widely across international borders.[55] International cooperation on enforcement and regulation of intellectual property rights has provided a certain amount of congruence allowing greater ease of transferability of technologies.[56] The TRIPS agreement provides rules for more effective dispute resolution regarding intellectual property rights amongst WTO members.[57]

TRIPS signatories adopted minimum standards for intellectual property laws in order to make it easier for countries to apply the law from the country of development, thus protecting the intellectual property.[58] For example, TRIPS requires member countries' patent systems to have a twenty

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53. Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, 33 I.L.M. 1197 (1994) [hereinafter TRIPS].

54. *See id*. art. 7 (listing the promotion of "the transfer and dissemination of technology[] to the mutual advantage of producers and users" as part of the agreement's objective). The WTO recognizes the need to "stimulate innovation, design and the creation of technology" through the incentive offered by patent systems and the structure that they create to foster development by providing a means of recuperation of research and development costs. World Trade Org., *What Are Intellectual Property Rights?*, http://www.wto.org/english/tratop_e/trips_e/intel1_e.htm (last visited Apr. 1, 2007).

55. *See* U.S. GEN. ACCOUNTING OFFICE, GAO-03-910, EXPERTS' ADVICE FOR SMALL BUSINESSES SEEKING FOREIGN PATENTS at 33–35 (June 2003), *available at* http://www.gao.gov/new.items/d03910.pdf.

56. *See, e.g.*, Srividhya Ragavan, *Of the Inequals of the Uruguay Round*, 10 MARQ. INTELL. PROP. L. REV. 273, 274 (2006) (illustrating how the Declaration on the TRIPS Agreement and Public Health created greater accessibility to medication in developing nations). When these minimum standards are in place, inventors can more easily rely on enforcement of rights in the participating countries.

57. CRAIG JOYCE ET AL., COPYRIGHT LAW 41–42 (6th ed. 2003).

58. *See* Srividhya Ragavan, *Of the Inequals of the Uruguay Round*, 10 MARQ. INTELL. PROP. L. REV. 273, 274 (2006).

year minimum limited monopoly period of protection.[59] At its core, the enforceability of patent rights between different nation's centers on the dispute resolution process and the importance attached to the registration of patents.[60]

Additionally, TRIPS provides guidance on the enforcement of rights across borders[61] by seeking greater guarantees of right preservation and increased ease of transferability. As an inventor, it is much more attractive to assert an invention overseas when there are agreements in place that ensure some sort of recourse in the event that their patent rights are infringed upon. As TRIPS signatories, the United States and other participating countries have recognized the value of international technology transferability to the patent owner.

Many sensitive technologies that fall under the guise of 35 U.S.C. § 181 have viable peaceful uses.[62] Consider, for example, the computer scientist who develops a powerful new encryption method. For decades, encryption has played an important role in protecting national security-sensitive communications.[63] However, such encryption technology also has peaceful uses, such as the protection of financial transactions through

59. TRIPS, *supra* note 53, art. 33.

60. *See* Mariano Municoy, *Allocation of Jurisdiction on Patent Disputes in the Models Developed by the Hague Conference in Private International Law: Asymmetric Countries and the Relationship of Private Parties*, 4 CHI. KENT J. INTEL. PROP. 342, 343–55 (2005) (discussing the difficulty of a global patent litigation system while examining the effects of eroding it would have on the jurisdiction of the registered states).

61. *See* TRIPS, *supra* note 53, arts. 63–64 (allowing member states to demand access to decisions of other nations that affect their rights and also providing a mechanism through the TRIPS Council to resolve disputes). Once a decision in one member country is made regarding the validity of disputed rights, it is made available to the other member countries involved. *Id.*

62. *See, e.g.*, Hornback v. United States, 36 Fed. Cl. 552, 554 (1996), *aff'd*, 405 F.3d 999 (Fed. Cir. 2005) (implying that since no government interest in the invention is necessary for a secrecy order, there are some inventions of no military utility that may still fall under 35 U.S.C. § 181).

63. *See* Karim K. Shehadeh, *The Wassenaar Arrangement and Encryption Exports: An Ineffective Export Control Regime that Compromises United States' Economic Interests*, 15 AM. U. INT'L L. REV. 271, 283–85 (1999) (discussing national security implications of exporting encryption technology).

authentication and confidentiality programs.[64] A wide array of markets exists for such technologies in the private sector and could be very lucrative if the technology were allowed into the marketplace.[65] Although the U.S. government has given way in some instances, precisely this is what is prevented through the withholding of patents under 35 U.S.C. § 181 and the disruption of research caused by the Patriot Act.

There is a strong incentive to implement intellectual property rights regimes[66] that conform to TRIPS in order for developing countries to continue development.[67] By conforming to TRIPS, countries automatically receive the benefits other participating countries receive.[68] The benefits encourage developing countries to provide economic incentives that would allow technology transfer of patentable subject matter into their country deemed beneficial for their advancement.[69]

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64. GREG R. VETTER, EMBEDDING THICKETS IN INFORMATION SECURITY?: CRYPTOGRAPHY PATENTING AND STRATEGIC IMPLICATIONS FOR INFORMATION TECHNOLOGY 4–5 n.7 (2005).

65. Charlie Zhu, *Suppliers in High Gear for Asia Nuclear Power*, FORBES, Apr. 11, 2004, http://www.forbes.com/markets/emergingmarkets/newswire/2004/04/10/rtr1328504.html.

66. *See* David Rogers, An Overview of the Patent System (2002), http://web.archive.org/web/20050109093459/http://www.rlo.ca/patentsys.htm.

67. *The Right to Good Ideas*, ECONOMIST, June 21, 2001, at 21. Enforceability still relies on the adopting country's ability to adapt to the requirements set out by TRIPS, which may be difficult to afford and implement in the near future. *Id.*

68. *See id.* It is easier to encourage the import of useful foreign technology when the patent owners are confident that their intellectual property rights will be enforced postimportation. A patentee's concerns about patent infringement postexportation will likely outweigh financial interests since those infringing goods could then become the subject of illegal import to the United States, therefore indirectly infringing on their rights conferred by the Patent Act. ADELMAN ET AL., *supra* note 1, at 857.

69. L. Danielle Tully, *Prospects for Progress: The Trips Agreement and Developing Countries After the Doha Conference*, 26 B.C. INT'L & COMP. L. REV. 129, 129–31 (2003).

