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# A Tale of Two Standards: Economics Applied to Patent Law's Fluctuating Utility Requirement

Brian A. Harris\*

## I. Introduction

The American patent system, codified by the United States Congress,<sup>1</sup> consists of a complex statutory framework that governs the patent monopoly. The patent grant is often considered more powerful than other monopolistic intellectual property grants such as copyrights or trademarks;<sup>2</sup> the patent grant allows the holder to exclude all others from practicing his patent for the entire term of the patent.<sup>3</sup> The United States Patent and Trademark Office (the “USPTO”), however, will only grant a patent if certain statutory requirements are met.<sup>4</sup> Before receiving a patent, inventors are required to demonstrate that their invention is “useful.”<sup>5</sup> The requisite level of utility that an inventor must demonstrate to the USPTO has varied throughout American history. In the early 19<sup>th</sup> century, Justice Joseph Story defined a utility test that became ubiquitous in American patent law.<sup>6</sup> The test, simply stated, deemed all inventions that

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<sup>1</sup> Patent Act of 1952, 35 U.S.C. §§ 1 *et seq.* (2006).

<sup>2</sup> Stanley M. Besen & Leo J. Raskind, *An Introduction to the Law and Economics of Intellectual Property*, 5 THE JOURNAL OF ECONOMIC PERSPECTIVES 3, 6-7 (1991).

<sup>3</sup> 35 U.S.C. § 154(a)(1) (“Every patent shall contain... a grant to the patentee, his heirs or assigns, of the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States...”); Besen & Raskind, *supra* note 2, at 7.

<sup>4</sup> 35 U.S.C. §§ 101-123; Besen & Raskind, *supra* note 2, at 7.

<sup>5</sup> 35 U.S.C. § 101 (“Whoever invents or discovers any new and *useful* process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.”) (emphasis added).

<sup>6</sup> *Bedford v. Hunt*, 3 F. Cas. 37 (C.C.D. Mass. 1817); W. PHILLIPS, THE LAW OF PATENTS FOR INVENTIONS; INCLUDING THE REMEDIES IN LEGAL PROCEEDINGS IN RELATION TO PATENT RIGHTS 141 (American Stationers’ Co. 1837) (explaining Justice Story’s standard is “now universally adopted in the United States”).

were not injurious to society or against public policy to be “useful.”<sup>7</sup> This minimalist standard of utility applied to all patent applications until the middle of the 20<sup>th</sup> century.

As the world grew in complexity, the United States Supreme Court held that a more stringent utility standard was necessary for patentable chemical inventions.<sup>8</sup> The Court determined that for a chemical process or compound to meet the requisite level of utility necessary for the patent grant, the inventor must demonstrate substantial, specific utility in the chemical invention’s present form.<sup>9</sup> Today, all chemical inventions seeking the patent grant must still pass this overly rigorous utility test.<sup>10</sup>

This paper argues that, in the ever-evolving arena of chemistry, Justice Story’s utility standard is economically preferable to the strict and burdensome utility standard set forth by the United States Supreme Court in *Brenner v. Manson*.<sup>11</sup> By applying different economic theories to intellectual property rights, economists, lawyers, and legislators can accurately approximate the optimal balance between providing incentives to creators while persevering the public’s right of access to their creations.<sup>12</sup> Section II of this article details the origin of the American patent system and its utility requirement. Section III explores the fluctuating utility requirement from its inception to its modern standard. Finally, Section IV of this paper applies the net benefit rule and the average cost theory to both Justice Story’s utility standard and the *Brenner* utility

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<sup>7</sup> *Bedford*, 3 F. Cas. at 37.

<sup>8</sup> *Brenner v. Manson*, 383 U.S. 519, 534-35, 16 L. Ed. 2d 69, 80, 86 S. Ct. 1033, 1042 (1966).

<sup>9</sup> *Id.*

<sup>10</sup> Dev A. Ghose, *A Proposal to Modify the Utility Standard for Patenting Biotechnology Research Tools*, 56 EMORY L.J. 1661, 1675-80 (2007).

<sup>11</sup> *Brenner*, 383 U.S. at 535.

<sup>12</sup> David W. Barnes, *The Incentives/Access Tradeoff*, 9 NW. J. TECH. & INTELL. PROP. 96 (2010) (citing *Twentieth Century Music Corp. v. Aiken*, 422 U.S. 151, 156 (1975) (“Creative work is to be encouraged and rewarded, but private motivation must ultimately serve the cause of promoting broad public availability of literature, music, and the other arts.”)); Besen & Raskind, *supra* note 2, at 6-7.

standard in the field of chemistry and concludes that a more relaxed utility standard is beneficial for both inventors and the American public.

## II. Patents Generally

A patent is an exclusive right granted to an inventor from his government that allows the inventor to protect his invention.<sup>13</sup> The patent right is granted in different ways by governments around the world based on each government's legal system.<sup>14</sup> The general process of acquiring a patent requires an individual to file an application for the patent with his government; after an inspection, the government will grant the exclusive right for a specific term of years if the application meets all the statutory criteria for patent protection.<sup>15</sup> During this term, the patent owner is not required to use or practice the patent; rather, the owner is granted the authority to prevent others from practicing the patent without consent.<sup>16</sup>

There are two main justifications for patent protection: (1) to encourage innovation and (2) to require public disclosure.<sup>17</sup> First, a patent system is necessary to avoid the "inventor's paradox;" this occurs when an inventor cannot reap monetary rewards for his invention because he fears that the invention will be stolen and duplicated if he publicly sells it.<sup>18</sup> Without patent

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<sup>13</sup> Katie Lula, *How to See a Jar of Peanut Butter: Evaluating Empirical Studies of Patents and Patent Law*, 7 *ASPER REV. INT'L BUS. & TRADE L.* 151, 154 (2007) ("a right or title that is conferred by 'a government authority to an individual or organization [...]. The sole right to make, use, or sell some invention [...].'" (quoting *THE CANADIAN OXFORD ENGLISH DICTIONARY* 1138 (Oxford University Press 2004))).

<sup>14</sup> Lula, *supra* note 13, at 154.

<sup>15</sup> 35 U.S.C. § 154(a)(2) ("...such grant shall be for a term beginning on the date on which the patent issues and ending 20 years from the date on which the application for the patent was filed in the United States..."); ADAM B. JAFFE & JOSH LERNER, *INNOVATION AND ITS DISCONTENTS* 3 (Princeton University Press 2004).

