

INVENTORS OF THE WORLD, UNITE! A CALL FOR COLLECTIVE ACTION BY EMPLOYEE-INVENTORS

Ann Bartow*

I. INTRODUCTION

Many successful inventions have developed accidentally.¹The now omnipresent "Post-it" note evolved out of a failed attempt to make super-strong adhesive.² A recently developed nontoxic replacement for dry cleaning solvents was unintentionally invented during research into the use of carbon dioxide to synthesize polymers.³ An inventor attempting to originate a new type of Freon inadvertently invented Teflon.⁴ The accidental observation that radio waves bounced off passing ships led to the idea for radar, and an experiment with a magnetron that resulted in a chocolate bar melting in the pocket of a researcher led to the microwave oven.⁵ The spontaneous origination of revolutionary and profitable ideas such as these can be comparable to winning a well endowed lottery, but who should get to pocket the check?

While technological innovation is often lauded as the cornerstone of the American economy into the next century, and both governmental and private observers ponder with fascination and some trepidation the ability of U.S. companies to reach and sustain high levels of innovative productivity, very little attention is paid to actual inventors. This article is one effort to draw attention to the importance of employee-inventors, the people who conceive and develop the inventions that American

* Honorable Abraham Freedman Fellow and LL.M. Candidate (Spring 1997), Temple University School of Law; J.D., University of Pennsylvania Law School, 1990; B.S. in Industrial & Labor Relations, Cornell University, 1985. The author would like to thank the Temple School of Law faculty for all of the advice and support, especially Marina Angel, Rick Greenstein, Joey Passon, Alice Abreu, Don Price, Sharon Harzenski, Jan Levine, Molly O'Brien and Debbie Zalesne. This article is dedicated to James McKenney and Cassey Bartow-McKenney.

¹ See generally JAMES BURKE, *JOURNEYS THROUGH KNOWLEDGE* (1996).

² Martine Costello, *Five Mistakes Every Good Manager Should Make*, *WORKING WOMAN*, May 1996, at 60.

³ Christopher Kirkpatrick, *UNC Professor Markets Nontoxic Industrial Soap*, *CHAPEL HILL HERALD*, Nov. 22, 1996, at 1.

⁴ Robert Friedel, *The Accidental Inventor*, *DISCOVER*, Oct. 1996, at 58.

⁵ *Id.*

corporations rely on for growth and profitability. Though "it is universally accepted that skills gained by an employee in the course of his employment belong to him alone,"⁶ when a patentable invention results from the diligent application of these skills, most employee-inventors are completely deprived of all ownership rights and privileges.

The role of employee-inventors within their employing entities (hereinafter referred to as "inventor employers") and within society is unique. An inventive individual with specialized scientific training who toils in a research facility performs a very different social and economic function than an assembly line or service worker, educated or not, who rotely performs the same small repertoire of tasks. While the assembly line or service worker can be expected to produce a predictable amount of goods or services within a given time frame, and with a value that can be accurately estimated, even brilliant and diligent labor by a properly equipped and well supported inventor offers no assurance of a profitable or even useful outcome, regardless of the amount of money or time invested. A corporation cannot just build a laboratory, stock it with equipment, hire individuals proficient in the applicable technology and expect patentable inventions to be methodically produced. Because an employer of potential inventors, typically a large corporation, assumes the financial risk that investments in research and development will not generate a positive return, the employer expects to reap the full rewards of any profitable invention. One of the ways such an inventor employer typically seeks to accomplish this goal is by requiring all potential inventors (and, increasingly, all but the most marginal employees)⁷ on its payroll to sign pre-invention assignment agreements as a condition of employment.⁸ These agreements require signatory employees to assign to the employer all rights to inventions conceived by the employee while at work, or in subject matters related to work, or while using any resources of the employer.⁹ Because employee-inventors may themselves invest extraordinary amounts of time, education, training, intellect, energy, and waking and sleeping thought to the innovative and usually complex ideas they originate and reduce

⁶ Paul C. Van Slyke & Mark M. Friedman, *Employer's Rights to Inventions and Patents of its Officer's, Directors & Employees*, 18 AM. INTELL. PROP. L. ASS'N Q.J. 127, 134 (1990).

⁷ 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) (noting that certain corporations require "janitors and secretaries" to sign pre-invention assignment agreements).