C. The Patriot Act and the Its Effect on Capabilities of the Federal Government

The Patriot Act has greatly enhanced the capabilities of the U.S. government to monitor suspected terrorist activity.[70] This capability mirrors the discretion afforded to government agencies and departments used to block the issuance of patents for national security reasons.[71] The chilling effects of this capability limit private technological development in arts that might be of national security concern.[72]

1. Purpose of the Patriot Act

The Patriot Act is an effort by Congress to establish greater capabilities of government agencies and departments to monitor and deter terrorist activities.[73] It allows for greater infiltration into the development and research of possibly sensitive technologies.[74] Section 221 of the Patriot Act amended the Trade Sanctions Reform and Export Act of 2000 to prohibit the transfer of technology capable of being used in the development of biological or chemical weapons.[75] Such a provision is entirely

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70. *See* Center for Democracy & Technology, *Summary and Analysis of Key Sections of USA PATRIOT ACT of 2001*, http://www.cdt.org/security/011031summary.shtml (last visited Apr. 1, 2007).

71. *See* B. Delano Jordan, *National Security and the Patent Squeeze*, Aug. 1, 2002, http://news.com.com/2102-1071_3-947508.html?tag=st.util.print (noting that the government can issue a secrecy order forbidding disclosure of information relating to a product or refuse to issue a patent at all). The discretionary capabilities of government agencies allowed via 35 U.S.C. § 181 and the Patriot Act "sneak-and-peek" provisions are similar in effect. *See* Lee R. Shelton IV & James Hall, *Patriot Act another RICO?*, ENTER STAGE RIGHT, Feb. 4, 2002, http://www.enterstageright.com/archive/articles/0202/0202patriot.htm (describing the ability of the federal government to search private residences while indefinitely delaying notification to the owner with a showing of "good cause").

72. Chilling effects are created in the minds of inventors working in these fields who worry whether their research may raise suspicions that they are developing with the intent to perpetrate terrorism or that they might inadvertently support it. *See* Schemo, *supra* note 8.

73. *See* Dahlia Lithwick & Julia Turner, *A Guide to the Patriot Act, Part 1; Should You Be Scared of the Patriot Act?*, SLATE, Sept. 8, 2003, http://www.slate.com/id/2087984.

74. *See* Shelton & Hall, *supra* note 72.

75. USA PATRIOT ACT, Pub. L. No. 107–56, § 221, 115 Stat. 272, 292 (2001) (codified in scattered titles of U.S.C.).

justifiable, given the dire consequences of such technologies if they end up in the hands of terrorists.[76] Which technologies aid in the development of such weapons, though, is a matter entirely determined by whatever department or agency is responsible for the review of the particular export function, whether it be the Atomic Energy Agency or the Department of Defense.[77] There are similarities between this provision and 35 U.S.C. § 181.[78]

Which technologies could be "used to facilitate the development, or production of [] chemical or biological weapon[s] or weapon[s] of mass destruction?"[79] One could infer from the expansive nature of this language,[80] a simple development in metallurgical science could trigger concerns that would fall into this sphere because it could affect delivery mechanisms for biological or chemical weapons. For example, a discovery might allow the manufacture of metals that provide less drag in flight to be interpreted as a discovery for more efficient missile flight. Alternatively, a new development in computer hardware or software technology could tread into the national security sphere because of the way in which the technology affects missile guidance systems. The computer programs and technologies that enable Global Positioning Tracking are certainly essential to

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76. *See, e.g.*, Org. for the Prohibition of Chem. Weapons, *Chemical Terrorism*, http://www.opcw.nl (follow "Chemical Weapons Protection & Assistance" hyperlink; then follow "Chemical Terrorism: Introduction" hyperlink) (last visited Apr. 1, 2007) (pointing to sarin attacks in Japan in 1995).

77. *See* Duke Law, Civil Liberties Online, *PART A: Providing for New and Enhanced Laws Against Terrorism Created Within the Existing Law Enforcement Paradigm*, http://www.law.duke.edu/publiclaw/civil/index.php?action=showtopic&topicid=10 (last visited Apr. 1, 2007).

78. San Francisco Indep. Media Center, *"Black Patents" on the Rise, USPTO Statistics Show*, July 11, 2005, *available at* http://www.iplawbulletin.com/Members/ViewArticlePortion.aspx?ID=3675&ReturnUrl=..%2fsecure%2fViewArticle.aspx%2fId%3d3675.

79. Trade Sanctions Reform and Export Enhancement Act of 2000, Pub. L. No. 106-387, 114 Stat. 1549, § 904(2)(C).

80. Arguably, this language is necessarily expansive, bearing similarity to the language of the Copyright Act ("original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced, or otherwise communicated"). 17 U.S.C. § 102 (2000). Both require broad language because it is not yet known, at the time of enactment, which articles may later fit the intentions of the legislation, and it was thought better to leave some of these decisions in the hands of the legal system. JOYCE, *supra* note 57, at 68–69.

guided missile systems,[81] thus any advancement in this area could be construed as aiding the development of chemical or biological weapons.

The responsible authorities have wide discretion in determining whether a particular technology could have potential national security-threatening uses.[82] This discretionary capacity embodied in the Patriot Act, so closely mirrors 35 U.S.C. § 181, one might assume the Patriot Act has a similar compensation scheme corollary to 35 U.S.C. § 183, but it does not.[83] The result is an unchecked ability to discourage private research in sensitive technologies.

2. Effects of the Patriot Act on the Development of National Security-Sensitive Technologies

While the Patriot Act contains no provision explicitly affecting the patentability of technologies,[84] it allows for greater deference to governmental agencies in their decisions as to what may or may not be a threat to national security.[85] Thus, inventors and scientists in the private sector have an added consideration in determining what might be a potentially viable

81. Frank Vizard, *Safeguarding GPS: Attempts to Jam U.S. GPS-Based Weapons and Navigation Systems in Iraq Were a Reminder of Just How Vulnerable the Technology Is*, SCI. AM., Apr. 14, 2003, http://www.sciam.com/print_version.cfm?articleID=00079DD3-DAA0-1E96-8EA5809EC5880000.

82. *See* USA PATRIOT ACT, Pub. L. No. 107–56, §§ 216–218, 115 Stat. 272, 288–291 (2001) (codified in scattered titles of U.S.C.) (setting out who has authority to deem new technology as security-sensitive).