<sup>16</sup> 35 U.S.C. § 154(a)(1); JAFFE & LERNER, *supra* note 15, at 3.

<sup>17</sup> GRAEME B. DINWOODIE ET AL., *INTERNATIONAL AND COMPARATIVE PATENT LAW* 49 (LexisNexis Publishing 2002).

<sup>18</sup> DONALD S. CHISUM ET AL., *PRINCIPLES OF PATENT LAW* 66 (Foundation Press 2d ed. 2001) ("Any potential buyer, of course, will not pay a high price, or perhaps any price at all, unless

protection, inventors would be far less likely to share their inventions and ideas, which would stifle creation.<sup>19</sup> With patent protection, however, the “inventor’s paradox” is eliminated, and inventors can earn income through “patent licensing, joint ventures, and strategic alliances.”<sup>20</sup>

Secondly, a patent system provides public disclosure of all new inventions.<sup>21</sup> The government that grants the patent offers certain statutory protection as a *quid pro quo* for the inventor’s coherent disclosure of the invention.<sup>22</sup> According to author Robert M. Sherwood, “[t]he history of intellectual property is essentially the emergence of recognition that a community benefits when it encourages its creative and inventive people by honoring the products of their minds.”<sup>23</sup> Thus, all patent systems theoretically encourage creation, commercial activity, and public disclosure at a national level.

### **III. The American Patent Utility Standard**

#### *A. The Origin of United States Patent Law*

The origin of United States patent law can be traced to the United States Constitution. Article I, Section 8, Clause 8, commonly referred to as the Patent and Copyright Clause, empowers Congress to “To promote the Progress of Science and *useful* Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and

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sufficient details are disclosed. The inventor, however, does not want to disclose too much, for fear the would-be buyer will instead become an independent producer of the invention's commercial embodiment, and a competitor of the true inventor. The inventor's paradox may be solved by a patent, which gives the inventor the freedom to disclose without fear of self-induced competition.”).

<sup>19</sup> Lula, *supra* note 13, at 157.

<sup>20</sup> KAMIL IDRIS, *INTELLECTUAL PROPERTY: A POWER TOOL FOR ECONOMIC GROWTH* 9 (2d ed. 2003).

<sup>21</sup> 35 U.S.C. §§ 112-113; Lula, *supra* note 13, at 159.

<sup>22</sup> *Id.* at 159.

<sup>23</sup> Robert M. Sherwood, *Human Creativity for Economic Development: Patents Propel Technology* 33 AKRON L. REV. 351, 352 (2000).

Discoveries.”<sup>24</sup> In 1790, Congress initially codified the American patent system,<sup>25</sup> which was soon amended and followed by the Patent Act of 1793.<sup>26</sup> Over the course of the past 200 years, Congress has modified the patent statutes several times.<sup>27</sup> Today, the Patent Act of 1952 is the current statute governing patents in the United States.<sup>28</sup> To receive a patent from the USPTO, an inventor must demonstrate four requirements: (1) statutory subject matter, (2) utility, (3) novelty, and (4) nonobviousness.<sup>29</sup> Additionally, the inventor must provide a written disclosure sufficient to instruct others how to recreate his invention.<sup>30</sup>

This paper specifically examines the required level of utility an inventor must demonstrate to receive the patent grant. Because the statutory language only vaguely states that “useful” inventions will receive the patent grant, the definition of “useful” has largely been left to the judicial branch for interpretation.<sup>31</sup>

#### *B. The Story Standard*

In *Bedford v. Hunt*, Justice Story examined what level of utility was required to be demonstrated to receive the patent grant.<sup>32</sup> After the plaintiff brought suit for patent infringement, the defendant argued that the plaintiff’s patent should not have been granted because his invention lacked usefulness.<sup>33</sup>

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<sup>24</sup> U.S. CONST. art. I, § 8, cl. 8 (emphasis added).

<sup>25</sup> Patent Act of 1790, ch. 7, 1 Stat. 109-112 (1790).

<sup>26</sup> Patent Act of 1793, ch. 11, 1 Stat. 318-323 (1793); *see also* N. Scott Pierce, *In re Dane K. Fisher: An Exercise in Utility*, 6 J. HIGH TECH. L. 1, 2 (2006).

<sup>27</sup> Ghose, *supra* note 10, at 1665.

<sup>28</sup> Patent Act of 1952, ch. 950, § 1, 66 Stat. 792 (1952) (codified as amended at 35 U.S.C. §§ 1 *et seq.* (2006)).

<sup>29</sup> 35 U.S.C. §§ 101-103; Ghose, *supra* note 10, at 1664.

<sup>30</sup> 35 U.S.C. § 112; Ghose, *supra* note 10, at 1664.

<sup>31</sup> 35 U.S.C. § 101; Ghose, *supra* note 10, at 1664.

<sup>32</sup> *Bedford*, 3 F. Cas. at 37.

<sup>33</sup> *Bedford*, 3 F. Cas. at 37.

In deciding the case, the court first summarized the language of the Patent Act of 1793 stating “[n]o person is entitled to a patent under the act of congress unless he has invented some new and *useful* art, machine, manufacture, or composition of matter, not known or used before.”<sup>34</sup> Interpreting the statute, Justice Story found that Congress intended to establish a very minimal utility requirement.<sup>35</sup> The court held that the inventor need not establish that his invention supersedes all others in a particular field; rather, it explained that Congress envisioned giving the patent grant to inventions that were not “injurious to the morals, the health, or the good order of society.”<sup>36</sup> He proposed that an invention should be patentable if it has no obnoxious tendencies and if it may be applied to a practical use.<sup>37</sup> Thus, in coming to its conclusion, the court did not focus on the invention’s degree of utility, but rather focused on the invention not being contrary to public policy.<sup>38</sup>

### C. *The Spread of the Story Standard*

Justice Story’s utility analysis spread from the Massachusetts Circuit to the Pennsylvania Circuit in *Kneass v. Schuylkill Bank*.<sup>39</sup> There, the invention in question was a modification to the common rolling press that allowed the press to print either double-sided copper-plates or single-sided copper-plates on one side and single-sided letter press on the other.<sup>40</sup> The machine was designed to help prevent counterfeit notes.<sup>41</sup>

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<sup>34</sup> *Id.* (emphasis added).

<sup>35</sup> *Id.*

<sup>36</sup> *Id.*

<sup>37</sup> *Id.* (“If its practical utility be very limited, it will follow, that it will be of little or no profit to the inventor; and if it be trifling, it will sink into utter neglect. The law, however, does not look to the degree of utility; it simply requires, that it shall be capable of use, and that the use is such as sound morals and policy do not discountenance or prohibit.”).