⁸ See Mark B. Herskovitz, *Unhitching the Trailer Clause: The Right of Inventive Employees and Their Employers*, 3 J. INTELL. PROP. L. 187 (1995). Even when there is no such contract between the employee and employer, courts will sometimes find that a pre-invention assignment agreement between the parties was "implied." See *Teets v. Chromally Gas Turbine Corp.*, 83 F.3d 403 (Fed. Cir. 1996). See also *Fish v. Air-O-Fan Prods. Corp.*, 285 F.2d 208 (9th Cir. 1960); *E.F. Drew & Co. v. Reinhard*, 170 F.2d 679 (2d Cir. 1948).

⁹ See Hershovitz, *supra* note 8, at 197.

to practice, and because such employee-inventors may not be able to secure any employment in their areas of expertise unless they sign pre-invention assignment agreements,¹⁰ such agreements are unfair to innovators.¹¹

It is unjust that an employer reaps all of the rewards of a valuable patent as the "payoff" for the resources it devotes to an invention, but an employee-inventor who has also made a substantial investment in the inventive process - potentially at a level of personal sacrifice disproportionately greater than any financial or "opportunity cost" risk assumed by the employer - is usually precluded by a pre-invention assignment agreement from profiting from the fruits of his or her labor in a manner commensurate with, or even proportional to, the value and utility of an invention, and may not benefit from her invention at all.¹² In fact, as discussed below, employee-inventors are often "rewarded" for innovations with group censure and the loss of their jobs.¹³ Thus, the patent laws of the United States, which are intended to foster innovation, are premised

¹⁰ See *supra* note 7; *infra* Part II. See also Ron Riley, *Inventors Deserve Their Fair Share*, MACHINE DESIGN, Mar. 21, 1994, at 109 ("All companies present a unified front to potential employees with [pre-invention assignment] contracts that deny inventors fair compensation.").

¹¹ The inventive employee has persuasive claims to inventions developed during the employment relationship. Recognizing the valuable resources that employers invest in an inventive employee's creative talent, it is still an employee's genius that coalesces concepts into inventions. Compared to the resources provided by the employer, the inventive employee views his genius as an equal, if not greater, ingredient in the inventive process.

Hershovitz, *supra* note 8, at 190 (footnotes omitted). See also Riley, *supra* note 10, at 109 ("Inventors tend to work night and day to develop their ideas. Inventions are usually the result of years or decades of experience and dedication. The effort that goes into creating a patentable idea is far greater than what is reasonable to expect from an employee.").

¹² A corollary to the inventive employee's belief that the value of his creative genius should vest the rights to his invention in himself is the belief that inventive employees are under-compensated for inventions they create. This belief is not unfounded. Many large American corporations known for their efforts in research and development do not give bonuses to employees who receive patents. For those companies that do reward successful inventive employees, it is not uncommon for the reward to be as little as one dollar if not merely a congratulatory plaque. This holds true regardless of the value of the invention to the employer.

Hershovitz, *supra* note 8, at 190-91 (footnotes omitted). See also Riley, *supra* note 10, at 109 ("[Pre-invention assignment agreements] drain a person's productivity in the same manner that communist countries stifled their workers [sic] will to produce. Pure socialism does not motivate people to be productive, yet we tolerate a socialist approach to inventions as the norm in the U.S. This practice harms our competitive position because it leads many inventors and potential inventors to ignore developing their ideas. Capitalism as an incentive system, on the other hand, works well because individuals work hardest when they stand to personally gain from their efforts. The same principle applies to motivating creative people.").

¹³ See discussion *infra* Part I.B.

on the now false assumption that inventors own, and therefore benefit from, the patents obtained on their inventions. In fact, the monopoly incentive completely sidesteps inventors, who have no incentive to innovate if they can find a better job doing something else.¹⁴

This article first reviews the disincentives to innovate¹⁵ confronting the typical employee-inventor,¹⁶ who is forced to assign all of the rights to any patentable invention she develops to her employer without compensation. Next, this article considers mechanisms for eliminating (or at least minimizing) these disincentives suggested by other scholars, the implementation of which require either new legislation or changes in judicial interpretation, or sometimes both. Finally, this article proposes a unique solution for solving the disincentive problem: Rather than waiting for Congressional or Judicial action, as neither is likely imminent, inventors should organize and act collectively, by refusing to sign any pre-invention assignment agreements in the future, by "revoking" pre-invention assignment agreements currently in effect (either through

¹⁴ According to law professor Samuel Oddi, every moral justification for our current patent system assumes that it is the inventor that reaps the rewards of a profitable patent. A. Samuel Oddi, *Beyond Obviousness: Invention Protection in the Twenty-First Century*, 38 AM. U. L. REV. 1097, 1107-08 (1989) [hereinafter Oddi I]. He asserts that, for example, the Natural Right theory holds that all inventors are entitled to patents as their own property. *Id.* He states that the Reward by Monopoly theory assumes that inventors should receive rewards for their inventions in proportion to the invention's usefulness to society, and that this is best achieved by awarding monopolistic patents to inventors. *Id.* Similarly, he claims the Patent as Privilege theory contends that patents are granted to inventors in the interest of society as an inducement to create and disclose inventions. *Id.*