83. *Id.* For example, the sneak-and-peak provision, § 213 of the Patriot Act, has no allowance for compensating the loss of research disrupted via its intrusive allowances. *Id.* § 213. This enables the delay of serving warrants upon suspected criminals in instances where proper service may adversely affect the situation. *Id.*

84. *See generally* USA PATRIOT ACT.

85. *See* Global Relief Found., Inc. v. O'Neill, 315 F.3d 748 (7th Cir. 2002) (deferring to executive branch determination that a corporation should have its assets frozen due to potential affiliation with terrorism). The Department of Justice points out that the Supreme Court has specifically authorized such deference, for example, in detaining aliens. U.S. Dep't of Justice, The USA PATRIOT Act: Myth vs. Reality, http://www.lifeandliberty.gov/subs/add_myths.htm (last visited Apr. 1, 2007) (citing Zadvydas v. Davis, 533 U.S. 678, 696 (2001)).

implementation of an art.[86] Primarily, if a budding scientist is considering entering a field of research that could entail surveillance by government agencies, through phone calls, emails, internet site visits, and library checkouts, that scientist may avoid such concerns altogether, instead opting for a field that is less monitored.[87]

This result is adverse to any country interested in encouraging development of new technology.[88] While the primary impetus for creating the U.S. intellectual property system is to encourage such development,[89] the Patriot Act works against this interest—quashing entire fields of private development for fear that the government could step in at any point and halt development entirely.[90] Combined with the capability of government agencies and departments to restrict patentability of technologies embodied in 35 U.S.C. § 181, this heightened interest in prohibiting technologies deemed sensitive from entering international trade, or even just the public eye,

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86. *See* Fed'n of Am. Scientists, *Secrecy Order Program in the United States Patent & Trademark Office*, June 27, 1991, http://www.fas.org/sgp/othergov/invention/program.html (describing the process of how the USPTO screens applications for potential secrecy orders in light of guidance provided by various governmental agencies). Rather than only considering the financial implications of conducting research, inventors and scientists must also consider whether the research would expose them to the government searches authorized by the Patriot Act. *See, e.g.*, Ohio State College of Biological Sciences, USA Patriot Act Select Agent Security Requirements, http://www.biosci.ohio-state.edu/~jsmith/safety/Biosafety/PatriotActResearch.pdf (last visited Apr. 1, 2007).

87. *See, e.g.*, John J. Nance, *Just How Secure Is Airline Security?: The Swiss Cheese Model and What We've Really Accomplished Since 9/11*, ABC NEWS, Apr. 12, 2005, http://abcnews.go.com/Business/FlyingHigh/story?id=647547&page=1 (discussing airline security). It is difficult to determine which types of fields may be more or less likely to be monitored. While some areas such as nuclear technology are obvious targets, others may be less obvious. For example, before September 11, 2001, one might not have readily considered aircraft security technology as a potential area of concern. *See id.* (indicating the gaps in airline security coverage and how September 11, 2001 has brought renewed focus on the issue). However, today this a concern of highest importance. *Id.*

88. ADELMAN ET AL., *supra* note 1, at 9–10 (noting how security concerns effectively remove the incentive for development that the Patent Act put in place).

89. *Id.*

90. *See* GENEVIEVE J. KNEZO, POSSIBLE IMPACTS OF MAJOR COUNTER TERRORISM SECURITY ACTIONS ON RESEARCH, DEVELOPMENT, AND HIGHER EDUCATION 23–25 (2002), *available at* http://www.fas.org/irp/crs/RL31354.pdf (stating that certain research institutions are seeking to mitigate restrictions placed on them by the Patriot Act).

has a damaging effect on the development of technologies by the private sector.[91]

The Patent Act has helped enable the United States to become a superpower in today's technological world.[92] Encouraging private sector development of technology has played an important role in allowing the United States to thrive.[93] Arguably, today's global economy is powered by those who can develop technologies the quickest;[94] creating a secure environment for inventors to develop in is the foundation for any economy that wants to flourish in the future.[95]

3. Current Developments and Potential Changes to the Patriot Act

As portions of the Patriot Act come up for renewal, U.S. intelligence agencies are pushing for continuance of their discretionary monitoring capabilities.[96] While the original

91. Randy Forbes, *The Dual-Use Double-Edged Sword*, MIL. INFO. TECH. ONLINE ED., Aug. 25, 2005, http://www.military-information-technology.com/article.cfm?DocID=1102; Michael D. Klaus, *Dual-Use Free Trade Agreements: The Contemporary Alternative to High-Tech Export Controls*, 32 DENV. J. INT'L L. & POL'Y 105–06 (2003); *National Security Implications of Lowered Export Controls on Dual-Use Technologies and U.S. Defense Capabilities: Hearing before the S. Comm. on Armed Services*, 104th Cong. 1–2 (1995) (statement of Sen. Robert C. Smith, Member, S. Comm. on Armed Services). These technologies may have viable peaceful uses, the effects of which may or may not be contemplated by their identification as sensitive. *See* Weiss v. United States, 146 F. Supp. 2d 113, 128–29 (1st Cir. 2001) (holding that damages resulting from inability to leverage patent in foreign countries must be concrete and not speculative).

92. Todd M. Rowe, Comment, *Global Technology Protection: Moving Past the Treaty*, 4 MARQ. INTELL. PROP. L. REV. 107, 128–29 (2000) ("[The patent registration system] facilitated the evolution of a system outfitted to the specific needs of this budding global superpower.").

93. *See, e.g.*, PANEL ON RESEARCH AND DEV. STATISTICS AT THE NAT'L SCI. FOUND., MEASURES RESEARCH AND DEVELOPMENT EXPENDITURES IN THE U.S. ECONOMY IX (2004), *available at* http://books.nap.edu/openbook.php?record_id=11111&page=R1.

94. By forcing research here into the public sector, the United States faces the danger of meeting the same fate of countries that have denied the power of capitalism in the recent past. *See* Jannik Lindbaek, Guy Pfeffermann & Neil Gregory, *The Evolving Role of Multilateral Development Banks: History and Prospects*, ECON. INVESTMENT BANK PAPERS, June 1998, at 61, 67, *available at* http://www.eib.org/Attachments/efs/eibpapers/y98n2v3/y98n2a03.pdf.

95. *See The Right to Good Ideas*, *supra* note 67.

