

# THE IMPACT OF OPEN SOURCE ON PRE-INVENTION ASSIGNMENT CONTRACTS

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In the heart of Boston lies America's oldest public park.<sup>1</sup> Lush in June, pristine under December snow, Boston Common belongs to all who pass through its wrought-iron gates. It is an important public resource. And, like all public resources, it must be properly maintained. In parks and nature reserves around the country, trails must be carved, weeds must be picked, and litter must be collected. Volunteers who wish to improve their communities often perform these tasks.

Similar volunteerism exists in the intellectual commons – the landscape of invention. Increasingly, engineers and scientists are contributing off-hours to open source projects, in which intellectual property rights are abandoned for the greater public good. These projects grant society a direct benefit completely free of charge. However, a threat

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1. See JANA RIESS, *THE SPIRITUAL TRAVELER, BOSTON AND NEW ENGLAND: A GUIDE TO SACRED SITES AND PEACEFUL PLACES* 67 (2002) (stating that Boston Common is the “oldest public park in America”). The notion of common property dates back to the ancient Roman legal doctrine of *res communes*, which held that air, water, and the shore-lines were subject to public use. Alfred C. Yen, *Restoring the Natural Law: Copyright and Possession*, 51 OHIO ST. L.J. 517, 522 (1990). These Roman concepts had an influence on English law following the Magna Charta. Approximately fifty years after the ratification of the Magna Charta, Henry de Bracton, an English legal scholar, wrote: “By natural law these are common to all: running water, air, the sea, and the shores of the sea, as though accessories of the sea. No one therefore is forbidden access to the seashore . . . .” James M. Kehoe, *The Next Wave in Public Beach Access: Removal of States as Trustees of Public Trust Properties*, 63 FORDHAM L. REV 1913, 1922 (1995). Roman law had a “powerful influence on the law of eighteenth century England.” Yen, *supra*, at 523. At that time, there were many public commons in England, although not all used by the public at large. See generally *Commons*, WIKIPEDIA, <http://en.wikipedia.org/wiki/Commons> (last visited Oct. 22, 2006) [hereinafter *Commons*] (describing the term “Commons”). Rather, their enjoyment was limited to “commoners.” *Id.* Interestingly, when American settlers came to North America, they established four states as “commonwealths”—places whose governments were based on the common will of the people. *Commonwealth (United States)*, WIKIPEDIA, [http://en.wikipedia.org/wiki/Commonwealth\\_%28United\\_States%29](http://en.wikipedia.org/wiki/Commonwealth_%28United_States%29) (last visited Oct. 22, 2006). Today, the term “commons” describes “resources that a community recognizes as being accessible to any member of that community.” *Commons*, *supra*.

looms: In the technology industry today, countless engineers sign away their intellectual property rights to employers. The instruments of these transfers—pre-invention assignment agreements—have generally enjoyed legitimacy in situations where employees attempted to personally profit from their patentable inventions. However, it seems that open source contributions should be treated differently. These valuable works are donated to the commons, and, as such, should never become the property of employers.

Pre-invention assignment agreements are commonplace in most American corporations.<sup>2</sup> These contracts are typically presented to engineers, and sometimes imposed upon all employees throughout an organization, regardless of their likelihood to invent.<sup>3</sup> Generally honored by courts,<sup>4</sup> pre-invention assignment agreements convey to employers all intellectual property rights arising from employee inventions.<sup>5</sup> Such agreements follow employees wherever they go, securing to employers patent rights for inventions created in and outside the scope of employment.

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2. See Ann Bartow, *Inventors of the World, Unite! A Call for Collective Action by Employee-Inventors*, 37 SANTA CLARA L. REV. 673, 683-84 (1997) (“Almost every technologist . . . of an American company involved in any sort of research is compelled to sign a pre-invention assignment agreement as a condition of employment.”); Marc B. Hershovitz, *Unhitching the Trailer Clause: The Rights of Inventive Employees and Their Employers*, 3 J. INTELL. PROP. L. 187, 197 (1995) (“In seeking to establish certainty in the employer-employee relationship and to obtain more protection than the common law affords, employers frequently require employees to sign ‘intellectual property agreements’ as a condition of employment.” (footnote omitted)).

3. See Neal Orkin, *The Legal Rights of the Employed Inventor: New Approaches to Old Problems (Part 1)*, 56 J. PAT. OFF. SOC’Y 648, 651 (1974) (remarking that some corporations require “janitors and secretaries” to sign pre-invention assignment agreements).

4. See Steven Chereksy, *A Penny for Their Thoughts: Employee-Inventors, Pre-invention Assignment Agreements, Property, and Personhood*, 81 CAL. L. REV. 595, 619 (1993) (“As a general rule, courts uphold pre-invention assignment agreements as valid and enforceable contracts.”). However, several states limit the power of pre-invention assignment agreements. *E.g.*, CAL. LAB. CODE § 2870(a) (2006) (stating that pre-invention assignment “shall not apply to an invention that the employee developed entirely on his or her own time without using the employer’s equipment, supplies, facilities, or trade secret information except for those inventions that either: (1) Relate at the time of conception or reduction to practice of the invention to the employer’s business, or actual or demonstrably anticipated research or development of the employer; or (2) Result from any work performed by the employee for the employer.”).

5. See, Bartow, *supra* note 2, at 687 (“Pre-invention assignment agreements typically require employee-inventors to assign ownership of any patented product or process invented during and after the employee’s tenure with the inventor employer.”); Jay Dratler, Jr., *Incentives for People: The Forgotten Purpose of the Patent System*, 16 HARV. J. ON LEGIS. 129, 141 (1979) (defining pre-invention assignment agreements as “obligat[ing] employees to assign to their employers all rights in any inventions made or conceived by them in the course of employment.”).

Intellectual property scholars criticize pre-invention assignment agreements for their tendency to freeze innovation. A prime complaint is that such agreements undermine and frustrate the goals of intellectual property law.<sup>6</sup> Rooted in Article I of the Constitution, the purpose and design of intellectual property is “[t]o promote the Progress of Science and useful Arts.”<sup>7</sup> In the case of patents, it is Congress’ hope that the twenty-year period of control it grants inventors will achieve this goal, making the patent right not truly a gift as much as a “necessary evil.”<sup>8</sup> The true end is to get new inventions into the hands of society. Because pre-invention assignment agreements strip inventors of their exclusive rights, some believe that employees under the thumb of these contracts are less willing to develop their ideas into useful inventions.<sup>9</sup>

This argument takes on a different hue, however, in the open source context. Part philosophy and part practice, open source describes a mode of producing works, often software, through the cooperative efforts of online communities. In the name of benefiting society, the authors of these works abandon their intellectual property rights, “enabling anyone to copy, modify and redistribute the source code without paying royalties or fees.”<sup>10</sup> Open source inventions are placed directly in the public domain, essentially side-stepping the incentive theory of intellectual property rights.<sup>11</sup> With no

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6. See Bartow, *supra* note 2, at 679 (discussing “[s]ubversion of the [g]oals of the [p]atent [s]ystem”).

7. U.S. CONST. art. I, § 8, cl. 8.

8. Bartow, *supra* note 2, at 680 n.23.

9. See *Id.* at 682 (stating that the incentive approach to innovation has been “impeded by corporate usurpation of inventive bounty”).

10. *Open Source*, WIKIPEDIA, [http://en.wikipedia.org/w/index.php?title=Open\\_source&oldid=44068783](http://en.wikipedia.org/w/index.php?title=Open_source&oldid=44068783) (last visited Oct. 22, 2006). The GNU Project, discussed later in this comment, defines software freedom, a concept closely-related to open source, as:

[A] matter of the users’ freedom to run, copy, distribute, study, change and improve the software. More precisely, it refers to four kinds of freedom, for the uses of the software:

- The freedom to run the program, for any purpose (freedom 0).
- The freedom to study how the program works, and adapt it to your needs (freedom 1). Access to the source code is a precondition for this.
- The freedom to redistribute copies so you can help your neighbor (freedom 2).
- The freedom to improve the program, and release your improvements to the public, so that the whole community benefits (freedom 3). Access to the source code is a precondition for this.

*The Free Software Definition*, GNU PROJECT, <http://www.gnu.org/philosophy/free-sw.html> (last visited Oct. 22, 2006).