Furthermore, noted intellectual property lawyer Kate Murashige explained in her article that:

Commentary suggests that a patent system (whereby an inventor is rewarded for his contribution to progress by being granted a limited monopoly in exchange for a complete disclosure of the invention to the public) can have either or both of two philosophical bases. Either the monopoly is conferred because the inventor 'deserves' it or because society wishes to induce the investment of time and resources necessary to create the invention. It is simpler to design a patent protection system to exert one or the other desired effect. If the monopoly is simply the inventor's just reward, a certain infrastructure and system of values must exist to make the monopoly useful. Such use could occur either directly through exploitation by the inventor or his agents or through the ability of the inventor to "hold up" other potential manufacturers or distributors by requiring licenses to some portion of the end product.

Kate Murashige, *Harmonization of Patent Laws*, 16 HOUS. J. INT'L L. 591, 592 (1994) (footnotes omitted).

¹⁵ For the purposes of this article the terms "invent" and "innovate" will be used synonymously, as will "invention" and "innovation."

¹⁶ The term "employee-inventor" is used to refer to any employee who invents, or has the potential to invent a patentable product or process. It does not refer strictly to employees who are specifically hired to research and develop new patentable inventions.

negotiations with the companies they work for, or by changing jobs and refusing to sign such agreements with new employers), and by retaining ownership of their patented inventions to exploit or license themselves, or with the assistance of a patent collective organized by and for inventors.

I am far from the first lawyer with an intellectual property background to notice and write about the plight of individual inventors.¹⁷ However, this article does propose a solution that does not require substantive action by either the Legislature or the courts¹⁸

¹⁷ See, e.g., Jay Dratler, Jr., *Incentives for People: The Forgotten Purpose of the Patent System*, 16 HARV. J. ON LEGIS. 129 (1979) [hereinafter Dratler]; Mark B. Baker & Andre J. Brunel, *Restructuring the Judicial Evaluation of Employed Inventors' Rights*, 35 ST. LOUIS U. L.J. 399 (1991) [hereinafter Baker & Brunel]; Steven Cherenky, *A Penny for Their Thoughts: Employee-Inventors, Pre-Invention Assignment Agreements, Property, and Personhood*, 81 CAL. L. REV. 597 (1993) [hereinafter Cherenky]; William P. Hovell, *Patent Ownership: An Employer's Rights to His Employee's Invention*, 58 NOTRE DAME L. REV. 863 (1983) [hereinafter Hovell]; Henrik D. Parker, Note, *Reform for Rights of Employed Inventors*, 57 S. CAL. L. REV. 603, 608 (1984) [hereinafter Parker].

One individual rather colorfully described his assessment of the very situation I am describing as follows:

The reason the United States is falling behind Japan and Germany in technology and industrial competitiveness may be because Germany and Japan have mandatory compensation for employed inventors, whereas in the United States, employed inventors are forced to sign contracts relinquishing any rights to their inventions. The scientist is a calculating man, just like the businessman or accountant, maybe even better with figures. He thinks, "What if I bust my neurons and come up with a great invention, like the light bulb or transistor? The most I could hope for from my tightwad employer would be a dollar as a legal consideration for assigning the invention. Maybe I should just take it easy and do basic research, or hack work in product and process improvement." This may be why Thomas Edison was drenched in perspiration 99 percent of the time (a patent every two weeks). Edison had incentives: He could earn a hundred grand or so from an invention - good money in those days. The reader might ponder whether it is more important to be first in science and technology, or in business management. The Gulf War demonstrated the efficacy of technological superiority. Perhaps the founding fathers were right in giving Congress the power to grant inventors the exclusive rights to their inventions, and perhaps it is time for Congress to exercise this prerogative.

Jim Benson & Irving Park, Editorial, CHI. SUN-TIMES, June 22, 1994, at 40.

¹⁸ Neither Congress nor any Federal Court has shown any marked inclination to increase incentives to innovate by legislatively or doctrinally strengthening the positions of employee-inventors. Congressional failure to act is described *infra*, and rulings by the Federal Circuit in employee/employer disputes have generally favored employer inventors. See, e.g., *Teets v. Chromalloy Gas Turbine Corp.*, 83 F.3d 403 (Fed. Cir. 1996) (employee hired for general purpose who developed patentable invention found to be party to "implied in fact" pre-invention assignment agreement and was therefore required to assign rights in invention to employer). See also Evelyn D. Pisegna-Cook, *Ownership Rights of Employee Inventions: The Role of Pre-invention Assignment Agreements and State Statutes*, 2 U. BALT. INTELL.