96. *See Patriot Act 'Essential' to War on Terror*, UPI, Jan. 19, 2006, http://www.upi.com/SecurityTerrorism/view.php?StoryID=20060119-112550-4653r

Patriot Act passed overwhelmingly in Congress following the terrorist attacks on the World Trade Center in 2001, civil liberties groups and some Senators, mostly from the Democratic Party, are now seeking to restrict the powers granted to federal agencies.[97] Furthering the concerns of these groups, President George W. Bush has authorized the National Security Agency to perform secret wiretapping activity in search of terrorist activity.[98] Both the Republican and Democratic parties recognize that there needs to be significant changes to the Patriot Act before it can be renewed,[99] therefore it is likely there will be shorter extensions to the Patriot Act until the parties can reach a mutual agreement.[100] The reauthorization bill for the Patriot Act currently before Congress contains many provisions that will add civil liberties safeguards to the discretionary monitoring capabilities of investigatory and intelligence

(detailing 2006 statements by FBI Director Robert Mueller relating the benefits the Patriot Act provided to intelligence agencies).

97. *Id.* These groups are concerned with the discretionary monitoring capabilities provided that may intrude on the liberties of U.S. citizens. Press Release, Am. Civil Liberties Union, ACLU Says New Ashcroft Bill Erodes Checks and Balances on Presidential Power; PATRIOT II Legislation Would Needlessly Infringe on Basic Constitutional Liberties (Feb. 12, 2003), http://www.aclu.org//safefree/general/17189 prs20030212.html.

98. James Risen & Eric Lichtblau, *Bush Secretly Lifted Some Limits on Spying in U.S. After 9/11, Officials Say*, N.Y. TIMES, Dec. 15, 2005, at A1; Press Release, Am. Civil Liberties Union, *ACLU Chief Calls on President to Shut Down Illegal Spying on Americans*, Jan. 31, 2006, http://www.aclu.org/safefree/spying/23978prs20060131.html. Justice Department lawyers have issued briefs explaining that "the Constitution vests in the President inherent authority to conduct warrantless intelligence surveillance (electronic or otherwise) of foreign powers or their agents, and Congress cannot by statute extinguish that constitutional authority." Risen, *supra* note 98. Even the President has stepped forward in his own defense of the powers given to him to use force in the war against terror after September 11, 2001. *President Bush Gives Pep Talk to NSA*, ASSOCIATED PRESS, Jan. 25, 2006, *available at* http://www.breitbart.com/news/ 2006/01/25/D8FBTABO8.html.

99. *Federal Judgeship Approval for Nevada Official Delayed*, LAS VEGAS SUN, Sep. 14, 2005, *available at* http://www.lasvegassun.com/sunbin/stories/nevada/2005/sep/14/ 091410097.html. These changes require time that is currently allotted, understandably, to more pressing issues such as hurricane disaster relief and filling Supreme Court vacancies.

100. Kelley Beaucar Vlahos, *Patriot Act Fix Wedged Among Many Priorities*, FOX NEWS, Jan. 22, 2006, http://www.foxnews.com/story/0,2933,182451,00.html.

agencies.[101] The struggle remains to ensure the Patriot Act will allow the agencies following it to continue to be successful in their efforts, while at the same time protecting the civil liberties of Americans in the process.[102] It is difficult to say at this point what the final version of the renewed Patriot Act will be. However, it is likely to be renewed, in some form or fashion, since its measures have been invaluable in allowing law enforcement agencies to better deter terrorist activities.[103]

Likewise, it is difficult to predict the effect of any changes to the Patriot Act upon the scientific community. Some provisions are more likely to weigh heavily on the minds of inventors than others. For example, one of the provisions currently in contention is the "Sneak-and-Peek Notification" provision, which authorizes "search warrants [to] allow agents to search and seize evidence from a person's home without prior notification."[104] The government only needs to notify the person within a certain period of time after it conducted the "sneak-and-peak" search,[105] allowing the Government to avoid the potential downside of warning unsuspecting terrorists beforehand of a search.[106] It is this type of capability that will define the future threat the Patriot Act will have in further constricting development in areas of technology with potential national security-related interests. Congress should consider the Patriot Act's effect on

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101. Press Release, Paul A. Logli, President, Nat'l. Dist. Atty. Assoc., USA Patriot Act Effectiveness Points to Need for Renewal (Jan. 18, 2006), http://www.expertclick.com/NewsReleaseWire/default.cfm?Action=ReleaseDetail&ID=11395.

102. *Id.*

103. *See id*.

104. Vlahos, *supra* note 100.

105. *The Patriot Act: Of Liberty and Libraries*, ECONOMIST, Dec. 17, 2005, at 29–30.

106. *See id*. The following situations allow for a delay in notice: "(1) the court finds reasonable cause to believe that providing immediate notification of the execution of the warrant may have an adverse result (as defined in section 2705); (2) the warrant prohibits the seizure of any tangible property, any wire or electronic communication (as defined in section 2510), or, except as expressly provided in chapter 121, any stored wire or electronic information, except where the court finds reasonable necessity for the seizure; and (3) the warrant provides for the giving of such notice within a reasonable period of its execution, which period may thereafter be extended by the court for good cause shown." USA PATRIOT ACT, Pub. L. No. 107–56, § 213, 115 Stat. 272, 285–86 (2001) (codified in scattered titles of U.S.C.).

scientific development in sensitive technologies as it evaluates changes to the current law.

III. POSSIBLE SOLUTIONS TO THE ADVERSE EFFECTS OF THE PATRIOT ACT UPON THE SCIENTIFIC COMMUNITY

There are multiple solutions to correcting the problems inherent in the current system under the Patriot Act relating to the interest of encouraging the development of new technologies that are beneficial to national security interests.[107] Such technologies are protected to a certain extent by the Patent Act, its amendments, and the agreements into which the United States has entered.[108] The methods prescribed by the Patent Act to deal with possible adverse effects of withholding certain patents might be helpful in addressing similar effects of the Patriot Act on the scientific community.

A. Educating Scientists of Their Inherent Rights Under Current Laws

One possible solution would be to better educate scientists and others working in fields with potential national security implications of their rights under the current patent system in the United States. Because the patent system compensates for the withholding of patents,[109] researchers in the private sector might continue their steadfast efforts if they were aware of the system's economic safeguards.