<sup>38</sup> *Id.*; Pierce, *supra* note 26, at 5.

<sup>39</sup> *Kneass v. Schuylkill Bank*, 14 F. Cas. 746 (C.C.D. Pa. 1820).

<sup>40</sup> *Kneass*, 14 F. Cas. at 747.

<sup>41</sup> *Id.* (“...as an additional security against counterfeiture.”).

The defendant claimed the invention was not patentable because it lacked utility.<sup>42</sup> The court dismissed the defendant's defense by posing this question: if the invention lacked utility, why did the defendant copy and manufacture the patented invention?<sup>43</sup> The court then recited Justice Story's statutory interpretation whereby if an invention is not injurious or against public policy and is not worthless, then the invention meets the necessary utility threshold.<sup>44</sup> Therefore, the modified rolling press was found to satisfy the utility requirement.<sup>45</sup>

In 1837, Willard Phillips stated in his treatise that Justice Story's utility analysis was "now universally adopted in the United States."<sup>46</sup> During this same time period, the patent law utility requirement and novelty requirement clearly diverged into two separate analyses.<sup>47</sup> Scholars began to draw a sharp distinction between relative utility and positive utility.<sup>48</sup> In 1849, G.T. Curtis published a patent treatise interpreting the Patent Act of 1836<sup>49</sup> explaining Congress' intention to bifurcate the Constitutional requirements of "new" and "useful."<sup>50</sup> Curtis explained

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<sup>42</sup> *Id.* at 748.

<sup>43</sup> *Id.* ("If the plaintiff's invention correspond substantially with the thing used by the defendants, how can the latter be permitted to say, that the thing so discovered and used is worthless?").

<sup>44</sup> *Id.* ("In the case of *Lowell v. Lewis*...Justice Story, commenting upon this subject, lays it down, that the law only requires that the invention should not be frivolous or injurious to the well being, good policy, and sound morals of society. 'The word 'useful,' therefore, he adds, 'is incorporated into the act, in contradiction to mischievous, or immoral.'") (quoting *Lowell v. Lewis*, 15 F. Cas. 1018, 1019 (C.C.D. Mass. 1817)).

<sup>45</sup> *Kneass*, 14 F. Cas. at 747.

<sup>46</sup> PHILLIPS, *supra* note 6, at 141.

<sup>47</sup> Pierce, *supra* note 26, at 7-8 (citing G. T. CURTIS, TREATISE OF THE LAW OF PATENTS FOR USEFUL INVENTIONS IN THE UNITED STATES OF AMERICA 3 (Charles C. Little and James Brown 1849)) ("The Patent Act now in force in this country requires that the subject of every patent should be "new and useful," whether it be an art, machine, manufacture, or composition of matter, or an improvement on any of these things. The inquiry that meets us on the threshold is, what constitutes novelty, and what constitutes utility, in the sense of the statute?") [hereinafter, CURTIS I].

<sup>48</sup> CURTIS I, *supra* note 47, at 3.

<sup>49</sup> Patent Act of 1836, ch. 357, 5 Stat. 117 (1836).

<sup>50</sup> U.S. CONST. art. I, § 8, cl. 8; CURTIS I, *supra* note 47, at 3 (citing Justice Story's opinion in *Earle v. Sawyer*, 8 F. Cas. 254, 256 (D. Mass. 1825)) ("It gives the first inventor, or discoverer of



that the terms were to be viewed separately in their conjunctive form and that the analysis of each be independent.<sup>51</sup> To receive a patent, an invention was required to be “new;”<sup>52</sup> this analysis tested the invention’s relative utility.<sup>53</sup> The invention must be substantially different than any invention in the prior art.<sup>54</sup> This relative utility should not be confused with the minimalist positive utility standard set forth by Justice Story, which describes the “useful” aspect of an invention.<sup>55</sup> Thus, throughout the 19<sup>th</sup> century, the statutory utility requirement was distinct in its own analysis and quite minimalistic.

*D. Departure from the Story Standard in the Field of Chemistry*

In the field of chemistry, the United States Court of Customs and Patent Appeals (the “CCPA”) began to take a stricter stance on the utility requirement in *in re* Bremner.<sup>56</sup> The invention in question was a process for a production of polymers.<sup>57</sup> The patent application, however, only explicitly described the steps in the process and failed to demonstrate any use, which is why the Board of Appeals within the Patent Office (the “Board”) denied the patent

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the thing, the exclusive right, and asks nothing as to the mode or extent of the application of his genius to conceive or execute it. It must also be useful, that is, it must not be noxious or mischievous, but capable of being applied to good purposes; and perhaps it may also be a just interpretation of the law, that it meant to exclude things absolutely frivolous and foolish. But the degree of positive utility is less important in the eye of the law, than some other things, though in regard to the inventor, as a measure of the value of the invention, it is of the highest importance.”).

<sup>51</sup> CURTIS I, *supra* note 47, at 3.

<sup>52</sup> 5 Stat. at 117.

<sup>53</sup> G. T. CURTIS, A TREATISE ON THE LAW OF PATENTS FOR USEFUL INVENTIONS, 110 (Little, Brown and Co. 4th ed. 1873) (“Care must be taken, however, to discriminate between what may be called the positive utility of an invention, which is made by the statute a mere description of the class of inventions which can be the subjects of valid patents, and that comparative or relative utility which is sometimes applied as one of the tests of novelty, or substantial difference of structure or mode of operation.”) [hereinafter, CURTIS II].

<sup>54</sup> Pierce, *supra* note 26, at 13 (citing Curtis II, *supra* note 53, at 110).

<sup>55</sup> Pierce, *supra* note 26, at 14.

<sup>56</sup> *In re* Bremner, 182 F.2d 216 (1950).