(though some might be helpful), but simply organized activity on the part of employee-inventors. Although the collective action proposed is somewhat novel in the patent context, allowing employee-inventors to retain ownership of their patents is hardly a radical idea. In fact, unless an employee is specifically hired to invent something in particular (an "invention-for-hire"), retention of ownership by the inventor is exactly what the common law dictates, which is the very reason employers force pre-invention assignment agreements upon their new hires so aggressively.¹⁹

II. SUBVERSION OF THE GOALS OF THE PATENT SYSTEM

A. *Investment is Treated as a Proxy for Invention*

It has long been acknowledged that two major propositions underlie the patent system of the United States: First, American patent law "encourages more invention and innovation than our economic system would otherwise provide; and second, a statutory monopoly is the best inducement for inventors under a patent system."²⁰

Most non-inventor participants in innovative ventures such as managers, venture capitalists, and intellectual property lawyers appear to agree with the general sentiment that an inventor should reap rewards for her inventions.²¹ Most of these individuals also agree, usually emphatically, that the possibility of lucrative economic return spurs

PROP. L.J. 163, 172-73 (1994) (footnote omitted) ("The general tendency of the courts to uphold these contracts demonstrates the significant power that has been transferred to the employer and taken away from the employee by way of the preinvention agreement.").

¹⁹ See discussion *infra* Part II. See also Baker & Brunel, *supra* note 17, for a detailed description of how the common law allocates rights in a patentable invention between employees and employers.

²⁰ Oddi I, *supra* note 14, at 1113.

²¹ A. Samuel Oddi, *TRIPS - Natural Rights and a "Polite Form of Economic Imperialism,"* 29 *VAND. J. TRANSNAT'L L.* 415 (1996) [hereinafter Oddi II].

Generally two lines of reasoning have been offered as natural-rights justifications for patents. One is the "first occupancy" thesis: The person who discovers or creates an invention should be entitled morally to its exclusive use. This appears to be the approach of the "rights of man" implemented in the French Patent Act of 1791. The other thesis is a "labor" justification for natural rights treatment. It is based on the principle that the person who expends labor in creating intellectual property - an invention - should be morally entitled to the fruits of that labor. This is a Lockean approach based upon the premise that labor is unpleasant, and those who engage in it deserve, in justice, to be rewarded. There is, however, an instrumentalist aspect to this theory, in that society should want to provide rewards to induce individuals to engage in distasteful but socially beneficial labor.

Id. at 427-28 (footnote omitted)

innovation.²² In fact, most would articulate the goals of the patent law and the patent system as being to reward and encourage inventors.²³ However, these same individuals will undoubtedly strongly oppose the proposal for collective action contained in this article, because in their world view, the term "inventor" connotes the corporation, university or other macroentity that gave rise to the invention and it is the employers of inventors, and not the inventors themselves, who should reap the benefits of patent monopolies.

The generally unstated assumption that institutions such as corporations or universities are the "real" inventors is evidenced by the fact that the two are often used interchangeably by intellectual property law practitioners, and even sometimes scholars,²⁴ despite the fact that by statute only living, breathing people can be named in patents as inventors.²⁵ Even those who happen to notice the difference between employee-inventors and inventor employers don't seem particularly troubled by the distinction. For example, in "Justifying Intellectual Property," philosopher Edwin Hettinger notes in passing, toward the end of his article that generally "prospective employees are required to give the rights to their inventions and works of authorship to

²² See, e.g., Murashige, *supra* note 14, at 594 ("There is no question that the patent system encourages research, development, and beneficially rewards successful R&D outcomes."). See also Hershovitz, *supra* note 8, at 189 ("The prospect of a limited monopoly is a powerful incentive encouraging the creating of intellectual property. Indeed, courts have recognized the prospect of receiving a patent as an inducement to invent and invest.").

²³ Some would argue that only the encouragement of innovation is a *goal* of the patent system, and that rewarding inventors with a temporary monopoly is simply a necessary evil. See, e.g., Oddi I, *supra* note 14, at 1107-10.

²⁴ See generally Oddi I, *supra* note 14; Oddi II, *supra* note 21; Murashige, *supra* note 14.