The compensation system has been in place throughout the recent era of the Patriot Act, yet the availability of the compensation system has not curbed the detrimental effects that the Patriot Act has had on the scientific community.[110] Any educational system designed to tackle the issue of incentives could be implemented in one of three places. First, researchers

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107. Such technologies are those best kept within domestic walls in the judgment of the applicable government agency or department. 35 U.S.C. § 181 (2000).

108. *See id.* § 183. *See generally* TRIPS, *supra* note 53 (providing a comprehensive framework and uniform minimal standards to help reconcile the world's patent laws).

109. *Id.*

110. *See id; see also* Am. Ass'n for the Advancement of Sci. (AAAS), *The War on Terrorism: What Does It Mean for Science?*, Dec. 18, 2001 [hereinafter AAAS], http://www.aaas.org/spp/scifree/terrorism/report.shtml.

could learn about the compensation system as part of their educational programs. However, this would be difficult to implement since it would require inserting the relevant information into programs that have never previously considered such concerns.[111] Second, emphasis on the compensation system and its allowances in the area of national security could be emphasized in law school curriculums. The advantage of such an approach is inventors, when faced with patent related issues, should turn to their attorneys for assistance in the matter. Most attorneys practicing patent law would have been taught, and have been made aware through practice, of the applicable provisions. Finally, another option would be to rely on employers to train their employees. This might work well for larger employers who can afford to do so, as it is probably in employers' best interest to avoid Patriot Act-enabled intrusion into their business. However, such a program would probably be difficult to achieve in smaller environments where access to resources needed to develop such a program would be more limited. Likewise, individual researchers would face a similar financial constraint.

Inventors invent. Their research and progress is guided by their interests and, in the private sector, their desire to achieve a profit (at least insofar as recovering their research costs).[112] The compensation provisions of the Patent Act deal with situations where the patent application is withheld.[113] For a patent application to be withheld in the first place, the patent application must be submitted. For the patent application to be submitted, the research must be at or near completion. The problem with the effects of the Patriot Act is not that scientists think they will not be compensated for their completed inventions, but they believe the research they seek to undertake

111. *See* Richard A. Johnson, Arnold & Porter, Power Point Presentation, U.S. Export Controls—The Challenge for Research Universities (Oct. 2003), http://www.sunysb.edu/research/spo/export-controls/pdf.

112. David Encaoua et al., *The Economics of Patents: From Natural Rights to Policy Instrument*, NAT'L BUREAU ECON. RES., Aug. 26 2003, at 3, *available at* http://www.nber.org/CRIW/papers/encaoua.pdf.

113. 35 U.S.C. § 183 (2000).

will never reach completion at all.[114] This is the essence of the dilemma created by the Patriot Act with regard to patents. It is unlikely that any education based solution would be effective in overcoming concerns about the disruption of research.

Consider a computer scientist working on a new software encryption method that will provide business users with enhanced security for their assorted digital business transactions. Better encryption of these types of transactions allows for greater assurance that sensitive financial information, such as customer details or bank account numbers and passwords, do not pass into the hands of those seeking to perpetrate fraud.[115] The financial networks of today are heavily dependent on such cryptography to provide a stable system for doing business on a global scale.[116]

Alternatively, cryptography also allows for people with more nefarious goals to hide information from government officials protecting national security interests.[117] Terrorists can use encryption technology to transmit details of plots or chemical or biological weapons.[118] Given this danger of abuse, it is not a stretch to think that U.S. federal agencies could use the Patriot Act to monitor and curb private sector research in the interest of national security.[119]

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114. The fear of being labeled by the federal government as undertaking national security-threatening research stems from the idea that the research could be interrupted before it reaches finality. *Cf.* AAAS, *supra* note 111 (discussing post 9/11 restrictions on scientific freedom).

115. *See* Thawte, Importance of Cryptography [hereinafter Cryptography], http://www.thawte.com/cryptochallenge/guides/importanceCrypto.pdf (last visited Apr. 1, 2006).

116. Jane K. Winn, *Catalytic Impact of Information Technology on the New International Financial Architecture*, 34 INT'L LAW. 137 (2000). *See also* Cryptography, *supra* note 115.

117. Interview by Allen Noren with Jonathan Knudsen, author of Java Cryptography, http://java.oreilly.com/news/knudsen_0398.html (last visited Apr. 1, 2007) (stating that "surely thieves and terrorists can use cryptography to keep their plans a secret").

118. *See id.*; David Plotz, *Cryptography*, SLATE, Oct. 11, 1996, http://www.slate.com/id/1031.

119. USA PATRIOT ACT, Pub. L. No. 107–56, § 213, 115 Stat. 272, 285–86 (2001) (codified in scattered titles of U.S.C.).

A simple search for "USA Patriot Act" on the internet reveals a staggering number of returns.[120] It is likely that the computer scientist working on a cryptography program will have heard of the Patriot Act, along with the civil liberties concerns many have raised.[121] The concern, then, becomes whether the computer scientist will be deterred from continuing work in such an important field for fear that the government may intrude upon his or her research at any time. Regardless of the level of education offered by intellectual property counsel or a collegiate or employer education program, it is likely that nothing will be reassuring enough to overcome this possibility. While the computer scientist will be entitled to compensation under 35 U.S.C. § 183 upon application for patent, the real concern will be never reaching that point in the research.[122] This is the gap Patriot Act reforms need to address by providing a meaningful compensation incentive for thwarted research.

B. A Research Based Registration System

Another possible solution would be to develop a registration system with the USPTO that would allow scientists to register their areas of research before they undertake them. Under such a system, scientists working on an invention they feel might have some national security implications could register, and gain approval or acknowledgement from the USPTO prior to commencement of their work. This approval or acknowledgement would allow the scientists to either continue

120. A search on Google on April 1, 2007, returned 1,640,000 results and a search on Yahoo on the same date and topic returned 5,400,000. Google Search, http://www.google.com/search?hl=en&q=USA+Patriot+Act (last visited Apr. 1, 2007); Yahoo Search, http://search.yahoo.com/search?p=USA+Patriot+Act&fr=FP-tab-web-t&toggle=1&cop=&ei=UTF-8 (last visited Apr. 1, 2007).

121. Adding the terms "civil liberties" to the search terms "USA Patriot Act" decreased the results on Google to 1,200,000 and on Yahoo to 1,480,000. Google Search, http://www.google.com/search?hl=en&lr=&q=USA+Patriot+Act+civil+liberties (last visited Apr. 1, 2007); Yahoo Search, http://search.yahoo.com/search?p=USA+Patriot+Act+civil+liberties&ei=UTF-8&fr=FP-tab-web-t&fl=0&x=wrt (last visited Apr. 1, 2007).