11. The incentive theory of intellectual property rights is discussed at length later in this comment. A brief definition is that the exclusive rights reserved for copyright and patent

prospect of personal financial gain, the open source inventor makes a donation to the greater good. It would seem bizarre then, for the law to punish this sort of activity when conducted during off-hours. Unlike the traditional employee-inventor claiming right to an invention, open source contributors present society with the chance to use a work immediately, without having to wait twenty years for a patent to expire.<sup>12</sup> Punishing this activity or reverting ownership to a corporation due to a pre-invention assignment agreement directly opposes the goals of intellectual property law.<sup>13</sup>

Some might believe that because open source contributors work for free, in a sense, they don't care who takes ownership of their works. This reflects a common misconception of the spirit behind open source. Open source contributors labor for the good of the community, and receive psychological and status-oriented benefits in the process.<sup>14</sup> While the desire to discard intellectual property rights might seem mysterious, this comment shows that those who participate in open source projects share many of the same motivations and benefits as those who participate in more traditional community service projects.

Additional attacks on pre-invention assignment agreements come from property scholars. The Personhood theory of property, developed by famed German philosopher Georg Hegel in the nineteenth century, asserts that property is the means by which people define themselves.<sup>15</sup> Under this view, "property which forms an essential element of personality must be inalienable."<sup>16</sup> While this theory might be useful to an employee-inventor disputing patent ownership with an employer, it carries less weight in the open source domain, where inventors effectively abandon their rights. Abandonment of rights, which lies at the heart of the open source movement, seems to be in direct conflict with the idea that some inventions are completely non-assignable.<sup>17</sup>

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holders are offered by the government as incentives to spur invention and expressive works. This system is not the only conceivable way such works can be promoted (for example, the Government can offer cash rewards or honorary awards to authors and inventions), but it is the system that our nation's founders decided upon.

12. The term of a patent is twenty years, as set forth in the Patent Act. 35 U.S.C. § 154(a)(2) (2002).

13. See Bartow, *supra* note 2, at 682 ("The professed intent of U.S. patent laws has always been to foster innovation by rewarding inventors . . . but realization of this objective has been impeded by corporate usurpation of inventive bounty.").

14. See generally 35 U.S.C. § 154 (2002) (listing the rights of a patent owner).

15. See generally G.W.F. HEGEL, ELEMENTS OF THE PHILOSOPHY OF RIGHT, at xi (H.B. Nisbet trans., Allen W. Wood ed. 1991) (1821) (describing Hegel's ethical theory "which identifies the human good with the self-actualization of the human spirit.").

16. Cherensky, *supra* note 4, at 644.

17. See Cherensky, *supra* note 4, at 658 (suggesting that "employee pre-inventions should be non-assignable because they embody the personality of their inventor."). It is

Arguments more applicable to open source circumstances come from contract theorists. These critics claim that pre-invention assignment contracts are not executed between parties with equal bargaining power.<sup>18</sup> Because most of these agreements are presented in a “take-it-or-leave-it” fashion,<sup>19</sup> and the practice is industry-wide, the argument appears to have merit. This raises additional questions regarding freedom of contract, adhesion, and unconscionability<sup>20</sup> in substance and procedure.<sup>21</sup> Adequacy of consideration is also especially troublesome, as the parties to a pre-invention assignment agreement are bargaining over something that does not yet exist.<sup>22</sup>

This comment studies the implications of open source on pre-invention assignment agreements. Part I analyzes the basis for past enforcement of these contracts, with an eye toward distinctions between open source projects and more traditional commercial endeavors. Part II briefly reviews the history of patents and explores constitutional and contract-based arguments against the pre-invention assignment. Part III begins with a discussion of open source and then explores how this new phenomenon perfectly fulfills the goals behind the Patent Act. With these

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notable, however, that new work in the area of Personhood Theory suggests that inventors can choose abandonment. *E.g.*, Margaret J. Radin, *The Liberal Conception of Property: Cross Currents in the Jurisprudence of Takings*, 88 COLUM. L. REV. 1667 (1988); Margaret J. Radin, *Market-Inalienability*, 100 HARV. L. REV. 1849 (1987); Margaret J. Radin, *Property and Personhood*, 34 STAN. L. REV. 957 (1982). These theories, while interesting, are not within the scope of this comment.

18. See Franklin D. Ubell, *Assignor Estoppel: A Wrong Turn from Lear*, 71 J. PAT. & TRADEMARK OFF. SOC'Y 26, 27 (1989) (“The new employee is compelled to accept such assignment provisions because of the far greater bargaining power of the employer and lack of access to patent counsel.”). See also Cherensky, *supra* note 4, at 621 n.115 (“Furthermore, employment contracts deserve a higher level of judicial scrutiny than, say, contracts for the sale of commodities, because ‘[a]fter all, what is being purchased and sold in the labor market is control over the time and activities of a human being.’” (quoting PAUL C. WEILER, GOVERNING THE WORKPLACE: THE FUTURE OF LABOR AND EMPLOYMENT LAW 21 (1990))).

19. Cherensky, *supra* note 4, at 621.

20. See RESTATEMENT (SECOND) OF CONTRACTS, § 208 (1981) (“If a contract or term thereof is unconscionable at the time the contract is made a court may refuse to enforce the contract, or may enforce the remainder of the contract without the unconscionable term, or may so limit the application of any unconscionable term as to avoid any unconscionable result.”). The distinction between substantive and procedural unconscionability is explored in Part III of this comment.

21. See Cherensky, *supra* note 4, at 621-22 (discussing unconscionability in substance, due to the absence of meaningful choice and often unreasonable terms, and a possible basis for procedural unconscionability).

22. See Cherensky, *supra* note 4, at 622 (finding that adequacy of consideration is “particularly difficult [to determine] in the pre-invention context because the parties are bargaining for something which does not exist and which may never exist, and thus is not easy for the parties to evaluate”).

addressed, the central inquiry of pre-invention assignment agreements, as they could conflict with open source inventions, will be addressed. Ultimately, this comment will show that some rules that preclude open source contributions from being recaptured by employers already exist. In those cases where the law remains ambiguous, it will be argued that such works are a service to the community, and when developed outside the scope of employment, should never become the property of an employer.

## I. PATENT LAW AND INVENTION ASSIGNMENT

### A. *The History and Purpose of American Patent Law*

A patent is an incentive to teach society something new. In exchange for informing the public about a new invention or process, inventors are granted a twenty-year window, during which they can capitalize from their ideas without having to worry about copyists.<sup>23</sup> Patents drive would-be inventors to invest time and money in the often difficult and risky job of inventing. Further, patents encourage those with inventive ideas to share their vision with society.

The drafters of the U.S. Constitution expressed these basic concepts eloquently and concisely. As stated in Article III, Section 8, clause 8, Congress has the power “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”<sup>24</sup> Just one year later, in 1790, Congress enacted the United States’ first Patent Act.<sup>25</sup> The year 1802 saw the establishment of a new government agency, the United States Patent and Trademark Office, dedicated to overseeing the issuance of patents.<sup>26</sup> Since those early days, Congress and the Judiciary have molded and developed United States patent law,<sup>27</sup> but ultimately, the aspirations of

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23. See 35 U.S.C. § 154 (2002) (describing the patent term and the rights of a patent owner).

24. U.S. CONST. art. I, § 8, cl. 8. This clause is also the Constitutional basis of the Copyright Act. The term, “authors” has been interpreted to mean something far beyond those who write books. Rather, the term refers to inventors and creators of all walks of creative expression. While this comment is focused on patent law, it is helpful to understand that patents reward useful and novel *ideas*, while copyright protects the original *creative expression* of an idea.

25. Patent Act of 1790, ch. 7, 1 Stat. 109, 109-12 (1790) (“An Act to promote the progress of useful Arts.”). Interestingly, many early Supreme Court cases dealt with patents because it was one of the only areas of exclusive federal jurisdiction. Today, the Patent Act is under Title 35 of the United States Code. 35 U.S.C. §§ 101-376 (2002).

26. See generally United States Patent and Trademark Office, <http://www.uspto.gov/web/offices/pac/doc/general> (last visited Oct. 22, 2006) (listing general information concerning patents).

27. Major developments include the notion of non-obviousness, novelty, and the

the patent system remain unchanged since its inception: to increase society's storehouse of technological knowledge.<sup>28</sup>

In the 18th and 19th centuries, most patent-holders were individual inventors—creative, resourceful individuals who often saw the world as a place that could be improved. Celebrated American inventor, Thomas Edison, is considered iconic of this breed. During his life, Edison was granted 1,093 patents for ideas spanning a wide range of subject matter, from the light bulb to the gramophone.<sup>29</sup> By the time of his death, Edison's inventions had changed the landscape of daily life. Of course, not every important invention during this period was revolutionary. In fact, many of the most valuable inventions have been improvements on existing ideas.<sup>30</sup>

In exchange for sharing their new ideas with society (by way of patent registration), inventors such as Edison were given a chance to recoup their expenses, and ideally, earn a profit. The *quid pro quo* of American patent law is a twenty-year period during which patent holders may control the use of their invention.<sup>31</sup> It is hoped that this promise will motivate individuals to dedicate their time, money and intellect to invention. An enterprising patentee can license her invention to others, or try to develop the discovery into a business of its own. When inventions are used without permission, inventors can sue for patent infringement.<sup>32</sup> After the twenty-year term expires, however, society at large can freely reap the rewards of the new innovation.