²⁵ The Patent Act states that, "A person shall be entitled to a patent" 35 U.S.C. 102 (1972). In fact, being named and registered as the inventor of a patented product or process is typically the only twig out of the bundle of property rights bestowed on a patented invention that an employee-inventor who has signed a pre-invention assignment agreement can even hope to hold on to. Cf. Lucy Gamon, *Patent Law in the Context of Corporate Research*, 8 J. CORP. L. 497, 512-13 (1983) ("The most drastic suggestion for changing the current patent law to accommodate the inventive process of the corporate research team would be to allow corporate patents. The entire corporation would be treated as a monolithic entity and be allowed to sign the patent application in its own name. Two coworkers employed by the same corporation could file a joint application or be listed as co-inventors on an application that the corporation filed. If a corporation, as the real party in interest, were permitted to sign the patent application of employees, the knowledge of new inventions released to the public would be greatly increased. Instead of keeping their inventions secret, corporations would disclose them in patent applications. The definition of prior art for the corporation would be that which is obvious to a person having 'ordinary skill in the art' *outside* the corporation at the time when the invention was being manufactured within the corporation. It would seem to be of little significance to the public which employees contributed to the final invention, since all the patent rights will eventually belong to the corporation anyway.").

their employers as a condition of employment, and independent authors or inventors who earn their living by selling their writings or inventions to others are increasingly rare."²⁶ This aside is contained in Hettinger's essay examining the philosophical basis for intellectual property rights, in which he chose to focus on the "labor arguments for intellectual property, one based on desert [as a function of effort], the other based on a natural entitlement to the fruits of one's labor,"²⁷ when he might have more usefully considered desert as a function of investment and natural entitlement to the fruits of one's employee's labor.²⁸ In addition, in at least one case, several judges who now sit on the Federal Circuit Court of Appeals drew a jurisprudential distinction between human inventors and the "true inventive entity" that employed them.²⁹ It is this refusal to see individual human beings as the sparks necessary to ignite sometimes enormous research and development engines that obscures any realization that inventors might require the same sorts of economic incentives as companies in order to be optimally productive.

B. *Misdirection of Incentives to Innovate*

²⁶ Edwin C. Hettinger, *Justifying Intellectual Property*, 18 PHIL. & PUB. AFF. 31, 46 (1989).

²⁷ *Id.* at 43.

²⁸ He goes even further afield in a discussion of whether "the right to exclude others from using one's invention or copying one's work of authorship" is "essential" to an individual's sense of sovereignty, security and privacy, and inventor employers will be relieved to note that he decides that it is not. *Id.* at 45-46. Employers, inventors or potential inventors will be even more assuaged that while he makes the management-troubling assertion that "an author's or inventor's sense of worth and dignity requires public acknowledgment by those who use the writing [or invention]," he concludes that "giving the author or inventor the exclusive right to copy or use her intellectual product is not necessary to protect this ... [and is] not important to one's privacy." *Id.* Hettinger then considers whether "intellectual property is a necessary incentive for innovation and a requirement for healthy and fair competition." *Id.* at 47. He asserts that "the strongest and most widely appealed to justification for intellectual property is an utilitarian argument based on providing incentives," and that "the justifiability of copyrights, patents, and trade secrets depends, in the final analysis, on this utilitarian defense." *Id.* In other words, he concludes that according to the utilitarian argument, which he claims is the only viable justification for the existence of the patent system altogether, "promoting the creation of valuable works *requires* that intellectual laborers be granted property works in those works," yet does not appear particularly concerned that by extrapolation of his own analysis, the creation of valuable works is not currently being promoted by the patent laws because, as he admits, "intellectual laborers ... are required to give the rights to their inventions and works of authorship to their employers as a condition of employment." Hettinger, *supra* note 26, at 47 (emphasis added).

²⁹ *Haskell v. Colebourne*, 671 F.2d 1362 (C.C.P.A. 1982) (holding that a patent attorney does not necessarily prepare a patent application on behalf of particular named persons, but on behalf of "a true inventive entity," and thus draft application prepared on behalf of two inventors could stand as evidence of conception of invention by one of the named inventors and two other subsequently named inventors).

Incentives to invent are misdirected both on a macro scale, by societal institutions, and on a micro scale, by individual entities that employ individuals with inventive capabilities. The professed intent of U.S. patent laws has always been to foster innovation by rewarding inventors for conceiving and reducing to practice novel, nonobvious innovations,³⁰ but realization of this objective has been impeded by corporate usurpation of inventive bounty. The courts assist companies in so doing by routinely upholding pre-invention assignment agreements, enabling employers to avoid the allocation of patent rights between employee-inventor and inventor employer dictated by the common law.³¹ The failure of state and federal legislatures to recognize and react to this subversion of the goals of the patent system reflects their tacit acceptance of current practices, as if the status quo reflects the proper order of things.