<sup>57</sup> *Id.*

grant.<sup>58</sup> The CCPA upheld the Board's decision holding that all patent applications are required to demonstrate a use.<sup>59</sup> The court concluded "[t]here is nothing in the application which asserts utility nor any thing indicating what [the] use of the product may be made."<sup>60</sup> This decision began a trend to deviate from, at least in the field of chemistry, the minimalist standard set forth by Justice Story.<sup>61</sup>

As a result of the lack of a uniform utility test for chemical inventions throughout the courts, the United States Supreme Court examined patent law's utility requirement in *Brenner v. Manson*.<sup>62</sup> Respondent Andrew Manson was a chemist who filed a patent application for a process that made particular steroids.<sup>63</sup> The application was rejected by a USPTO examiner, and the rejection was affirmed by the Board.<sup>64</sup> Both the examiner and the Board cited that the application omitted any cognizable use.<sup>65</sup> Manson, in an effort to cure his application, directed the Board to an article in a well-renowned chemistry periodical that revealed the steroid in question was related to other research, which had demonstrated some scientific promise of reducing the effects of tumors in mice.<sup>66</sup> The Board firmly held, however, "our view that the statutory requirement of usefulness of a product cannot be presumed merely because it happens to be closely related to another compound which is known to be useful."<sup>67</sup>

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<sup>58</sup> *Id.*

<sup>59</sup> *Id.* ("It is our view that no 'hard and fast' ruling properly may be made fixing the extent of the disclosure of utility necessary in an application, but we feel certain that the law requires that there be in the application an assertion of utility and an indication of the use or uses intended.").

<sup>60</sup> *Id.*

<sup>61</sup> *Pierce*, *supra* note 26, at 21.

<sup>62</sup> *Brenner*, 383 U.S. at 519; *Pierce*, *supra* note 26, at 21-31.

<sup>63</sup> *Brenner*, 383 U.S. at 520-21.

<sup>64</sup> *Id.* at 521.

<sup>65</sup> *Id.* ("The ground for rejection was the failure 'to disclose any utility for' the chemical compound produced by the process.").

<sup>66</sup> *Id.* at 522.

<sup>67</sup> *Id.*

On appeal, the CCPA reversed the Board's decision holding that Manson was entitled to the patent.<sup>68</sup> The CCPA attempted to restore Justice Story's utility standard holding "where a claimed process produces a known product it is not necessary to show utility for the product," so long as the product "is not alleged to be detrimental to the public interest."<sup>69</sup> The government appealed, and certiorari was granted by the United States Supreme Court to resolve the conflict of what constitutes utility in a chemical process.<sup>70</sup>

At the Supreme Court, Manson advanced several different arguments in his attempt to establish the requisite level of utility.<sup>71</sup> First, he claimed that his compound has a specific utility in that it produces an adjacent homologue that inhibits the effects of tumors in mice.<sup>72</sup> The Court, dissatisfied with Manson's evidence that the process would routinely yield a tumor inhibiting homologue, rejected this argument.<sup>73</sup>

Next, Manson claimed that the chemical process was useful simply because (1) it produces the intended compound, or alternatively (2) produces a compound belonging to a class of steroids that are under intensive scientific exploration.<sup>74</sup> The Court, exploring several arguments by both the respondent and the petitioner, articulated a critical component of the patent *quid pro quo* that weighed in favor of Manson: the public benefit of disclosure.<sup>75</sup> The

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<sup>68</sup> *In re Manson*, 333 F.2d 234, 238 (1964).

<sup>69</sup> *Id.* at 237.

<sup>70</sup> *Brenner*, 383 U.S. at 523.

<sup>71</sup> *Id.* at 530-34.

<sup>72</sup> *Id.* at 532.

<sup>73</sup> *Id.* ("Indeed, respondent himself recognized that the presumption that adjacent homologues have the same utility has been challenged in the steroid field because of 'a greater known unpredictability of compounds in that field.' In these circumstances and in this technical area, we would not overturn the finding of the Primary Examiner, affirmed by the Board of Appeals and not challenged by the CCPA.").

<sup>74</sup> *Id.* at 532.

<sup>75</sup> *Id.* at 533 ("It is true, of course, that one of the purposes of the patent system is to encourage dissemination of information concerning discoveries and inventions.").

Court, however, evaluated that benefit against the dangers of the grant of a monopoly along with the potential for scientists to abuse and block off certain areas of research with a patent.<sup>76</sup> The Court reasoned that Congress intended to require inventors to demonstrate “substantial” utility before the government granted the patent monopoly.<sup>77</sup>

Additionally, the Court stated that a compound’s potential for further study was an insufficient demonstration of utility.<sup>78</sup> Here, the Court analogized the granting of a patent at such an early stage to a license to hunt; the Court stated, though, that the patent grant should be given as a reward for a successful conclusion to the hunt, rather than just the opportunity to hunt.<sup>79</sup>

Ultimately, the Court rejected Justice Story’s standard noting that it shed little light on the subject of chemical processes.<sup>80</sup> The Court reasoned “many things in this world which may not be considered ‘useful’ but which, nevertheless, are totally without a capacity for harm.”<sup>81</sup> Thus, the Court rejected the inverse correlation between harm and usefulness that was at the key of Justice Story’s utility standard.<sup>82</sup>

Finally, the Court held that for a chemical process to meet the requisite utility standard deserving of the *quid pro quo* contemplated by the Constitution and Congress for the patent

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<sup>76</sup> *Id.* at 534.

<sup>77</sup> *Id.*

<sup>78</sup> *Id.* at 535-36.

<sup>79</sup> *Id.* (“This is not to say that we mean to disparage the importance of contributions to the fund of scientific information short of the invention of something ‘useful,’ or that we are blind to the prospect that what now seems without ‘use’ may tomorrow command the grateful attention of the public. But a patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion.”).

<sup>80</sup> *Id.* at 534.

<sup>81</sup> *Id.*

<sup>82</sup> *See id.*

grant, the process must demonstrate three specific criteria.<sup>83</sup> The inventor must establish (1) “substantial” utility refined to a point where (2) “specific” benefit (3) “exists in [a] currently available form.”<sup>84</sup> Applying this new standard to the facts of *Brenner*, the Court found that Manson had not sufficiently demonstrated utility and rejected his application for the patent.<sup>85</sup>

Many critics disagreed with the 7-2 majority in *Brenner*, including Justice Harlan who authored the dissent.<sup>86</sup> Justice Harlan’s argument, formed from a public policy perspective, claimed that an invention could achieve the minimum threshold of utility “simply because it facilitates further research into possible product uses.”<sup>87</sup> Justice Harlan explained that the field of chemistry has brought humanity many tangible benefits, but those benefits are often a result of building discoveries from their predecessors.<sup>88</sup> Justice Harlan believed that if chemists are refused patents due to a lack of “substantial” utility, then the scientific community would share significantly less information with the public, which would stunt the growth of knowledge in the scientific community.<sup>89</sup>

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<sup>83</sup> *Id.* at 535.