122. Patents cannot be applied for until the invention has actually been made because part of the patent application is a personal attestation that the applicant is in actual possession of the invention at the time. 35 U.S.C. § 115 (2000); 37 C.F.R. § 1.131 (2005).

their research unimpeded (under the presumption that the Patriot Act could allow them to be monitored at any point during their work)[123] or discontinue and surrender their research, as it falls under an area concerning national security issues.

Under a registration system, scientists working in any field would, at some point during their research, become aware that it could have some effect on national security interests. At that stage, they would likely seek the advice of patent counsel in notifying the USPTO of the research. Subsequently, a preliminary application would be submitted to the USPTO for dissemination to the pertinent governmental authorities,[124] who would then issue an opinion. The USPTO would then provide an answer to the applicant with detailed opinions and instructions for furtherance of the research. The scientist would then continue the research understanding that certain government agencies or departments may be monitoring the research.

A registration system creates a number of issues. First, such a process would create an enormous burden on the USPTO that it is probably not equipped to handle.[125] It would require the USPTO (and the applicable government agency or department) to evaluate purely conjectural research without any proof or grounds that it will ever capitulate into anything useful. Second, it would not eliminate the need for the government, per the Patriot Act, to continue monitoring research in fields with potential national security implications because not all scientists and researchers would be aware of the registration system. Finally, creating such a system may have adverse

123. *See* Shelton & Hall, *supra* note 71 (describing the monitoring and surveillance provisions in the Patriot Act).

124. The pertinent authorities would likely be similar to those listed in the Patent Act, that is, the "Atomic Energy Commission, the Secretary of Defense, and the chief officer of any other department or agency of the Government designated by the President as a defense agency of the United States . . . ." 35 U.S.C. § 181 (2000).

125. The USPTO is already overburdened simply by the number of applications it handles every year. *The Cost of Ideas*, ECONOMIST, Nov. 11, 2004, at 71. The number of applications has been on the rise since the system's inception and the USPTO has difficulty coping with the annual increase, as evidenced by the steady rise of the average period of time it takes to examine patent applications. *Id.* As of 2004, the number of applications submitted has grown by six percent per year, and the average wait time for an applicant was twenty seven months. *Id.*

incentives. Primarily, if a scientist or researcher were to apply and receive approval, it might serve as notice to be more careful about the ongoing research. Such an allowance may only serve to notify those with nefarious intentions to undertake more protective measures during their research. Additionally, registration could create a cost and time burden on the front end of the research process, which may serve to effectively halt the process altogether because of additional funding needs or delay.

There are also benefits to the registration based approach. For example, it would let scientists know from the beginning their progress would be monitored. In addition, it would advise them upfront of their likelihood to recoup research costs from the government. However, it would create a larger burden for the government—having to analyze these issues preemptively. Additionally, such a system could create incentives that would not help the government in trying to further national security policy and potentially inhibit development.

Returning again to the example of the computer scientist working on a new cryptographic software program, the problems with the registration system become more evident. Under such a system, after realizing there could be potential national security concerns with the software, the computer scientists would be required to register with the USPTO. The USPTO would then examine the research and make a cursory examination of the purpose and subject matter of the research to determine if it warrants further examination by other government agencies.[126] If it does, the USPTO would forward the documents to the appropriate agencies and await their response.[127] If the appropriate agencies determine the research does have national security implications, then the scientist would either be forced to discontinue and hand over the research or be tightly monitored

126. This is similar to the investigation of patents for national security concerns. *See* 35 U.S.C. § 181 (laying out the process for investigating patents for national security concerns). Because the language of the Patriot Act can be interpreted as highly expansive as to which types of technologies could fit under this description, this would effectively create an entirely new set of patent-type examinations for the USPTO. *See, e.g.*, Bookstores Buck Patriot Act, CBS News, Feb. 21, 2003, http://www.cbsnews.com/stories/2003/02/21/national/main541464.shtml (highlighting the broad powers the Patriot Act endowed on the U.S. government).

127. REVIEW OF APPLICATION, *supra* note 26.

as the research progresses. Undoubtedly, this will slow the research progress and create concerns about communications with colleagues and interested parties.[128] Once the government is aware of the research, the government knows it must monitor the scientist more closely and could use the Patriot Act to justify further intrusion into the scientist's regular activities. Intrusion by the government, needless to say, is generally not welcomed by most individuals and is a looming concern.[129]

The result would be a very costly and time-intensive process that cost U.S. taxpayers' money and the cryptography researcher time and expense in answering queries from the various government agencies that have interests at stake. Additionally, any sort of reporting requirements that burden the research process will only delay the innovation that the Patent Act seeks to encourage.[130] For these reasons, such a bureaucratic solution would prove to be unmanageable and only provide more disincentives to the creative process of invention.

From a public policy perspective, however, a great benefit would be obtained. Under a registration system, the government would be made aware of national security-related research ahead of time and continuously be able to monitor its progress for national security concerns. While this appears to be an attractive solution, scientists with nefarious intentions will not register because the last thing they will want is the prying eyes of the U.S. government scrutinizing their work. This leaves the United States in the exact same monitoring situation that exists today under the Patriot Act because the wrongdoers do not reveal themselves.

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128. *See* Raymond Zilinskas & Jonathan Tucker, *Limiting the Contribution of Scientific Literature to the Biological Weapons Threat*, J. HOMELAND SECURITY, Dec. 2002, *available at* http://www.homelandsecurity.org/journal/Articles/Tucker.html.

129. *See, e.g.*, Press Release, People for the American Way, Civil Liberties Advocates' Worst Fears Realized with Patriot Act Scandal (Mar. 9, 2007), http://www.pfaw.org/pfaw/general/default.aspx?oid=23672 (discussing how national security letters authorized under the guise Patriot Act trump civil liberties).