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primacy of claims. See generally ROBERT P. MERGES & JOHN F. DUFFY, *PATENT LAW AND POLICY: CASES AND MATERIALS* (3d ed. 2002) (providing an overview of patent law and policy).

28. See R. Polk Wagner, *Reconsidering Estoppel: Patent Administration and the Future of Festo*, 151 U. PA. L. REV. 159, 192-93 ("The United States patent system traditionally has been justified in terms of utilitarian notions of the use of incentives to stimulate progress."). See generally R. Polk Wagner, *Information Wants to Be Free: Intellectual Property and the Mythologies of Control*, 103 COLUM. L. REV. 995 (challenging "the suggestion that the control conferred by . . . [intellectual property] rights is detrimental to the continued flourishing of a public domain of ideas and information.").

29. See *Thomas Edison*, WIKIPEDIA, [http://en.wikipedia.org/wiki/Thomas\\_Edison](http://en.wikipedia.org/wiki/Thomas_Edison) (last visited, Oct. 22, 2006) (providing a background on Thomas Edison).

30. An excellent example is Edison's patent for the incandescent lamp, which was an improvement or refinement of an earlier patent for an electric bulb. U.S. Patent No. 223,898 (filed Nov. 1, 1879) (illustrating Edison's patent for the electric lamp); *The Incandescent Lamp Patent*, 159 U.S. 465 (1895) (pertaining to an ownership dispute between Edison and the owners of an earlier patent).

31. See 35 U.S.C. § 154(a)(2) (2002) ("Term. Subject to the payment of fees under this title, 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 . . .").

32. See generally *Infringement of Patents*, 35 U.S.C. §§ 271-73 (2002) (prohibiting the infringement of patents, describing liability of those that infringe upon patents, and the possible defenses to claims of patent infringement).

Judging from the many important patents filed during the 19th century,<sup>33</sup> it seems that the incentive system worked well. However, as the Industrial Revolution gained strength, a new problem surfaced: Large businesses and the federal government witnessed the mighty economic power held by patent owners.<sup>34</sup> Although the Patent Act did not permit corporations or the government to apply for patents—only individual inventors could do so—individuals could assign their patent rights to them. As the age of industrial expansion progressed, and more inventors gained employment, a natural question arose: When an employee patents something during his employment, must that patent be assigned to his employer? What if the invention does not pertain to the subject matter of their employment? The judiciary would struggle with this fundamental question of employment law throughout the late nineteenth and early twentieth centuries.

### *B. Invention Assignment at Common Law*

A string of Supreme Court decisions from this period chart the development of common law rules pertaining to invention assignment.<sup>35</sup> One of the most fascinating early cases of this type began in 1858, as the nation teetered on the brink of Civil War.<sup>36</sup> An inventor and U.S. officer, H.H. Sibley, held a patent for a newly designed conical tent.<sup>37</sup> The U.S. government had interest in the tent for use by the army, and convinced Sibley to license his patented design.<sup>38</sup> By the terms of the license agreement, Sibley would receive five dollars per tent built. In April 1858, Sibley granted half his license revenue to Burns, another officer. A short

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33. It is impossible to place an exact number on innovations during this general historical period, but it may be helpful to consider some of the most important advances: cotton gin (patented in 1794), smallpox vaccine (invented in 1796), electric battery (invented in 1799), improved printing press (invented in 1810), sewing machine (invented in 1830), Calotype photography (invented in 1835), bicycle (invented in 1839), elevator (invented in 1861), typewriter (invented in 1867), telephone (patented in 1876), radar and gramophone (invented in 1887). *Eighteenth Century Inventions 1700 to 1799*, ABOUT, <http://inventors.about.com/library/inventors/bl1700s.htm> (last visited Oct. 22, 2006); *Nineteenth Century Inventions 1800 to 1850*, ABOUT, <http://inventors.about.com/library/weekly/aa111100a.htm> (last visited Oct. 22, 2006); *Nineteenth Century Inventions 1851 to 1899*, ABOUT, <http://inventors.about.com/library/weekly/aa111100b.htm> (last visited Oct. 22, 2006).

34. See MERGES & DUFFY, *supra* note 27, at 10 (“[P]atents . . . were viewed as important weapons in the suffocating arsenal of big business.”).

35. See Cherenksy, *supra* note 4, at 616 n.93 (citing cases illustrating “[t]he common law allocation of property rights between employee and employer”).

36. *United States v. Burns*, 79 U.S. 246 (1870).

37. *Id.* at 246.

38. *Id.* at 248.



time later, Sibley defected to the Confederate army. Despite his associate's disloyalty, Burns continued to receive his half share (\$2.50) for each tent built.<sup>39</sup> Payments ceased, however, when the Secretary of War learned of an Army regulation forbidding agents of the military from furnishing "supplies or services" to the army in exchange for money.<sup>40</sup> As Sibley had been employed as an officer, the government claimed that the regulation rendered his original license contract invalid. When the dispute reached the Supreme Court, however, Justice Field held otherwise. Writing for the majority, Field stated:

If an officer in the military service, *not specially employed* to make experiments with a view to suggest improvements, devises a new and valuable improvement . . . he is entitled to the benefit of it, and to letters-patent for the improvement from the United States . . . and the government cannot, after the patent is issued, make use of the improvement . . . .<sup>41</sup>

Justice Field's statement is most significant for its recognition of an employee's right to retain patents. Also important is the fact that Justice Field excluded from protection employees specifically employed to invent.

This distinction, which came to be known as the 'employed-to-invent' doctrine, was further refined in the 1890 case of *Solomons v. United States*.<sup>42</sup> The innovation at issue was a particular type of 'self-canceling stamp,' conceived by the head of the government Bureau of Engraving and Printing, Spencer M. Clark.<sup>43</sup> Clark developed the stamp at the specific request of his employer.<sup>44</sup> Finding the inventor did not own the patent, Justice Brewer, writing for the majority, explained the limits of employee rights to inventions at common law:

An employé, performing all the duties assigned to him in his department of service, may exercise his inventive faculties in any direction he chooses, with the assurance that whatever invention he may thus conceive and perfect is his individual property. There is no difference between the government and any other employer in this respect. But . . . [i]f one is employed to devise or perfect an instrument, or a means for accomplishing a prescribed result, he cannot, after successfully accomplishing the

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39. *Id.*

40. *Id.* at 249.

41. *Id.* at 252 (Field, J. dissenting) (emphasis added).

42. *Solomons v. United States*, 137 U.S. 342 (1890).

43. *Id.* at 342-43.

44. *Id.* at 344 ("[T]he Chief of the Bureau of Engraving and Printing, was called officially, and to him was assigned the duty of devising a stamp.").

work for which he was employed, plead title thereto as against his employer.<sup>45</sup>

Stated more bluntly, the employed-to-invent doctrine rests a patent with the employer when an employee invents something that he is employed to invent. Justice Brewer made it clear that, outside of this limitation, employees still had the right to retain ownership in their inventions.

The only notable addition to this rule is that when employer equipment and resources are used in the process of invention (laboratory devices, etc.), employers are typically found to either own employee-created inventions, or to have an implied license or "shop right" to make use of them.<sup>46</sup>

The common law's approach to invention assignment was further refined with the 1933 case of *United States v. Dubilier Condenser Corp.*<sup>47</sup> The case concerned two inventors who, during their employment as radio research engineers in the U.S. Department of Standards, developed inventions unrelated to their assigned work. The inventions pertained to electrical power amplification, and using alternating electrical current, as it typically enters a home, for use in machines that require direct (i.e., non-alternating) current.<sup>48</sup> Once the inventions were patented, the two engineers entered into an exclusive license arrangement with a Delaware-based corporation.<sup>49</sup> The United States, however, claimed that because it employed the engineers during the period of invention, either the patents belonged to the government or fell under public domain. Applying the employed-to-invent doctrine, the Court held that the inventors owned their patents, as their employment had not contemplated inventions of that nature.<sup>50</sup> In doing so, the Court further refined the common law approach, stating that employment to design a mode of manufacture or design is not the same as employment to invent.<sup>51</sup>

This case marked the end of significant developments in common law approaches to invention assignment. To this day, the common law

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45. *Id.* at 346.

46. See Dratler, *supra* note 5, at 139 ("If the employee was not hired to invent but uses the employer's facilities and resources to make an invention, the law splits the rights in the invention between the employer and the employee. Because the employee has done more than his job requires, he receives ownership of the patent, with full rights to grant licenses and collect royalties. The employer, however, is given a 'shop right,' i.e., a nonexclusive, nontransferable, royalty-free license to make or use the invention during the life of the patent, so that he, too, can reap some benefit in return for his contribution to the innovative process.") (citing *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 188-89 (1933)).