<sup>84</sup> *Id.*

<sup>85</sup> *Id.*

<sup>86</sup> *Id.* at 536 (Harlan, J., dissenting).

<sup>87</sup> *Id.* at 537 (Harlan, J., dissenting).

<sup>88</sup> *Id.* at 539 (Harlan, J., dissenting).

<sup>89</sup> *Id.* at 539 (Harlan, J., dissenting) (“What I find most troubling about the result reached by the Court is the impact it may have on chemical research. Chemistry is a highly interrelated field and a tangible benefit for society may be the outcome of a number of different discoveries, one discovery building upon the next. To encourage one chemist or research facility to invent and disseminate new processes and products may be vital to progress, although the product or process be without “utility” as the Court defines the term, because that discovery permits someone else to take a further but perhaps less difficult step leading to a commercially useful item.”).

Several other critics of the *Brenner* decision observed that the Court failed to analyze the statute utilizing the proper rules of statutory construction.<sup>90</sup> The Court used modifiers such as “substantial” and “specific” in front of the word “utility,” but those adjectives cannot be found anywhere in the statutory text.<sup>91</sup> The Court’s reading departs from *a verbis legis non est recedendum*, or “from the words of the law, there must be no departure.”<sup>92</sup>

Additionally, critics argued that the Court has confused positive utility, which is the section 101 analysis discussed in this article, and relative utility, which is analyzed in the specification section of the patent application pursuant to section 112.<sup>93</sup> Positive utility is derived from the plain meaning of the word “useful,” which means capable of being put to use.<sup>94</sup> This definition represents the minimal utility standard set forth by Justice Story.<sup>95</sup>

By requiring “substantial” and “specific” utility for chemical processes, the Court set a murky precedent that is hard to define and enforce uniformly.<sup>96</sup> Because the Court in *Brenner* failed to give further guidance regarding the new chemical invention utility standard, the Court of Appeals for the Federal Circuit (the “CAFC”) further developed the standard via case law. Throughout the 1980s and the 1990s, the CAFC struggled to make a black and white rule on what would be considered “substantial” and “specific” utility.<sup>97</sup>

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<sup>90</sup> Eric P. Mirabel, *A Review or Recent Decisions of the United States Court of Appeals for the Federal Circuit: “Practical Utility” Is a Useless Concept*, 36 AM. U.L. REV. 811, 813-14 (1987).

<sup>91</sup> 35 U.S.C. § 101; *Brenner*, 383 U.S. at 535; Mirabel, *supra* note 90, at 814.

<sup>92</sup> BLACK’S LAW DICTIONARY 124 (5th ed. 1979).

<sup>93</sup> 35 U.S.C. §§ 101, 112; Mirabel, *supra* note 90, at 815.

<sup>94</sup> *Id.*

<sup>95</sup> *Bedford*, 3 F. Cas. at 37.

<sup>96</sup> *Brenner*, 383 U.S. at 535; Mirabel, *supra* note 90, at 814.

<sup>97</sup> *Pierce*, *supra* note 26, at 45-53.

In 1995, the CAFC liberalized the chemical process utility requirement in *in re Brana*.<sup>98</sup> There, both the USPTO examiner and the Board found that an application for a new chemical lacked utility.<sup>99</sup> Both the examiner and the Board, however, were confused whether the patent application failed to satisfy the section 101 “substantial” utility threshold or the section 112 specification requirement.<sup>100</sup> The applicant presented a chemical compound that he asserted was useful for anti-tumor activity.<sup>101</sup> The applicant claimed his compound was an improvement over other compounds that were published in a scientific article.<sup>102</sup> Additionally, he relied on two model tests that demonstrated high efficacy in reducing the effects of lymphocytic leukemia.<sup>103</sup>

The CAFC overturned the Board’s ruling and held that, based upon the preceding evidence, the application satisfied the section 101 utility requirement.<sup>104</sup> Interestingly, the level of “substantial” and “specific” utility the inventor in *Brana* demonstrated was roughly equivalent to the level of utility that Manson disclosed in *Brenner*. The CAFC in *Brana*, however, never cited to the *Brenner* Court once.<sup>105</sup> This loosening of the utility requirement would nonetheless revert to the strict standard that *Brenner* established in the decade to follow.

Prior to 1995, the USPTO was silent on the issue of the utility threshold in chemical inventions.<sup>106</sup> Between 1995 and 2001, the USPTO addressed the utility requirement three

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<sup>98</sup> *In re Brana*, 51 F.3d 1560 (Fed. Cir. 1995).

<sup>99</sup> *Id.* at 1564.

<sup>100</sup> *Id.*

<sup>101</sup> *Id.* at 1565.

<sup>102</sup> *Id.*

<sup>103</sup> *Id.* (“Since one of the tested compounds, NSC 308847, was found to be highly effective against these two lymphocytic leukemia tumor models, applicants’ favorable comparison implicitly asserts that their claimed compounds are highly effective (i.e. useful) against lymphocytic leukemia.”).

<sup>104</sup> *Id.* at 1566.

<sup>105</sup> See generally *id.*; Ghose, *supra* note 10, at 1670.

<sup>106</sup> Mary Breen Smith, *An End to Gene Patents? The Human Genome Project Versus the United States Patent and Trademark Office's 1999 Utility Guidelines*, 73 U. COLO. L. REV. 747, 766

different times issuing Guidelines for Examination of Applications for Compliance with the Utility Requirement (the “Guidelines”).<sup>107</sup> First, in 1995, amidst a series of criticisms, the USPTO effectively relaxed the utility standard for biotechnology inventions.<sup>108</sup> Essentially, if the applicant could assert any use whatsoever, then the patent examiner was to approve the application with respect to the utility element.<sup>109</sup> Additionally, examiners were instructed to accept the application’s statements as true, unless they had countervailing evidence.<sup>110</sup> Thus, applicants were no longer required to provide substantial evidence linking their process with a specific use, as the Court required of Manson in *Brenner*.<sup>111</sup>

In 1999, the USPTO revisited the topic of utility.<sup>112</sup> Several critics argued that the “credible” Guidelines issued in 1995 did not comport with the *Brenner* holding and the USPTO did not have the authority to relax a standard set forth by the United States Supreme Court without an act of Congress.<sup>113</sup> By 2001, the Guidelines were clear that “specific, substantial, and

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(2002) (“Despite decisions that have modified and softened the *Brenner* rule, until 1995 the Patent Board followed *Brenner* strictly.”).