De facto governmental favoritism of investors, and the apparent disinterest in the lot of actual inventors, gives companies involved in inventive pursuits license to marginalize employee-inventors and treat them as they do any other non-management employee despite the uniqueness of their function. Corporations, in turn, individually misdirect innovative incentives by failing to encourage and support inventive employees, by restricting the scope of innovation to market driven target projects, and by failing to reward even those employee-inventors who develop profitable, patentable inventions.³²

Other than a consuming love for the process of innovation, there are few incentives to become an employee-inventor. The summer after my second year in law school in the late 1980s, I clerked in the immigration law department of a large law firm, and found myself preparing temporary work visas for foreign biologists, physical scientists and engineers, most with Ph.D.'s and substantial "post doc" experience. Our clients were large corporate research and development institutions, who imported en masse highly credentialled scientists for two to four year periods and paid them a pittance to work long hours in for-profit laboratories.³³ I had completed only two years of law school, but was being paid in excess of a thousand dollars per week to help clients arrange for the temporary employment of very experienced and highly educated scientists who labored fifty hours or more each week for salaries as low as \$ 16,000 per

³⁰ See Parker, *supra* note 17, at 603-04; Dratler, *supra* note 17, at 135.

³¹ See discussion *infra* Part II and note 18.

³² See *infra* Part II.A.2.

³³ Catherine Yang, *Give Me Your Huddles ... High Tech Ph.D.'s*, BUS. WK., Nov. 6, 1995, at 161 ("By law, employers can't petition for either temporary or permanent immigration visas for foreign workers if they can find a qualified U.S. citizen for the job. But it's widely known that employers often get Labor Dept. [sic] approval by tailoring job descriptions to a particular foreign candidate to make sure that no U.S. candidate can fill the slot.").

year, barely above the minimum wage (if divided by the number of hours spent in the laboratory). America should not find it surprising that its children would rather go into law than science or engineering.³⁴

The foreign scientists and engineers involved gladly accepted meager wages in exchange for the opportunity to live in the United States for a few years, enhance their resumes, and perhaps make professional connections that would lead to more lucrative employment later, either in this country or abroad. The willingness of these noncitizens to be exploited in this manner undoubtedly serves to depress wages for all technology professionals, and to limit the employment opportunities available for American citizens or others with long term commitments to the United States.³⁵ Generally, it is therefore always a "buyers market" for the "consumers" of employee-inventors.

Almost every technologist (and in fact, almost every employee) of an American company involved in any sort of research is compelled to sign a pre-invention assignment agreement as a condition of employment.³⁶ This insures that any potentially lucrative invention devised by any employee remains under the complete control of the employer and prevents even the most brilliant and hard working, technologically proficient employee from securing even a shadow of the bargaining power needed to leverage a share of profits from any inventions, a good salary, or even a semblance of job security. In fact, any attempt by an employee-inventor to exert any control over the terms of her employment,³⁷ or over one of her inventions may jeopardize her

³⁴ See Barbara Vobejda, *Foreign Students Proliferate in Graduate Science Programs: Shortage of American Expertise Foreseen*, WASH. POST, Sept. 2, 1987, at A1 ("Across the country, the number of foreign graduate students enrolled in all fields of science has grown dramatically. In engineering, mathematics and computer sciences, more than 40 percent of graduate school enrollment is foreign... 'We don't have too many foreign students. We have too few American students,' said F. Karl Willenbrock, executive director of the American Society for Engineering Education."). See, e.g., Joanne Miller, *Minorities in Engineering: Numbers Paint a Diverse Picture*, ELECTRONIC ENGINEERING TIMES, July 31, 1995, at 66 ("In 1993 there were 1,542 doctoral degrees in electrical engineering by American universities, and only 560 (36.3 percent) were earned by U.S. citizens or permanent residents.").

³⁵ See generally Willam R. Greer, *Foreign Students: Boon or a Threat?*, N.Y. TIMES, Mar. 27, 1983, at 72; Yang, *supra* note 33, at 161.

³⁶ See Hershovitz, *supra* note 8, at 197 n.53 ("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."). See also Cherensky, *supra* note 17, at 599, 617; Parker, *supra* note 17, at 608.