47. 289 U.S. 178.

48. Dratler, *supra* note 5, at 185.

49. *Id.* at 194 n.11.

50. *Id.* at 196.

51. *Id.* at 188.

approach remains clear: Unless employed to invent, employees retain ownership in their patents. Although the cases above dealt with government employees, the decisions reflect the general treatment afforded by courts to non-governmental employees as well.<sup>52</sup> The *Dubilier* decision suggests that the Court's rationale in applying the employed-to-invent doctrine was rooted in the meaning and purpose of the Patent Act: By giving employees the opportunity to own patents, the common law incentivizes individuals to produce useful inventions, and through the patent process, to share them with society.<sup>53</sup>

### C. *Pre-invention Assignment*

Common law sought equitable solutions to the problem of employee invention assignment. As the discussion above reveals, the resolution of many such disputes depended on an employee's scope of employment, the nature of a coveted invention, and sometimes, whether employer resources were used in development. Such fact-specific considerations often led to unpredictable results.<sup>54</sup> Wishing to side-step uncertainty, employers have long followed the practice of pre-invention assignment. Unlike common law, which decides ownership of existing inventions, pre-invention agreements concern *potential* innovative ideas. By obligating employees to sign away their future invention rights at the outset of employment, corporations seize more security and confidence than the common law provides.

Patent assignment agreements attained widespread popularity during World War II when government research grants fueled major innovation in the United States.<sup>55</sup> In fact, by the end of the war, the federal government provided contracts and grants to fund more than three-quarters of the total money spent on research in the United States.<sup>56</sup> As an enormous patron of

52. See Cherenky, *supra* note 4, at 616 n.93 (“*Dubilier* continues to state the general common law as to non-governmental employees.”).

53. See *Dubilier*, 289 U.S. at 188 (upholding employee patent rights because “employment merely to design or to construct or to devise methods of manufacture is not the same as employment to invent.”).

54. See Cherenky, *supra* note 4, at 617 (“Most employers are unwilling to rely on the uncertainty and perceived equities of the common law.”).

55. This form of direct funding might be seen as an alternative to the patent system and a driving force for innovation. See Dratler, *supra* note 5, at 129 (contending “that the current patent laws fail to provide effective incentives to inventors . . . because the laws allow employers to require employee-inventors to assign all potential inventions to their employers.”).

56. See *id.* at 130 (“Before [the Second World War], universities and private industry conducted most of the nation’s applied research; by the end of the war, however, the federal government provided more than three-quarters of all the money spent on research, either directly or through contracts and grants.”).

the sciences, the government also exerted great control in directing the path of research and development. In this environment of great government innovation, big businesses sought to own patents, not just for the purpose of licensing or selling, but because they could be used as leverage in business transactions.<sup>57</sup>

In the 1920s and 1930s, courts generally based their support for pre-invention assignment agreements on theories of freedom of contract, which enjoyed widespread popularity at that time.<sup>58</sup> During this period, courts not only enforced pre-invention assignment agreements in law, but also in equity, demanding specific performance from employee-inventors.<sup>59</sup> A case recognized by commentators as symbolic of judicial enforcement of pre-invention assignment agreements at the time was *Guth v. Minn. Mining & Mfg. Co.*<sup>60</sup> The case involved a chemical engineer who was an adhesives and abrasives expert. The engineer's employer instructed him to develop a type of masking tape that would not tear when unwound from the roll or when removed from surfaces. After extensive research, including a field trip to study new methods of drying adhesives, the engineer developed a solution. Pursuant to a pre-invention assignment agreement, the employer tried to make the engineer apply for a patent and turn it over to them. The crux of the ensuing legal dispute rested upon the legitimacy of the pre-invention assignment agreement. The engineer claimed — and the court ultimately agreed — that the agreement was overly broad. As the court's decision stated:

Upon the facts peculiar to this case we are convinced that those provisions of the contract which were *limitless in extent of time and in subject matter* of invention were contrary to public policy.

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57. Today, many major technology corporations create patents simply for their value in business transactions. I.B.M. is well known for this practice. See generally Michael Kanellos, *Companies Trying to Cash in Via Licenses Lawsuits*, CNET NEWS.COM, Jul. 20, 2005, [http://news.com.com/Staking+a+claim+in+the+patent+gold+mine/2009-1001\\_3-5793470.html](http://news.com.com/Staking+a+claim+in+the+patent+gold+mine/2009-1001_3-5793470.html) (last visited Oct. 22, 2006) ("IBM . . . obtained 3,248 . . . patents in the United States alone - more than any other company or individual for the 12th straight year. In all, IBM garnered \$1.2 billion through intellectual-property licensing [in 2004]."). Recently, Companies known as 'patent trolls' have become a problem. "Patent trolls" hold patents and then wait for others to invent and manufacture the invention. Once another business successfully sells the product, the patent troll strikes and sues for infringement. See generally *Patent Troll*, WIKIPEDIA, [http://en.wikipedia.org/wiki/Patent\\_troll](http://en.wikipedia.org/wiki/Patent_troll) (last visited Oct. 22, 2006) ("The key point of contention against patent trolls is not their non-practising status, nor that their assertions are necessarily invalid, but rather that they are in a position to negotiate licensing fees that are grossly out of alignment with their contribution to the alleged infringer's product or service." (citation omitted)).

58. See Dratler, *supra* note 5, at 142 (noting the popularity of pre-invention assignment agreements during the 1920s and 1930s).

59. *Id.*

60. 72 F.2d 385 (1934).

Guth was a chemical engineer. . . . He was a research man prepared to devote his life to discoveries of value to industry. Under this contract he was, however, if he worked in another laboratory or for another manufacturer, required to assign his discoveries to appellee. This would effectively close the doors of employment to him. . . . Such a contract conflicts with the public policy of the land, which is one that encourages inventions . . . .<sup>61</sup>

Remarkably, the court did not find the agreement completely void, despite the invalidity of the agreement's boundless subject matter and term length. Instead, the majority upheld those provisions of the contract that applied to the engineer's employment, and found that the employer owned the patent.<sup>62</sup> Decisions of this sort certainly do not give employers any incentive to carefully craft their agreements. Blanket-style contracts, even overreaching in places, provide more complete protection and are easier to draft. Courts continue to widely enforce pre-invention assignment agreements, even those that are overly broad.<sup>63</sup>

## II. CRITICISM OF PRE-INVENTION ASSIGNMENT AGREEMENTS

Pre-invention assignment agreements have been widely criticized by commentators with expertise in the fields of contract, property, and patent law. Establishing familiarity with these arguments is crucial in later understanding the subject of open source inventions.

### A. Contract-based Arguments

Traditionally, contract law is built around the notion of equal bargaining power between two parties.<sup>64</sup> Such a paradigm assumes parties "brought together by the play of the market and who meet each other on a footing of social and approximate economic equality."<sup>65</sup> However, pre-invention assignment agreements present a completely different scenario. They appear as terms in standardized employment contracts. In this context, the parties—typically a corporation and an individual—are not on equal footing. Rather, terms are presented on a take-it-or-leave-it basis and bargaining is not a possibility. For most engineers, to refuse a pre-

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61. *Id.* at 388-89 (emphasis added).

62. *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 187 (1933) ("A patent is property and title to it can pass only by assignment. If not yet issued an agreement to assign when issued, if valid as a contract, will be specifically enforced.").

63. *See* Dratler, *supra* note 5, at 144 ("It is surprising, however, that courts have slavishly followed these precedents [e.g., *Guth*] . . .").

64. *See* Friedrich Kessler, *Contracts of Adhesion – Some Thoughts About Freedom of Contract*, 43 COLUM. L. REV. 629, 630 (1943) (describing traditional contract bargaining).

65. *Id.*

invention assignment agreement is to refuse employment.<sup>66</sup> For this reason, pre-invention assignment agreements have been criticized as unfair contracts of adhesion.<sup>67</sup>

Although courts typically enforce these contracts of adhesion,<sup>68</sup> common law has developed several methods for invalidating them under certain circumstances. However, “[n]one of these traditional judicial techniques is adequate, at least in theory, to protect an unfortunate person who has actual knowledge” of the terms of the contract.<sup>69</sup> As most engineers are probably sophisticated enough to understand the terms of a pre-invention assignment agreement, common law solutions do little to aid the problem of adhesion in the employment context.