<sup>107</sup> Utility Examination Guidelines, 60 Fed. Reg. 36,263, (July 14, 1995) [hereinafter, 1995 Guidelines]; Utility Examination Guidelines, 64 Fed. Reg. 71,440, (Dec. 21, 1999) [hereinafter, 1999 Guidelines]; Utility Examination Guidelines, 66 Fed. Reg. 1,092 (Jan. 5, 2001) [hereinafter, 2001 Guidelines].

<sup>108</sup> 1995 Guidelines, *supra* note 107, at 36,264 (“if the applicant has asserted that the claimed invention is useful for any particular purpose (i.e. a ‘specific utility’) and that assertion would be considered credible by a person of ordinary skill in the art, do not impose a rejection based on lack of utility.”).

<sup>109</sup> *Id.*

<sup>110</sup> *Id.* at 26,265 (“Office personnel are reminded that they must treat as true a statement of fact made by an applicant in relation to an asserted utility, unless countervailing evidence can be provided that shows that one of ordinary skill in the art would have a legitimate basis to doubt the credibility of such a statement.”).

<sup>111</sup> *Brenner*, 383 U.S. at 535.

<sup>112</sup> 1999 Guidelines, *supra* note 107, at 71,440.

<sup>113</sup> *Id.* at 71,441 (“Many comments stated that sufficient patentable utility has not been shown when the sole disclosed use of an EST is to identify other nucleic acids whose utility was not known, and the function of the corresponding gene is not known....Some comments suggested



credible utility” was to be demonstrated before a patent could meet the requirements of section 101.<sup>114</sup> Although the USPTO caused the utility standard to fluctuate, by 2001 it was returned to the strict *Brenner* standard.

After the 2001 Guidelines were released, the CAFC reviewed the Board’s rejection of Dane Fisher’s application to patent certain nucleic acid molecules for lack of utility in *in re Fisher*.<sup>115</sup> The CAFC carefully analyzed Fisher’s seven articulated utilities for the patent finding he had only demonstrated general utility.<sup>116</sup> Ignoring the liberalization of the utility requirement it had set forth in *Branan*, the court focused on the “substantial” utility requirement mandated by the Court in *Brenner*.<sup>117</sup> Additionally, the CAFC gave judicial notice to the 2001 Guidelines.<sup>118</sup> Ultimately, the CAFC substantiated the Board’s analysis, denied the application, and returned the utility requirement to the standard the Court set forth in *Brenner*.<sup>119</sup>

#### E. *Summary of the Two Utility Standards*

Thus, since the enactment of the Patent Act of 1790, two distinct utility standards have been established through case law. First, Justice Story’s minimalist standard (the “Story Standard”), which applied to all patentable subject matter and found utility in all inventions not

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that PTO examination procedures would result in granting patents based on nonspecific and nonsubstantial utilities, contrary to established case law.”).

<sup>114</sup> 2001 Guidelines, *supra* note 107, at 1,094 (“The utility requirement, as explained by the courts, only requires that the inventor disclose a practical or real world benefit available from the invention, i.e., a specific, substantial and credible utility.”).

<sup>115</sup> *In re Fisher*, 421 F.3d 1365, 1366 (Fed. Cir. 2005).

<sup>116</sup> *Id.* at 1370 (“It argues that Fisher failed to meet that standard because Fisher’s alleged uses are so general as to be meaningless.”).

<sup>117</sup> *Id.* at 1369 (citing *Brenner*, 383 U.S. at 519).

<sup>118</sup> *Id.* at 1370 (“The government contends that a patent applicant need disclose only a single specific and substantial utility pursuant to *Brenner*, the very standard articulated in the PTO’s ‘Utility Examination Guidelines’ . . . and followed here when examining the ‘643 application.”).

<sup>119</sup> *Id.* at 1379.

pernicious or against public policy.<sup>120</sup> Second, the standard the Court announced in *Brenner* (the “*Brenner* Standard”), which applies strictly to patentable chemical inventions and requires “substantial” utility that demonstrates a “specific” benefit “exist[ing] in [a] currently available form.”<sup>121</sup> Part IV of this article analyzes both standards applied to chemical inventions from an economic perspective and asserts that the Story Standard is preferable for all patentable subject matter.

#### **IV. Economic Principles Applied to the Patent Utility Standard**

The economic objective of intellectual property law is to provide enough incentive to the creators of intellectual property so that they will bear the cost of creation.<sup>122</sup> Additionally, intellectual property rights should not be so exclusive that the public cannot share and use the creators’ intellectual property.<sup>123</sup> Economists and legal analysts often differ on how to best achieve the optimal balance between providing incentives to creators and access to the public.

From his perspective, an inventor will only invest in the creation of intellectual property if he receives what he perceives to be an appropriate return.<sup>124</sup> The inventor’s ability to collect a sufficient return is dependent on his ability to collect, in some form, a portion of the value that the public places in the invention.<sup>125</sup> If the intellectual property legal system in place does not permit the inventor to collect enough value from the public for his invention, then the inventor will cease to invent.<sup>126</sup> The most prevalent reason why an inventor would not be able to collect a sufficient return for his invention is if one of his competitors were able to replicate his invention

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<sup>120</sup> *Bedford*, 3 F. Cas. at 37.

<sup>121</sup> *Brenner*, 383 U.S. at 535.

<sup>122</sup> Besen & Raskind, *supra* note 2, at 5.

<sup>123</sup> *Id.*

<sup>124</sup> *Id.*

<sup>125</sup> *Id.*

<sup>126</sup> *Id.* (“If potential innovators are limited in their ability to capture this value, they may not have enough value to invest a socially optimal amount in innovative activity.”).

at little or no cost.<sup>127</sup> Similarly, if others are able to expand upon an underlying invention without returning value to the original inventor, then the original inventor loses a significant amount of incentive to invent. Thus, an intellectual property legal system is required to give some form of rights to inventors in order to provide enough incentive to invent.<sup>128</sup>

Legislators and regulators, however, must analyze incentives from the public's perspective as well.<sup>129</sup> If the rights given to an inventor are too exclusive, then the invention may not be widely used.<sup>130</sup> If the invention is not widely used, then society may be in the same position it would be if there were a suboptimal reward for innovation, but all innovation was widely disseminated.<sup>131</sup> Both scenarios are economically inefficient and, therefore, hinder innovation. Thus, it is critical for a legal system to find the appropriate balance between inventor incentives and public access.