130. ADELMAN ET AL., *supra* note 1, at 9–10.

C. Rely on the Power of the Takings Clause

Under the Patent Act, the grant of a patent right to an inventor creates a personal property right in the patent for the limited duration.[131] Since the right conferred by the patent is treated as personal property, it is therefore protected by the Takings Clause.[132] When a patent is denied for national security reasons under 35 U.S.C. § 181, 35 U.S.C. § 183 provides an avenue for the inventor to obtain some sort of compensation for his or her loss.[133] Compensation is only available for research that ultimately leads to a patentable invention. Such is not always the case, and in general purely scientific research findings are not afforded patent protection by the USPTO.[134] Arguments have been made on both sides for either allowing such findings to be patentable or not,[135] but that is not the relevant issue with regard to the Patriot Act.

Relying on the Takings Clause of the Constitution to adequately incentivise the scientific community would require a change in policy.[136] In order for the Takings Clause to govern research thwarted by the Patriot Act, one would have to recognize the research done up to that point as personal property. Under the labor theory of property posited by John Locke,[137] one could argue research undertaken with the labor and at the expense of the researcher creates a personal property right in that research.[138]

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131. 35 U.S.C. §§ 261, 154.

132. Evan Ackiron, Note, *Patents for Critical Pharmaceuticals: The AZT Case*, 17 AM. J. L. AND MED. 145, 153 (1991).

133. 35 U.S.C. § 183.

134. Robert P. Merges, *Property Rights Theory and the Commons: The Case of Scientific Research*, 13 SOC. PHIL. & POL'Y 145, 152 (1996) [hereinafter *Property Rights Theory*].

135. *See id*.

136. Weiss v. United States, 146 F. Supp. 2d 113, 123 n.7 (1st Cir. 2001) (citing Constant v. United States, 16 Cl. Ct. 629, 634–35 (1989), *aff'd*, 884 F.2d 1398 (Fed. Cir. 1989) ("It is settled that 'the issuance of a secrecy order is not *per se* a taking and that diminution of [an] invention and inability to exploit [the] invention are compensable elements of a claim under 35 U.S.C. § 183, not under the Fifth Amendment.'")).

137. JESSE DUKEMINIER & JAMES KRIER, PROPERTY 15–16 (5th ed. 2002).

138. *Id.*

There are a couple of problems with relying on the Takings Clause to provide the incentives necessary to overcome the effects of the Patriot Act on scientific research. First, it is difficult to say any valuable property right would ever exist in the research that was thwarted. Depending on the stage of the research when the government steps in, a viable technology may or may not have been developed. Second, taking the government to court is expensive.[139] This creates a high financial hurdle that effectively erases any potential compensation incentive for the inventor.

Returning again to the cryptography researcher, the Takings Clause solution provides an alternative on the back end of the research. Here, the scientist will not be required to do any work to ensure proper registration with the USPTO or other government agencies. In fact, the research may continue unimpeded by the government if it is not noticed. If the scientist continues unimpeded research and develops a patentable invention, the scientist will apply to the USPTO for a patent under 35 U.S.C. § 181 and could take advantage of the compensatory scheme provided by 35 U.S.C. § 183.[140] What if the research is halted before completion because of government intervention authorized under the Patriot Act? Has the research developed into a personal property right that gives the scientist a cause of action against the government under the Takings Clause?[141] How is a court to determine whether the research would have resulted in a patentable invention? How much would that right or invention be worth if it was available for commercial gain?[142] Clearly this raises a number of questions that are not readily answerable. There is a chance the scientist will have taken none of these concerns or questions into account while researching. But there is a risk these concerns will come

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139. *See, e.g.*, Public Expression of Religion Act, WoodMore Village, http://www.woodmoorvillage.org/2006/10/public_expressi.html (Oct. 2, 2006).

140. *See* 35 U.S.C. §§ 181, 183 (2000).

141. *Cf. Property Rights Theory*, *supra* note 134, at 151 (explaining that most scientists would prefer only informal property rights at this stage).

142. The damages available under 35 U.S.C. § 183 are limited to those that are concrete and provable, not those that the inventor speculates might eventually arise. Weiss v. United States, 146 F. Supp. 2d 113, 127 (1st Cir. 2001).

into play at some point and have negative effects on the research. Even if the scientist is not subject to negative influences, having concerns of being monitored will deter research.[143] Industries that rely on technologies like cryptography should not have to rely on such controls to ensure future development in the science.

D. A Compensation Based Scheme as an Incentive for Private Sector Inventors to Continue Development in National Security-Related Fields

As another alternative to combating the patent problem created by the Patriot Act, Congress could provide for a compensation scheme to incentivise inventors when facing a potential disruption in research. Some of the same issues exist under a compensation scheme, but to less of an extent and in a manner that opens up research and allows it to thrive in technologically sensitive areas that otherwise would be inalterably deterred.[144] While such a novel scheme would be difficult to reconcile with traditionally contentious issues, the consequences are large for the future of technological development in the United States.[145] Congress created a compensation scheme within the Patent Act to incentivise research and development[146] and, likewise, there should be such a scheme in the Patriot Act.

1. Structure of a Potential Compensation Scheme

How should an incentive scheme for compensating researchers for lost research when thwarted by national security interests be structured? The best answer lies in compensating researchers for lost time and money while still encouraging

143. *See* AM. ASS'N OF UNIV. PROFESSORS (AAUP), ACADEMIC FREEDOM AND NATIONAL SECURITY IN A TIME OF CRISIS 34–35 (2003), *available at* http://www.aaup.org/NR/rdonlyres/5D2D9A5A-1935-4DF4-B402-57525CAF8CDD/0/Post911.pdf.

144. *See id.* (stating that national security concerns should not compromise scientific freedom).

145. *See generally* Encaoua et al., *supra* note 112, at 2–3 (demonstrating the various impacts of patent law on various technologies).

146. *See* Robert P. Merges & Glenn Reynolds, *The Proper Scope of the Copyright and Patent Power*, 37 HARV. J. LEGIS. 45, 47 (2000) (citing U.S. CONST., art. I, § 8, cl. 8).

further development. How such a compensation system should be structured needs to take into account several concerns.

First and foremost, how should any research or invention be valued? Where should the line be drawn and how should the value of the work be evaluated? Some research may lead to patentable and profitable inventions, and others may not. It is a difficult estimation that would require much foresight on the part of the USPTO and the inventor. Nonetheless, it is an important enough topic to garner significant debate.