Another attack has been to call pre-invention assignment agreements unconscionable. While the legal doctrine of unconscionability is expressed in both the Restatement of Contracts<sup>70</sup> and the Uniform Commercial Code<sup>71</sup> (UCC)(which governs the sale of goods in almost every state), the term is not formally defined by either source. In place of a definition, an interpretation considered by commentators as the “most durable”<sup>72</sup> appears in the case of *Williams v. Walker-Thomas Furniture*: “Unconscionability has generally been recognized to include an absence of meaningful choice on the part of one of the parties together with contract terms which are unreasonably favorable to the other party.”<sup>73</sup> Since that decision, legal writers and experts have come to recognize two brands of unconscionability: procedural and substantive. To use the language of *Williams*, an “absence of meaningful choice” is referred to as procedural unconscionability.<sup>74</sup> This term encompasses cases of unequal bargaining power.<sup>75</sup> In contrast, unreasonably favorable terms would be considered

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66. *See id.* at 632 (“Standard contracts are typically used by enterprises with strong bargaining power. The weaker party, in need of the goods or services [or employment] is frequently not in a position to shop around for better terms, either because the author of the standard contract has a monopoly (natural or artificial) or because all competitors use the same clauses. His contractual intention is but a subjection more or less voluntary to terms dictated by the stronger party, terms whose consequences are often understood only in a vague way, if at all. Thus, standardized contracts are frequently contracts of adhesion; they are *à prendre ou à laisser* [take it or leave it].” (citation omitted)).

67. *Id.*

68. Cherensky, *supra* note 4 (noting that courts generally uphold pre-invention assignment agreements).

69. E. ALLAN FARNSWORTH, CONTRACTS 292 (4th ed. 2004).

70. RESTATEMENT (SECOND) OF CONTRACTS § 208 (1981).

71. U.C.C. § 2-302 (2001).

72. FARNSWORTH, *supra* note 69, at 301.

73. *Williams v. Walker-Thomas Furniture*, 350 F.2d 445, 449 (1965). This case was directly referenced and discussed by Farnsworth. FARNSWORTH, *supra* note 69, at 301.

74. FARNSWORTH, *supra* note 69, at 301..

75. *Id.*

substantive unconscionability.<sup>76</sup> Courts measure both types of unconscionability, and when there is more of one, less of the other is required in order for a contract to be invalidated.<sup>77</sup>

As the earlier discussion of unequal bargaining power shows, pre-invention assignment agreements are procedurally unconscionable. Arguably, they are substantively unconscionable as well. The reasonableness of the terms of a contract are determined by looking to the adequacy of consideration.<sup>78</sup> However, this presents problems because pre-invention assignment agreements pertain to consideration that does not yet, and may never, exist. While some courts argue that continued employment alone suffices as consideration,<sup>79</sup> the argument appears to be flawed: Presumably, continued employment would exist even if the employee hadn't developed the invention.

The fruitless search for substantive conscionability thus reveals a final contractual argument: lack of consideration. The Restatement (Second) of Contracts defines consideration as essentially a *quid-pro-quo*.<sup>80</sup> But, unlike inventors and employers bargaining for an interest in a known invention, how can consideration be determined for something that does not, and may never, exist? The answer is not clear.

In sum, the contractarian arguments of adhesion, unconscionability, and lack of consideration are compelling. While opponents to these arguments might cite the legal and economic importance of freedom of contract, the contractarian arguments do not undermine free choice; rather, they circumscribe it and identify the limits of its utility with respect to problematic arrangements between parties. Ultimately, these are strong arguments against the enforcement of pre-invention assignment agreements.

### *B. Incentive-Based Arguments*

As discussed in Section I, the purpose of the American patent system is to stimulate “the Progress of Science.”<sup>81</sup> Progress can be stimulated in

76. See Arthur A. Leff, *Unconscionability and the Code—the Emperor’s New Clause*, 115 U. PA. L. REV. 485, 487 (1967) (noting that “evils in the resulting contract” are considered examples of “substantive unconscionability.”).

77. FARNSWORTH, *supra* note 69, at 302.

78. See generally *id.* (explaining the function of consideration).

79. Robert P. Merges, *The Law and Economics of Employee Inventions*, 13 HARV. J.L. & TECH. 1, 8 (1999).

80. See RESTATEMENT (SECOND) OF CONTRACTS § 71 (1981) (“To constitute consideration, a performance or a return promise must be bargained for . . . A performance or return promise is bargained for if it is sought by the promisor in exchange for his promise and is given by the promisee in exchange for that promise.”).

81. U.S. CONST. art. I, § 8, cl. 8. Discussed *supra* p. 205.

two ways: First, the promise of a patent at the end of the road could convince an inventive individual to commit the time and money required to develop their ideas into patentable inventions.<sup>82</sup> Second, patents encourage those who already have new ideas not to keep them secret.

There is good reason to think that pre-invention assignment agreements seriously erode these incentives. Under common law, an employee not hired to invent at least has the potential to profit from a patentable idea.<sup>83</sup> This incentive is extinguished by a pre-invention assignment. After all, what reason does an inventive employee have to devote time and mental energy to a new idea if he or she knows the patent will ultimately be assigned to their employer?

The hierarchical management structure of modern corporations acts as another disincentive.<sup>84</sup> Although patents are highly valued by corporations, they are not necessarily valued by those who directly manage engineers. A mid-level manager in a large corporation shows his worth by dividing work assignments, overseeing progress, and delivering projects on time. Producing employee patents is rarely a middle-management goal.<sup>85</sup> Thus, managers' interests may diverge from those of the corporation (and society) as a whole. As a result, high-level officers encourage engineers to patent, while immediate managers press the matter less, for fear of losing valuable resources to the often speculative and distracting task of patent prosecution.<sup>86</sup>

Some may point to the internal rewards given to employees who patent as evidence that corporations *do* create incentives for employees to invent. Further, it might be argued that the pure pleasure that comes from

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82. See *supra* Part I.A. (discussing how the right to hold a patent for twenty years encourages inventors to invest time and money in a project).

83. See *supra* Part I.B. (discussing the case of *United States v. Dubilier Condenser Corp.*, holding that an employee not employed to invent may retain the patents to any invention developed during the course of his employment).

84. See Cherensky, *supra* note 4, at 639 n. 207 ("Corporate technical workplaces . . . are hierarchical environments . . . . The support of an engineering manager may be critical to an invention's success (such as in assigning resources) . . . . [T]he manager understandably may have a disincentive for the engineer to invent (and expend time and resources) when the invention is unrelated to an area for which the manager has responsibility or in which the corporation has a bona fide business interest. Yet the invention may be very valuable to society."). See also Dratler, *supra* note 5, at 172-78 (discussing corporate disincentives to patent).

85. Some corporations, including IBM, are so patent driven that they offer mid-management incentives for encouraging employee patents. However, this practice isn't representative of the industry at large. Joe Berghammer, *Power Lunch: Sowing a Culture of Patents*, FOODPROCESSING, [http://www.foodprocessing.com/voices/power\\_lunch.html](http://www.foodprocessing.com/voices/power_lunch.html) (last visited Oct. 23, 2006) (illustrating corporate incentives for employee patents).

86. This refers to *investigating and developing inventions*, not merely the mechanical task of patenting things that have already been developed. See generally Dratler, *supra* note 5 (problematizing corporate patent making)



the act of inventing could be enough incentive to engineers who are already employed. But, in reality, the monetary or promotional rewards offered by corporations are often nominal compared to the power of patent ownership, or the internal satisfaction that comes from contributing to society.<sup>87</sup>

This Section has surveyed two major arguments against pre-invention assignment agreements. One argument is rooted in contract law, and the other is based on the incentive theory of patents. The Section that follows presents a third argument, which arises in circumstances where open source inventions are concerned.

### III. OPEN SOURCE AND PRE-INVENTION ASSIGNMENT

The term, ‘open source’ entered the popular lexicon during the turn of the twenty-first century. Only vaguely understood by many, ‘open source’ describes both a property status and a philosophy shared by a growing number of workers.<sup>88</sup> While some still dismiss this new concept as nothing more than a trend, open source seems to be changing the landscape of our economy and the intellectual commons itself. With these changes come troubling questions of pre-invention assignment which must be addressed.

#### A. *The History of Open Source*

To truly understand the meaning of open source, one must understand its history. The story begins in university, government and corporate computer laboratories of the 1950s and early 1960s. In those early years, the job title of “computer programmer” sounded to most people as modern and incomprehensible as that of “astronaut.” Software was not yet the commodity it is today. In fact, at that time, software was considered to be nothing more than sequences of commands, instructing a computer to reach a particular result. Consequently, early computer programmers freely exchanged the programs they wrote.<sup>89</sup> Hardware companies bundled

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87. See *Id.* at 184 (discussing the weaknesses of such monetary and promotional rewards).

88. *Open Source*, WIKIPEDIA, [http://en.wikipedia.org/wiki/Open\\_source](http://en.wikipedia.org/wiki/Open_source) (last visited Oct. 22, 2006). See also *Open-source Software*, WIKIPEDIA, [http://en.wikipedia.org/wiki/Open\\_source\\_software](http://en.wikipedia.org/wiki/Open_source_software) (last visited Oct. 22, 2006) (describing open source philosophy).