There are multiple economic theories applicable to intellectual property rights that seek this optimal balance between inventor incentives and public access.<sup>132</sup> The cost-benefit theory compares and contrasts the costs and benefits that are produced from either expanding intellectual property rights and restricting public access or, alternatively, restricting intellectual property rights and expanding public access.<sup>133</sup> Other economists prefer the average cost theory, which proposes that an optimal legal system should provide exactly enough incentive to cover the average inventor's costs.<sup>134</sup>

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<sup>127</sup> *Id.*

<sup>128</sup> *Id.*

<sup>129</sup> *Id.* at 6.

<sup>130</sup> *Id.*

<sup>131</sup> *Id.*

<sup>132</sup> Barnes, *supra* note 12, at 119-24.

<sup>133</sup> *Id.* at 120.

<sup>134</sup> Jeffrey L. Harrison, *A Positive Externalities Approach to Copyright Law: Theory and Application*, 13 J. INTEL. PROP. L. 1, 14 (2005) (explaining extra incentives will not inspire the

While both theories have their advantages and disadvantages, the cost-benefit approach is slightly more practical in determining the optimal level of intellectual property rights.<sup>135</sup> First, the average cost approach fails to account for the social benefits that are created by new intellectual property or the social benefits gained by increased access to intellectual property.<sup>136</sup> The magnitude of an inventor's cost is not the sole consideration that should be taken account in the balancing equation; social value is an important factor that needs to be included.<sup>137</sup> Second, the average cost theory creates the market presumption that an inventor's cost will always be covered, which may lead to an inaccurate analysis.<sup>138</sup> The idea that an inventor's cost will always be covered strays from the conventional wisdom that structures a free-market economy.<sup>139</sup> Finally, the average cost of acquiring a patent is a variable that is highly correlated with the patent legal system.<sup>140</sup> If the legal system changes, then the average cost of acquiring a patent will also change.<sup>141</sup> Nevertheless, both theories are presented below and, when applied to the Story Standard and the *Brenner* Standard, they both reach similar conclusions.

A. *The Cost-Benefit and Net Benefit Approach*

The fundamental question in the cost-benefit analysis is whether granting increased rights to the creators of intellectual property outweighs the social benefits that would be lost by

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an author or inventor to create more intellectual property); *see also* F. Scott Kieff, *Property Rights and Property Rules for Commercializing Inventions*, 85 MINN. L. REV. 697, 727 (2001).

<sup>135</sup> Barnes, *supra* note 12, at 121.

<sup>136</sup> *Id.* (discussing the social value of intellectual property investments compared to the magnitude of those investments).

<sup>137</sup> *Id.*

<sup>138</sup> *Id.*

<sup>139</sup> *Id.*

<sup>140</sup> John F. Duffy, *Intellectual Property Isolationism and the Average Cost Thesis*, 83 TEX. L. REV. 1077, 1078 (2005) (explaining that if an intellectual property system only granted monopolies for a short duration of time, investment in intellectual property would be dissipate accordingly).

<sup>141</sup> *Id.*

restricting public access.<sup>142</sup> Thus, intellectual property rights should be expanded if the benefit from the expansion is greater than the resulting cost to public access. Conversely, intellectual property rights should be restricted if the reduced incentives to inventors are outweighed by the benefit to public access.

The net benefit theory uses the fundamental principles of the cost-benefit approach, but allows economists studying intellectual property to view the original formula from a slightly more practical angle. The net benefit theory recognizes that both inventor incentives and public access can be viewed as a benefit from one perspective while simultaneously being viewed as a cost from another perspective.<sup>143</sup> An increase in inventor incentives is a benefit to inventors and may produce more intellectual property; this, however, will increase the public's cost of accessing the intellectual property. *Vice versa*, an increase in public access will allow more people to benefit from inventors' intellectual property, but it may reduce the total amount of intellectual property due to a lack of incentives. Therefore, to simplify the analysis, the net benefit rule eliminates perspectives. When applied to intellectual property, the net benefit rule weighs the overall value of an increase in intellectual property rights against the overall value of an increase in public access.<sup>144</sup> Thus, the net benefit principle proposes:

1. An increase in exclusive rights to intellectual property is justified only when the value of increased creative activity resulting from increased incentives is greater than the value of the benefits lost from reduced access.

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<sup>142</sup> Barnes, *supra* note 12, at 120.

<sup>143</sup> *Id.* at 121-22 (“A net benefit rule avoids characterizing one option as a cost and the other as a benefit, but instead mediates between these extremes and is analytically identical to the cost-benefit approach.”).

<sup>144</sup> *Id.* at 122.

2. An increase in access to intellectual property is justified only when the value of the benefits resulting from increased access is greater than the value of decreased creative activity resulting from decreased incentives.<sup>145</sup>

Following these principles, it is important to analyze the incremental effect on all factors when considering increasing or decreasing intellectual property rights and public access.

*B. Applying the Net Benefit Rule to the Patent Law Utility Requirement*

The Story Standard requires a minimal demonstration of usefulness from an inventor.<sup>146</sup> Comparing the Story Standard to the more burdensome *Brenner* Standard,<sup>147</sup> it is clear that an inventor is more likely to meet the utility threshold required for the patent grant under the Story Standard. Applying both standards to potentially patentable chemical inventions, it is easier for an inventor to simply demonstrate that his invention is not a danger to society rather than proving the invention has a “specific” and “substantial” use in its current form. Consequently, because it is easier for an inventor to receive patent protection under the Story Standard, a reversion to this standard from the *Brenner* Standard would be viewed as an increase in intellectual property protection. Applying the net benefit rule, this increase in intellectual property rights would only be justified if the net benefit of the increased inventor creativity is greater than the net benefit of the reduced right of access.

If the Story Standard governed potentially patentable chemical inventions, the patent system would grant the exclusive right to a monopoly over the invention at an earlier stage of the inventor’s research. This would ultimately reduce the cost of obtaining a patent because inventors would not have to further invest in discovering a specific use for the chemical compound they discovered prior to filing a patent application. Consequently, more inventors

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<sup>145</sup> *Id.*

<sup>146</sup> *Bedford*, 3 F. Cas. at 37.

<sup>147</sup> *Brenner*, 383 U.S. at 535.

would apply for chemical invention patents, and their applications would be more likely to survive the examiner's scrutiny. An increase in patents would result in an increase of disclosures.

The increase in patents and disclosures benefits both inventors and society for several reasons. First, an increase in disclosures would result in an increase of information in the public domain after the inventor's patent window lapses. While the public would not have a right to use any of the inventions or the material in their disclosures without the permission of the inventor during the patent period, an increase of information in the public domain would lead to quicker technological development at a macro level.