Second, addressing the underlying concern of deterring terrorist activity is of primary importance.[147] Weighing heavily on any compensatory incentive should be the interest of keeping the United States safe from domestic terrorism. Any modification to the Patriot Act made in the interest of promoting the sciences and providing a compensatory scheme similar to the Patent Act needs to address the terrorism issue. Specifically, in addressing the scientific disincentive, the Patriot Act needs to account for research activities that represent terrorist activities. Certainly, such research is not of the type or nature deserving of compensation because of disruption by Patriot-Act-enabled intrusion. Like the registration based system, there would necessarily be an evaluation of the research's threat to national security. However, the threat would be evaluated only upon submission of a patent application,[148] thus involving no more research on the part of the USPTO and yielding the same results.

The compensatory scheme needs to take into account the interests of national security. The Patriot Act was negotiated and enacted with valid concerns[149] that the compensatory scheme should not ignore. Any solution should embody the notion terrorist activities should not be allowed to thrive. A revision of the Patriot Act should specifically exclude from the compensatory scheme research activities that arise from goals

147. WHITE HOUSE I, *supra* note 9.

148. 35 U.S.C. § 181 (2000).

149. *See* U.S. DEP'T OF JUSTICE, REPORT FROM THE FIELD: THE USA PATRIOT ACT AT WORK 1 (2004), *available at* http://www.lifeandliberty.gov/docs/071304_report_from_the_field.pdf (detailing how the Patriot Act provides the key legal tools necessary to effectively fight terrorism).

based on terrorism. While it still affords the government the same liberty in deterring such activity, it avoids the negative consequences aforementioned. The U.S. intelligence community would still have the ability to deter terrorist activity when identified. But it would have to act with an understanding scientists may have to be compensated for their work based on an underlying property right.[150]

2. The Effect of Incentives on the Scientific Community

Inventors need to know the fruits of their efforts will one day be rewarded. The scientific community is burdened by the concern their efforts will go unrewarded because of the effects of the Patriot Act.[151] Congress has already responded to such concerns by enacting the Patent Act and should be interested in imputing these concerns to the Patriot Act.[152] There needs to be an incentive for continuing research in fields potentially affecting national security interests.

Upon its inception, 35 U.S.C. § 183 was intended to incentivise development in fields of national security concern.[153] The Patriot Act works against this and contains provisions that enable the same type of discretion afforded to the government.[154] Ideally, such discretionary capability would be coupled with an allowance for compensation for such applications. But no such provision resides in the Patriot Act.[155]

Revisiting the cryptography researcher hypothetical is helpful for illustration. Under current law, the researcher would be forced to resort to a number of different avenues to obtain an equitable result, none of which are favorable in the context of encouraging the continuation of research.[156] In the spirit of 35

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150. *See* discussion *supra* Part III.C.

151. *See supra* note 83 and accompanying text.

152. *See supra* note 5 and accompanying text.

153. 35 U.S.C. §§ 181, 183 (2000).

154. *See generally* Shelton & Hall, *supra* note 71 (discussing the impact of the Patriot Act on existing laws and the expansion of the government's power).

155. *See* USA PATRIOT ACT, Publ. L. No. 107–56, 115 Stat. 272 (2001) (codified in scattered titles of U.S.C.).

156. *See supra* notes 31–37 and accompanying text. For instance, the scientist will be left to battle the government over the Takings Clause, where the argument will center

U.S.C. § 183, the researcher should be afforded the possibility of compensation as an incentive. Under such a scheme, where the researcher (or a sponsoring entity) would serve to profit from the innovation, the compensation would serve as an additional incentive to create and further the art. This is the exact goal of the Patent Act[157] and is the exact reform needed of the Patriot Act.

IV. CONCLUSION

Since its inception, the innovations of scientists have driven the United States to economic dominance.[158] The patent regime has provided the structure and security necessary to encourage ingenuity.[159] Justified and growing concerns over national security have resulted in regulations that have adverse effects on the scientific community.[160] These adverse effects on the encouragement of new developments, which the Patent Act seeks to avoid,[161] need curing. Encouraging the development of technology in national security-related fields should be of the utmost concern to legislators seeking to maintain the edge the United States has enjoyed for the past half century.[162] National security interests weigh heavily, but robbing inventors of their rights without adequate compensation could deter development in certain fields and have an equal or worse effect on national

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on whether the research was a valid personal property right by government intrusion. *See supra* text accompanying notes 142–44.

157. ADELMAN ET AL., *supra* note 1, at 11.

158. COUNCIL ON COMPETITIVENESS, U.S. COMPETITIVENESS 2001: STRENGTHS, VULNERABILITIES, AND LONG-TERM PRIORITIES i (2001), http://www.compete.org/pdf/Highlights.pdf.

159. Steven L. Nichols, *Fundamentals of Intellectual Property*, IEEE-USA TODAY'S ENGINEER ONLINE, Nov. 2004, http://www.todaysengineer.org/2004/Nov/IPfundamentals.asp.

160. David Malakoff, *New U.S. Rules Set the Stage for Tighter Security, Oversight*, 298 SCI. 2304, 2304 (2002).

161. *See* Congressman Lamar Smith, *Smith's Floor Statement on the Patent and Trademark Office Fee Act (H.R. 1561)*, Mar. 3, 2004, *available at* http://lamarsmith.house.gov/news.asp?FormMode=Detail&ID=366 (noting that "[w]ithout a strong PTO our economy would be devastated").

162. WHITE HOUSE I, *supra* note 9.

security.[163] Private development of new technologies has become a chief driver of innovation in today's marketplace.[164] If, in the interest of national security, the government takes away the rights of private sector inventors while leaving intact those of public interest employment, the incentive to create and innovate disappears for the entrepreneur minded inventor. Currently, private sector inventors research with the knowledge that the patent system is in place to reward them for their efforts, whereas government employed researchers are not concerned with such issues since they are researching for the benefit of the country. The United States should be acutely aware of the possible damaging effects of continued Patriot Act-driven monitoring of the scientific community, and it should take measures to ensure that protecting national security does not serve to damage national security in the long term.

*S. Scott Pershern**

163. There is evidence that the encouragement of private sector research and development in countries can deter the spread of terrorism. KIM CRAGIN & PETER CHALK, TERRORISM & DEVELOPMENT: USING SOCIAL AND ECONOMIC DEVELOPMENT TO INHIBIT A RESURGENCE OF TERRORISM 33–36 (2003), *available at* http://www.rand.org/pubs/monograph_reports/MR1630/MR1630.pdf.

164. *See, e.g.*, *Bioshield II*, *supra* note 18.

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