89. See, e.g., Richard Stallman, *My Lisp Experiences and the Development of GNU Emacs, Remarks at the International Lisp Conference* (Oct. 28, 2002) (transcript available at <http://www.gnu.org/gnu/rms-lisp.html>) [hereinafter *Emacs*] (last visited Oct. 23, 2006) (“This spirit of building up gigantic, complicated programs . . . and then exchanging them with other people, fueled the spirit of free-wheeling cooperation that we had at the AI Lab then. The idea was that you could give a copy of any program you had to someone who wanted a copy of it. We shared programs to whomever wanted to use them . . .”).

software free of charge with computer systems, and users were free to copy code and make modifications.<sup>90</sup> This all changed, however, when a company named Applied Data Research (ADR) attempted to sell licenses to a software product it had developed.<sup>91</sup> The program, which ADR held patents in and forbade users from copying, was directed at users of IBM computers.<sup>92</sup> IBM's tactic of bundling similar products with their systems led ADR to initiate a lawsuit against them for unfair business practices. Further, the United States Department of Justice began an investigation of IBM's practices.<sup>93</sup> Ultimately, IBM unbundled their competing program, and many other computer-makers followed suit.<sup>94</sup> Software had become a business, and those who purchased code were forbidden by license agreements from copying or modifying it.

Over the following decades, the computer industry exploded in size, while computer hardware grew ever smaller. By the early 1980s, personal computers were in vogue and a subculture of individuals fascinated by the art and utility of programming no longer needed access to expensive mainframes.<sup>95</sup> Personal computers were affordable, small, and suitable for software development. However, user license agreements and copyright infringement suits dominated the business.<sup>96</sup> Programmers rarely had access to source code,<sup>97</sup> and fears of copyright infringement impeded them from working together in the traditional spirit of scientific collaboration.<sup>98</sup> It was in this environment that Richard Stallman,<sup>99</sup> a computer

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90. See generally Martin A. Goetz, *How ADR Got Into the Software Products Business and Found Itself Competing Against IBM* (1998), <http://www.softwarehistory.org/history/Goetz1.html> (last visited Oct. 23, 2006) (stating that "software was bundled with hardware . . .").

91. See *id.* (providing a full history of ADR, a company dedicated to licensing software to several users for a fixed fee, and the beginnings of the computer software).

92. *Id.*

93. *Id.*

94. *Id.*

95. *Mainframes*, WIKIPEDIA, <http://en.wikipedia.org/wiki/Mainframes> (last visited Oct. 23, 2006) (explaining the history of mainframe computers).

96. *Personal Computers*, WIKIPEDIA, [http://en.wikipedia.org/wiki/Personal\\_computer](http://en.wikipedia.org/wiki/Personal_computer) (last visited Oct. 23, 2006) (chronicling the rise of personal computers).

97. Computer software, as it is written by programmers, is referred to as source code. This type of code is stored as text, viewable on any text editing program, and comprehensible to those who understand the mechanics of the language in which it is written (i.e., C++, Perl, etc.). Source code is compiled by a computer into "object code" – a string of 1's and 0's that, when properly presented to a computer, cause it to behave in the desired way. Although source code can be converted into object code, the reverse is difficult and often impossible. Software vendors typically exploit this fact, only distributing their programs as object code that will allow customers to run, but never read, the program. *Source Code*, WIKIPEDIA, [http://en.wikipedia.org/wiki/Source\\_code](http://en.wikipedia.org/wiki/Source_code) (last visited Oct. 9, 2006).

98. Stallman, *Emacs*, *supra* note 89.

99. See *Richard Stallman*, WIKIPEDIA, [http://en.wikipedia.org/wiki/Richard\\_Stallman](http://en.wikipedia.org/wiki/Richard_Stallman)

programmer, quit his job at MIT and started building a computer operating system that he would share with the world.<sup>100</sup>

Stallman explained his beliefs and motivations in a manifesto. He explained his feeling that software should be “free,”<sup>101</sup> in the sense that it should be freed from intellectual property and contractual constraints.<sup>102</sup> Following this call to arms, Stallman, in 1985, invented and popularized the concept of “copyleft,” a collection of legal mechanisms to keep “free” works capable of being modified and copied.<sup>103</sup> Stallman named his first such license “The GNU General Public License” (GPL),<sup>104</sup> and used it when distributing portions of his free operating system (which he named GNU Unix).<sup>105</sup> By 1991, Stallman had finished much of his work on GNU Unix, with the notable exception of the operating system’s core procedures, known collectively as the kernel.<sup>106</sup> This final piece was supplied by a young programmer from Finland named Linus Torvalds,<sup>107</sup> who dubbed his contribution, ‘Linux.’<sup>108</sup>

Throughout the early 1990s, Stallman’s ideas took root with a large number of computer programmers and engineers. Additionally, the popularity and commercial success of the Linux operating system stood as proof to skeptics that free software worked both as a production model and as a business model.

So confident were businesses in the viability of “free” software that Netscape Communications decided to release the source code of their popular web browser under a public license in 1998.<sup>109</sup> The initiative,

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(last visited Oct. 22, 2006) [hereinafter Stallman] (describing his background and importance in the free software movement).

100. *Id.*

101. A popular explanation for this phrase was, “[F]ree as in free speech, and not free as in free beer.” GNU Project, *supra* note 10 (quotations omitted).

102. *Stallman, supra* note 99.

103. *Id.*

104. GNU (pronounced “guh-noo”) is a rather odd name that warrants some explanation: The letters, G-N-U stand for the phrase, ‘GNU’s Not Unix.’ As the object of this acronym contains the acronym itself, there is an endless recursive spiral contained in the name. Some in the software community regard this as high humor. See Richard Stallman, *The GNU Project*, <http://www.gnu.org/gnu/thegnuproject.html> (last visited Oct. 22, 2006) (discussing the meaning of the GNU name and the history of the GNU project).

105. See *Stallman, supra* note 99 (discussing the creation of the license and its impact on free software development.)

106. *Id.*

107. See *Linus Torvalds*, WIKIPEDIA, [http://en.wikipedia.org/wiki/Linus\\_Torvalds](http://en.wikipedia.org/wiki/Linus_Torvalds) (last visited Oct. 22, 2006) (describing Linus Torvalds’ role in developing the Linux kernel).

108. Linux would go on to achieve greater name recognition than the later GNU project to which it was attached. Linus Torvalds is, at the time of this writing, viewed as a leader of the technology industry. See *Id.* (discussing Torvalds as the world’s authority on the Linux kernel).

109. See *Open Source, supra* note 88 (discussing the history of the open source label and

named 'Mozilla,' was one of the first instances of a corporation releasing proprietary code to others outside the business. As such, those involved wanted to make sure that analysts, shareholders, and the public at large understood their motivations. At a strategy session held by Netscape, it was recognized that the phrase, "free software" was ambiguous. It was feared that many would mistakenly read the term as free of charge rather than free of legal impediments.<sup>110</sup> The term, 'Open Source' was chosen instead.

Today, 'Open Source' refers to creative and inventive works that are donated to the public by their authors under a general public license.<sup>111</sup> As of early 2006, a growing number of important software projects are being developed as open source.<sup>112</sup> These include the Linux operating system,<sup>113</sup> the Mozilla web browser code base (including the popular program, Firefox),<sup>114</sup> the Apache web server,<sup>115</sup> and Eclipse,<sup>116</sup> a development tool. These projects are developed and maintained by individuals. Recently, large corporations such as IBM, have begun devoting resources as well.<sup>117</sup>

Open source is making its way into another industry where patents are highly-valued: hardware.<sup>118</sup> Unlike software, hardware designs are not typically created by hobbyists. As a result, large corporations are getting into the game. In December of 2005, Sun Microsystems announced it would release the source code for one of their microprocessors under an open source license.<sup>119</sup>

the role of Netscape in its development).

110. *See generally id.* (explaining the ambiguity between freedom to use and availability of the source).

111. *See id.* (tracing the historical meaning of open source).

112. *Id.*

113. *See generally* The Linux Homepage at Linux Online, <http://www.linux.org> (last visited Oct. 22, 2006) (providing general information about Linux).

114. *See generally* Mozilla.org – Home of the Mozilla Project, <http://www.mozilla.org> (last visited Oct. 22, 2006) (describing the Mozilla project and information about Mozilla software).

115. *See generally* The Apache Software Foundation, <http://www.apache.org> (last visited Oct. 22, 2006) (describing various Apache projects and the role of the Apache Software foundation).

116. *See generally* Eclipse, <http://www.eclipse.org> (last visited Oct. 22, 2006) (providing background information about the Eclipse open source community).