Second, the increase in disclosures would lead to an increase in license agreements between scientists. Under the Story Standard, a scientist may invent a chemical compound and patent it without knowing its specific use. Hypothetically, after the inventor has patented the compound, other scientists could enter into a licensing agreement with the inventor to explore the potential benefits of the newly patented compound. These license agreements would expedite the process of discovering any beneficial and specific uses of chemical inventions. In addition to spurring innovation and enhancing society, the licenses would also stimulate commerce. The commercial value of a chemical invention may initially be unknown to the original inventor, but through these license agreements, other scientists could enlighten the original inventor of particular uses he had yet to discover.

Alternatively, under the *Brenner* Standard, inventors who have developed a new chemical invention, but have not developed a specific use for the invention are not able to apply for patent protection. Consequently, inventors choose not to disclose their inventions until they discover a specified use. This results in two scenarios: (1) the inventor delays disclosure until a

specified use is discovered or (2) the inventor abandons his research and keeps it private forever because there is no economic incentive to disclose. Both situations are unfavorable for the inventor and society. In the former scenario, the inventor disadvantages society by delaying the release of beneficial information. In the latter scenario, the inventor disadvantages society by never releasing the beneficial information.

There is one potential drawback to implementing the Story Standard for patenting chemical inventions. There is a concern that too many scientists may apply for chemical patents while their inventions are still in their infancy. As a result, other scientists will be excluded from freely conducting research on an increasing amount of chemical compounds and processes. The Story Standard may at times result in scientists cornering off certain chemical markets by acquiring patents and then preventing other scientists from further experimentation. This may result in a suboptimal level of scientific growth.

Utilizing the net benefit rule, however, the Story Standard's increase in exclusive rights to inventors outweighs the benefits lost by reduced public access. While there is a small potential for abuse, the Story Standard, if applied to chemical inventions, would increase disclosure, license agreements, technological advancement, and commerce in today's society.

### C. *The Average Cost Theory*

The average cost theory seeks to compensate an inventor at precisely the same level as the costs he sunk into creating the invention.<sup>148</sup> Professor Jeffrey Harrison, viewing the problem from the inventor's perspective, notes that there is no reason to further incentivize an inventor

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<sup>148</sup> Mark A. Lemley, *Property, Intellectual Property, and Free Riding*, 83 TEXAS L. REV. 1031, 1065 (2005) (arguing that for an intellectual property system to be economically efficient, it should reward creators only enough to compensate them for their average cost of creation and that any additional compensation is wasteful).



beyond his costs because doing so will only create waste.<sup>149</sup> Incentivizing the inventor beyond his costs will not inspire more creativity or intellectual property; rather, it will restrict public access to the intellectual property without inducing more creation.<sup>150</sup> Thus, if an intellectual property legal system rewards an inventor beyond his cost, it is creating an economic burden to society.<sup>151</sup>

Consequently, the average cost theory aims to return the average cost of invention to the inventor.<sup>152</sup> The nexus where intellectual property rights meet average cost is the economically optimal point between incentivizing inventors and allowing public access to their inventions.<sup>153</sup> By returning an inventor's average cost to him, the intellectual property system removes the competitive advantage a copier may have over the inventor.<sup>154</sup> This eliminates the economic fear inventor's possess when they file a public disclosure with the patent office.

*D. Applying the Average Cost Theory to the Patent Law Utility Requirement*

As demonstrated above, the average cost of creation is lower under the Story Standard than under the *Brenner* Standard. This is true because an inventor does not need to invest the additional time and money necessary to develop a specific use for his chemical invention; rather, the invention would be considered patentable from a utility perspective if the inventor could demonstrate that the invention was simply not harmful.

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<sup>149</sup> Harrison, *supra* note 134, at 14 (“[T]he benefits derived from the creative effort should be obtained at the lowest possible social cost. Put differently, as long as the creative effort is put forward, there is no need to incur costs to protect benefits beyond this minimum.”).

<sup>150</sup> *Id.*

<sup>151</sup> *Id.*

<sup>152</sup> Lemley, *supra* note 148, at 1065.

<sup>153</sup> *Id.* at 1054-55 (discussing the difficulty of controlling information once it has been publicly disclosed).

<sup>154</sup> *Id.*

A lower average cost of invention would benefit inventors and society in multiple ways. First, reducing the average cost of invention would allow more inventors to apply for patents. This would result in increased public disclosures. As stated above, an increase in technological disclosures drives an increase in licensing, information in the public domain, and commerce, ultimately leading to a more rapid rate of scientific evolution.

According to the average cost theory, if a legal system were to lower the average cost of creation by adopting the Story Standard for chemical inventions, then a proportional reduction in inventor incentives should follow to avoid waste. After carefully evaluating the new average cost of invention, Congress should reduce intellectual property rights to proportionally compensate for the lowered average cost of invention.<sup>155</sup> Congress could choose to, *inter alia*, decrease the duration of chemical patents or reduce the exclusive rights of inventors in various ways. This will avoid the economic waste that Professor Mark Lemley details in his analysis of overcompensating creators.<sup>156</sup> Therefore, if the Story Standard were applied to chemical patents, the rate of invention would remain a constant, but intellectual property rights would be reduced allowing greater public access to inventions. For the foregoing reasons, the Story Standard is economically preferable to the *Brenner* Standard.

## **V. Conclusion**

Since its inception, American patent law has required inventors to demonstrate their invention is “useful” before granting a patent.<sup>157</sup> Throughout American history, the legal threshold of utility that inventors have been required to demonstrate for chemical inventions has fluctuated between the minimalist Story Standard and the stricter *Brenner* Standard. From a

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<sup>155</sup> U.S. CONST. art. I, § 8 cl. 1 (“The Congress shall have power to...”).

<sup>156</sup> Lemley, *supra* note 148, at 1065.

<sup>157</sup> 35 U.S.C. § 101.

legal perspective, the courts have struggled over what constitutes specific and substantial utility, and regulators have debated whether the *Brenner* decision set the utility threshold at a point too burdensome for inventors. Employing economics, this article concludes that the current *Brenner* Standard hinders creation, encumbers commerce, and slows technological innovation. Both the net benefit rule and the average cost theory dictate that the Story Standard is economically preferable to the *Brenner* Standard. As such, Congress should take the appropriate steps to fully investigate the patent utility standard across all subject matter and adopt legislation adjusting the standard accordingly.