³⁷ Parker, *supra* note 17, at 608 ("Employees attempting to negotiate more favorable assignment terms take a substantial risk with little hope of meaningful gain. Further, inventors who demand unusual contract terms may reduce their opportunities to change jobs because employers are wary of inventors who try to obtain more than the traditional rewards for their inventions.").

livelihood,³⁸ and may give her the reputation of "troublemaker" that will make obtaining a comparable position elsewhere difficult. In extraordinary cases, an inventor who tries to retain ownership of her invention may find herself in jail.³⁹ At present, the best recourse for dissatisfied inventors is a change in career path, and "the smart people ... quit innovating and become management types."⁴⁰

Thus, the comparatively low wages and lack of attractive job opportunities discourage American citizens from pursuing research and development oriented employment that would present opportunities to invent. Those who are willing to ignore these hardships and enter technological fields cannot count on financial rewards from even revolutionary laboratory achievements.⁴¹ The current system is therefore paradoxical: While investment in research and development by technology oriented companies is encouraged, there are few incentives for individual scientists to innovate. Consequently, those who are predisposed to conceiving useful inventions are discouraged from entering or remaining in inventor positions.

The exact effect of this misdirection of inventive incentives is impossible to quantify. There is no way to predict who might have nurtured inventive talents in response to monetary incentives, or what might have been invented had an employee-inventor found herself in improved circumstances. There are widely disparate views about whether and to what extent American innovation is declining or increasing, and whether any change is absolute or comparative.⁴² There is general agreement, however,

³⁸ Dratler, *supra* note 17, at 156-57. See *Zlotnicki v. Harsco Corp.*, 672 F. Supp. 161 (M.D. Pa. 1987) (termination of employee, who refused to sign pre-invention assignment agreement until terms of agreement included his continued employment, was not wrongful after employee had applied for patent in his own name in violation of the agreement, even though employee was terminated only one month after signing said agreement).

³⁹ A University of South Florida student disputing with corporation sponsoring research in his laboratory over rights to invention that cleanses human waste water was arrested for stealing his own laboratory notebooks, charged and convicted of grand theft and misuse of trade secrets, and sent to chain gang for violating his probation by filing for patents. William Booth, *From University Lab to Chain Gang*, WASH. POST, June 7, 1996, at A1.

⁴⁰ David Stipp, *Inventors Are Seeking Bigger Share of Gains from Their Successes*, WALL ST. J., Sept. 9, 1982, at 1.

⁴¹ See, e.g., PAUL RABINOW, *MAKING PCR* (1996) (describing how unusual it was for scientists at Cetus Corporation to receive anything more than a token one dollar payment for developing a patentable invention, in the context of discussing how unusual it was for Nobel laureate Kary Mullis to receive a \$ 10,000 bonus for inventing the polymerase chain reaction, the patent rights to which were later sold for \$ 300 million).

⁴² But see Richard R. Nelson & Gavin Wright, *The Rise and Fall of American Technological Leadership: The Postwar Era in Historical Perspective*, 30 J. ECON. LITERATURE 1931, 1955-56 (1992) ("Most analysts have noted that U.S. patenting has shown an absolute decline since the late 1960s. That is

that technological innovation will play an increasingly important role in this country's economy.⁴³

III. A COMPARISON OF THE EFFECTS OF THE COMMON LAW UPON INNOVATION WITH THE IMPACT OF PRE- INVENTION ASSIGNMENT AGREEMENTS

Unless an employee was hired solely to invent a particular process or product at the specific direction of the employer (the innovative outcome which will hereinafter be referred to as a "linear" invention), employee-inventors retain ownership of any patentable invention they develop,⁴⁴ even if some of the employer's time and materials were used during the inventive process leading to an unexpected, "nonlinear" invention.⁴⁵ If resources of the employer were used, the employer retains a "shop right"

so, but it is also true of the major European countries and the U.S. rate has partially recovered since 1980."); Steve Grossman, *Better Friends than Foes: Growth of U.S. Manufacturers Hinges on Partnerships with Foreign Competitors*, KAN. CITY BUS. J., Sept. 15, 1995, at 15 ("Eight of the top 11 organizations to receive U.S. patents in 1994 were Japanese companies, according to the report. However, IBM was the No.1 recipient for the second consecutive year. The share of U.S. patents going to American inventors in 1994 climbed to a record high in the last decade to 55.1 percent, a marked improvement from the years between 1973 and 1988, which saw a steady decline in American inventor's share of U.S. patent grants."); *Short-Term Economic Indicators Show U.S. Leads Japan and Germany*, 2 TECH. TRANSFER WK. 31, Aug. 8, 1995, available in LEXIS, News Library, Nwltrs File ("The private, non-profit Council on Competitiveness reports that, short term, the United States is doing well competing with other industrialized countries. The group's 1995 Competitiveness Index says the United States is among the top three in most short-term measures of economic competitiveness, ahead of Germany and Japan, two technological powerhouses. But long term indicators are worrisome, the report says, because American companies are currently benefiting from fickle factors such as the weak American dollar, which helps exporters... The report, compiled by business, labor and academic leaders, urges government and industry not to forget that America's low savings rate, spiraling education costs and decreasing investment on R&D are problems that need to be addressed if the nation is to remain competitive."); Jerry Jackson, *Commerce Transition Still Felt in Open Posts*, ORLANDO SENTINEL, Oct. 21, 1996, at 10 ("The United States leads all countries in seeking European patents, at nearly 33 percent, followed by Germany at 20 percent, Japan at 17 percent, and France at 8 percent.").