117. *See generally* developerWorks, <http://www-128.ibm.com/developerworks/opensource> (last visited Oct. 22, 2006) (providing IBM resources and project lists for the open source community).

118. *See Open Source, supra* note 88 (discussing the application of open source technology to computer hardware). Although microchips are physical objects, they are first designed much like software. First, a chip designer describes a chip's behavior using a special computer language. The behavior of the design is extensively tested in software before the code is translated into a physical layout. This author's previous career was in microchip design.

119. Press Release, Sun Microsystems, Inc., Sun Microsystems Launches OpenSPARC

### B. *Open Source and The Goals of The Patent System*

Shifting backward in time for a moment, we consider the meaning of open source with respect to the goals of the patent system. The framers of the constitution were acutely wary of monopolies. Although no drafting record of the Intellectual Property Clause of the Constitution exists, a series of written exchanges between Thomas Jefferson and James Madison at the time of ratification indicates the trepidation felt about monopolies in general. Writing to Madison from France, Jefferson stated:

[I]t is better to . . . abolish . . . Monopolies, in all cases, than not to do it in any. . . . [S]aying there shall be no monopolies lessens the incitements to ingenuity, which is spurred on by the hope of a monopoly for a limited time, as of 14[] years; but the benefit even of limited monopolies is too doubtful to be opposed to that of their general suppression.<sup>120</sup>

In response, Madison conceded that monopolies were “among the greatest nu[i]sances in Government.”<sup>121</sup> However, he advocated their value for the limited purpose of incentives, which might spur people to create and invent “ingenious discoveries.”<sup>122</sup> By the time he drafted the first patent act in 1793, Jefferson had come to tolerate limited monopolies on inventions as a necessary evil to insure that “ingenuity should receive a liberal encouragement.”<sup>123</sup>

One can only wonder what Jefferson would have thought of open source projects. The phenomenon of thousands of creative and inventive workers collaborating together on valuable and useful products, casting their intellectual property rights to the wind seems to undercut the entire incentive theory of intellectual property. The incentives driving these individuals are non-financial, and the benefits to society are instant. The world need not wait twenty long years when the inventor grants their ideas to the public immediately. In open source, we have all of the benefits of

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Project – Ignites New Open Source Community for Breakthrough UltraSPARC T1 Processor (Dec. 6, 2005), <http://www.sun.com/smi/Press/sunflash/2005-12/sunflash.20051206.4.xml> (last visited Oct. 22, 2006).

120. Letter from Thomas Jefferson to James Madison (July 31, 1788), in 13 THE PAPERS OF THOMAS JEFFERSON 442-43 (Julian P. Boyd ed., 1956).

121. Letter from James Madison to Thomas Jefferson (Oct. 17, 1788) in 14 THE PAPERS OF THOMAS JEFFERSON 21 (Julian P. Boyd ed., 1958).

122. *Id.*

123. Letter from Thomas Jefferson to Oliver Evans (May 2, 1807), in 11 THE WRITINGS OF THOMAS JEFFERSON 202 (Andrew A. Lipscomb ed., Memorial ed. 1904). It’s not surprising that monopolies were extremely unpopular at the time. After all, it was a monopoly on tea that started the war with the British. *Tea Act*, WIKIPEDIA, [http://en.wikipedia.org/wiki/Tea\\_Act](http://en.wikipedia.org/wiki/Tea_Act) (last visited Oct. 22, 2006) (indicating a monopoly on tea was a contributing cause of the American Revolution).

intellectual property that the constitution aimed for, without any of the costs.

Despite the radical implications behind open source, there is no reason to assume that traditional intellectual property will ever be obsolete. While it might be tempting to view open source projects as evidence that the “necessary evil” of intellectual property is not actually necessary after all, a brief look at the reality of open source forecloses such visions. The vast bulk of all open source projects are software-based.<sup>124</sup> Software represents but one thread in the vibrant tapestry of all intellectual property works. While programmers have found it desirable to donate their work to the public, other types of inventors and creative workers are not all doing the same. Open source was born in, and it seems will remain in, the realm of technology and information. Thus, patent law as a whole is in no way threatened by the GPL. Rather, some types of projects require traditional patent incentives, while other works are capable of flourishing independently.

### C. *Open Source and Pre-invention Assignment*

Imagine the following scenario: Engineer Edison works for Solar Systems, a large computer company. Like all employees of Solar, Edison signed a pre-invention assignment agreement when he was hired. The agreement states that Solar owns all patentable software inventions Edison develops during his employment, regardless of where and when the inventions are developed. Over the past six months, Edison has spent his evenings contributing to the Linux operating system. One of his most recent contributions contained a few brilliant lines of code that solved a long-standing problem. Hearing of Edison’s invention, Solar’s management became interested in claiming ownership of the work and told him to file for a patent. This scenario raises the central inquiry of this Comment: When an engineer contributes patentable work to an open source project, should their employer be able to assert ownership of the invention based upon a pre-invention assignment agreement? Given the ubiquity of pre-invention assignment agreements and the rising popularity of open source participation, the question seems quite natural. Surprisingly, there is scant judicial opinion on the matter. This provides an excellent opportunity to explore and reconsider pre-invention assignment in light of open source.

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124. See generally, *Open Source*, *supra* note 88 (noting that, although the concept of open source has been applied to non-software subject matter, it began in the realm of computer software).

For several reasons, it seems clear that courts should not, and sometimes cannot, enforce pre-invention assignment agreements when open source inventions are in question. Unlike traditional pre-invention assignment disputes, the question raised is not whether a patent should belong to an inventor or her employer; the question is whether an invention that has been donated to society can be recaptured and controlled by the inventor's employer.

The Patent Act's statutory bar on public use could prevent an employer from recapturing inventions in this way. Section 102 of the Act specifically denies patents to inventions "described in a printed publication in this or a foreign country *or in public use* . . . more than one year prior to the date of the application for patent in the United States."<sup>125</sup> The Supreme Court has construed the meaning of 'public use' quite broadly. In fact, the public at large need not even be apprised of an invention so long as the invention is used outside the inventor's control.<sup>126</sup> Based on this construction, a patentable piece of software contributed to an open source project would probably be considered in public use. Even if the inventor's code was never technically *utilized* by an open source project, the act of publicly demonstrating the code, and allowing others to share it in an unconstrained fashion, would likely be seen as public use. This would be a powerful argument against patentability and a strong defense against a claim of infringement by a third party.

However, the Patent Act leaves room for argument on this point. If the employer compelled the inventor to apply for a patent within one year of the critical date of invention, the public use bar would not prevent the patent from being granted, or conveyed to the employer. Of course, the inventor himself would have to apply for the patent, as the Patent Act only grants patents to individual inventors and not organizations.<sup>127</sup>

Another question arises in the case of uncooperative employees. What would happen if an inventor, already having donated their work to the open source community, refused an employer's request to file for a patent? One can imagine employment being discontinued, but could the employer take legal action? Could they sue an employee who distributed source code just as one might sue an employee for releasing a trade secret to the public?

Absent the public use bar, a court facing such questions in an infringement suit would be dealing with a question of public policy. One

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125. 35 U.S.C. § 102(b) (2002) (emphasis added).

126. *See, e.g.*, *Egbert v. Lippmann*, 104 U.S. 333, 336 (1881) (holding unrestricted use by a close associate is sufficient to trigger public use); *Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 1265-67 (Fed. Cir. 1986) (emphasizing the importance of "free and unrestricted use." (quoting *Moleculon Research Corp. v. CBS, Inc.*, 594 F. Supp. 1420, 1427 (D. Del. 1984))).

127. 35 U.S.C.A. § 111(a)(1) (2002).

source of guidance is the Federal Circuit's description of the policies underlying the public use bar. These include:

*(1) discouraging the removal, from the public domain, of inventions that the public reasonably has come to believe are freely available; (2) favoring the prompt and widespread disclosure of inventions; (3) allowing the inventor a reasonable amount of time following sales activity to determine the potential economic value of a patent; and (4) prohibiting the inventor from commercially exploiting the invention for a period greater than the statutorily prescribed time.*<sup>128</sup>

This explanation argues against granting a patent for two reasons: First, and most apparently, there is a strong aversion to removing inventions from the public domain if the public has already come to rely upon their availability. This is exactly what is threatened in the scenario described above. Second, it seems that the one year grace period exists largely to allow inventors time to determine the value of their inventions. In the scenario described above, the grace period was only utilized as a window through which the employer leapt upon the invention in an effort to reclaim it. Thus, the Federal Circuit's policy viewpoints argue against granting a patent.

Another argument against granting patent rights comes from the Constitution itself. Here, the argument is clear: There is no reason to utilize the "necessary evil" of patent rights for inventions that society has already received for free. Typically, it's impossible to know whether an invention would have been created absent the incentives created by intellectual property laws. However, in the open source hypothetical proposed here, the inventor has demonstrated that his work was not motivated by the promise of a patent. The patent incentive played absolutely no role in the creation and disclosure of the invention. In fact, intellectual property rights were explicitly discarded by the inventor. Thus, disregarding a pre-invention assignment agreement in this situation would meet the end-goal of patent law, without harming the incentive theory upon which it is based.

Finally, it is interesting to consider the strength and importance of the pre-invention assignment in the context of uncooperative employees. While a pre-invention assignment agreement vests an employer with ownership of a patent, it does not transfer ownership of ideas that have been made public. Further, such a contract cannot compel an employee to the specific performance of filing a patent. Thus, while the specter of a pre-invention assignment agreement might influence an employee's desire

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128. *Tone Bros., Inc. v. Sysco Corp.*, 28 F.3d 1192, 1198 (Fed. Cir. 1994) (emphasis added).



to please their employer, it would have no power to compel an uncooperative employee to file.

Ultimately, the open source question can be considered from a number of angles. If an employee cooperates and attempts to file for a patent after having released his or her code into the wild, the Patent Act's public use statutory bar could create a roadblock. Absent this limitation, there are policy arguments that a court might heed for not issuing patent rights in such a circumstance. These arguments are rooted in the language of the Constitution, and the Federal Circuit's interpretation of the policies underlying the public use bar. Interestingly, it is unclear whether an uncooperative employee who refuses to file for a patent would be able to block his or her employer from taking ownership of the invention.

#### *D. Infringement Claims Under GPL, Version 3*

The General Public License (GPL), first written by Richard Stallman in the 1980s, is the principal vehicle by which software enters the open source community. Today, the GPL is maintained by the Free Software Foundation, an organization established by Stallman to promote the ideals of free software and open source.<sup>129</sup>

While most commercial end-user license agreements restrict the rights of users to copy and modify code, the GPL aims to give users rights.<sup>130</sup> Specifically, the license grants users the right to distribute copies of the program, and the right to modify the program and distribute derivative works.<sup>131</sup> Further, the GPL prevents protected software from being 'locked-up' by a party who incorporates it into a proprietary product.

129. FSF – The Free Software Foundation, <http://www.fsf.org> (last visited Oct. 22, 2006).

130. The preamble to version three of the GPL states: "The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software—to make sure the software is free for all its users. . . . You can apply it to your programs, too. When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things." *GPLv3 First Discussion Draft* (Jan. 16, 2006), <http://gplv3.fsf.org/gpl-draft-2006-01-16.html> [hereinafter GPLv3] (last visited Oct. 22, 2006). See also, *Open Source*, *supra* note 88 (describing the history and development of open source and the ability of users to obtain and modify open source software).

131. See generally, *GNU General Public License, Version 2* (June 1991), <http://www.gnu.org/licenses/gpl.html> (last visited Oct. 22, 2006) [hereinafter GPLv2] (noting that the GPLv2 protects a user's right to distribute and modify software).

In December of 2005, the Free Software Foundation released a draft proposal of the third version of the GPL, the first update to the document in fifteen years. Notably, many of these updates address the issue of software patents. The first hint of the changes appears in the preamble to the license, which states:

[E]very program is threatened constantly by software patents. We wish to avoid the special danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, the GPL makes it clear that any patent must be licensed for everyone's free use or not licensed at all.<sup>132</sup>

To implement these changes, the Free Software Foundation first introduced a new section explicitly granting a "patent license [that] is nonexclusive, royalty-free and worldwide, and covers all patent claims you control or have the right to sublicense."<sup>133</sup> Further, GPLv3 protects downstream users from patent infringement suits. In the past, if a party redistributed patented code it had licensed from its owner, the patent owner could sue anyone who received the code for patent infringement. GPLv3 addresses this issue by requiring distributors of code to protect downstream users.<sup>134</sup> Finally, GPLv3 permits patent retaliation – the termination of the license for parties that bring patent infringement lawsuits pertaining to the work.<sup>135</sup>

These changes could have an impact on employers seeking patent ownership of code distributed by employees under the GPL. Even assuming that an employer had a claim to an employee's patented work, the employee's act of distributing it under GPLv3 explicitly grants a worldwide non-exclusive license. Even if it is not to an employer's liking, and even if the act exceeded the employee's authority, the license would prevent the employer from bringing infringement claims against others who use the software. The protection for downstream users would also prevent an employer from taking such action. Finally, a carefully-crafted patent retaliation clause might give an employer pause before bringing a suit regarding patent ownership. GPLv3 provides further impediments to employers seeking ownership of their employees' open source inventions. Taken in combination with the public use bar, policy valuations made by the Federal Circuit, and the constitutional purpose behind the Patent Act itself, the conclusion is clear: Courts should not permit employers to

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132. GPLv3, *supra* note 130.

133. *GPLv3 Second Discussion Draft Rationale 24*, <http://gplv3.fsf.org/rationale> (last visited Oct. 11, 2006).

134. *See* GPLv3, *supra* note 130, at § 10.[6] (noting that "Each time you redistribute a covered work, the recipient automatically receives a license from the original licensors, to propagate and modify that work . . .").

135. *Id.* at § 7(e).

recapture patentable inventions that have already been released into the open source wilds.

#### IV. CONCLUSION

This article opened with a description of a public park. Long ago, this was the only sort of commons that served the general public. Society benefited from these pastures, and maintained them either through taxes, donations, or actual labor.

Our nation's founders appreciated another type of commons: the landscape of ideas. Despite their wariness of monopolies, the Constitution's drafters recognized that granting exclusive rights to inventive works was critical to their production. This belief was enshrined in Article I of the Constitution, which granted Congress the ability to "promote the Progress of Science and useful Arts" via such incentives.<sup>136</sup>

The immediacy with which the Patent Act of 1790 was drafted reflects the great importance it had in the minds of the founders. Their focus on spurring innovation nearly 100 years before the Industrial Revolution was widely-recognized and seems today almost prescient. However, perhaps it reflects a (somewhat clichéd) truth that was as true in 1790 as it is today: knowledge is power. To a government, technology can be a source of military might, and an engine of economic growth. However, it is doubtful that men such as Madison and Jefferson could have ever predicted the immense impact the Patent Act would have on business and employment law in the ninetieth through twenty-first centuries.

Issues of employment law and invention surfaced during the Industrial Revolution. Employers of engineers struggled during this period to seize patents generated by their employees. These suits were met with mixed success, but helped shape a set of common law doctrines that addressed difficult questions of employee invention. Most notably, the employed-to-invent doctrine prevented employees who had been tasked to invent from denying patent rights to their employers.<sup>137</sup> Further, in cases where employer resources had aided an invention's development, employers were often said to possess a "shop right" —a nonexclusive license—to use the invention.<sup>138</sup>

Unfortunately, pre-invention assignment agreements rendered these equitable solutions largely meaningless. And, rather than grappling with the troublesome implications of these forced agreements, courts of the early

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136. U.S. CONST. art. I, § 8

137. See *supra* Part I.B. (discussing the development of the employed-to-invent doctrine).

138. *Id.*

twentieth century generally followed a plain and simple path of enforcement.

It might be argued that, from a societal viewpoint, it does not matter whether inventors or companies are granted patent rights in a given dispute. Regardless of the outcome, the public must wait a full patent term of twenty years until the ideas fall into the public domain.<sup>139</sup> However, the same cannot be said in cases involving open source. In those circumstances, the interpretation of a pre-invention assignment agreement could have a dramatic impact on the ultimate benefit society receives: If the agreement is disregarded, society receives a valuable invention absolutely free. The goals of the patent system are met without the cost of a twenty-year grant of exclusive rights. On the other hand, if such agreements are enforced, inventions could be yanked back out of the commons where they had been placed. Equally disturbing, an inventor could be sued by her employer for having distributed an unpatented invention, which, under a pre-invention assignment agreement, is the property of the corporation.

This article has discussed several traditional arguments against pre-invention assignment agreements, and delved into the history of the Patent Act itself. Long before open source, many commentators took issue with the unfairness of pre-invention assignment agreements from a contract-based perspective. Still others expressed fear that such agreements would stifle innovation. Looking to the future of open source, an equally troubling threat looms: Conceivably, an employer could pressure employees to apply for patents on works already distributed to the public. Worse, uncooperative employees could be sued for breaching an agreement that transferred unpatented ideas to their employer. Looking to history and policy, courts must recognize that it defies the very core of our patent system to remove what has already been donated to the intellectual commons. Further, it is plainly unjust to punish an employee who, off the company clock, performed a service for her community.

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139. See 35 U.S.C. § 154 (a)(2) (2002) (noting that the term of a patent is twenty years).