⁴³ See, e.g., George Leopold, *California Maintains Job Lead*, ELECTRONIC ENGINEERING TIMES, Feb. 17, 1997, at 71; *Computers Will Be Crucial*, ARIZ. BUS. GAZETTE, Jan. 30, 1997, at 14; Alan Hassenfeld, *End the Pentagon Buying Spree*, J. COMM., Oct. 11, 1996, at 8A; Olaf de Senerport Domis & Jeffrey Kutler, *Reporters Notebook: Meeting Validates Treasury on Electronic Cash Issues*, AM. BANKER, Sept. 23, 1996, at 2.

⁴⁴ Dratler, *supra* note 17, at 131. See Hershovitz, *supra* note 8, at 195-96.

⁴⁵ See Van Slyke & Friedman, *supra* note 6, at 132 ("The basic starting point in the law of employee/employer patent rights is the principle that the inventor owns the patent rights even though the invention was conceived and/or reduced to practice while the inventor was employed."). See also Parker,

in the invention that permits the nonexclusive and nontransferable use of the invention, even if the employee-inventor terminates her employment.⁴⁶

Because valuable inventions had a way of turning up unexpectedly, i.e. not at the specific direction of the employer,⁴⁷ employers, "unwilling to rely on the uncertainty and perceived equities of the common law,"⁴⁸ began forcing their technical employees to sign broad pre-invention assignment agreements after World War II, when institutional research and development underwent a great transformation,⁴⁹ as did the rest of society. 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.⁵⁰ Courts generally hold such agreements to be valid and enforceable, even though the employee-inventor usually receives no consideration for signing such an agreement other than being given a job, and neither party knows the subject or value of the things being bargained for at the time this "mutual agreement" is entered into,⁵¹ leading some to characterize pre-invention assignment agreements as contracts of adhesion, since prospective employees often cannot secure research oriented employment at any corporation without signing one, and others to characterize them as unconscionable.⁵² Courts uphold pre-invention assignment agreements "unless the inventor can show that the agreement is overbroad or that the invention is outside the scope of the agreement in time or subject matter."⁵³ Universities and government operated research entities require their potential inventors to sign or otherwise submit to similar agreements.⁵⁴

supra note 17, at 606. *But see* [Teets v. Chromalloy Gas Turbine Corp.](#), 83 F.3d 403 (Fed. Cir. 1996) (employee not subject to pre-invention assignment agreement who used employer's resources to conceive patentable invention and reduce it to practice had entered into an "implied-in-fact contract" to assign patent rights in invention to his employer).

⁴⁶ Hershkovitz, *supra* note 8, at 195; Parker, *supra* note 17, at 607 (three factors in determining employee ownership rights).

⁴⁷ *See* Cherensky, *supra* note 17, at 613.

⁴⁸ *Id.* at 617. *See also* Parker, *supra* note 17, at 609.

⁴⁹ *See* Dratler, *supra* note 17, at 131.

⁵⁰ Cherensky, *supra* note 17, at 619; Dratler, *supra* note 17, at 131; Parker, *supra* note 17, at 608.

⁵¹ Cherensky, *supra* note 17, at 623. *See also* [Goodyear Tire & Rubber Co. v. Miller](#), 22 F.2d 353 (9th Cir. 1927); Pisegna-Cook, *supra* note 18, at 173-76.

⁵² *See* Pisegna-Cook, *supra* note 18, at 171-77. *See also* Dratler, *supra* note 17, at 141-48.

⁵³ Dratler, *supra* note 17, at 148.

⁵⁴ Sunil R. Kulkarni, *All Professors Create Equally: Why Faculty Should Have Complete Control Over the Intellectual Property Rights in Their Creations*, 47 [HASTINGS L.J.](#) 221, 235 (1995) ("The majority position among University policies ... claims substantial rights in patentable inventions...."); Pisegna-Cook, *supra* note 18, at 184 ("The federal government obtains the entire domestic right, title and interest in an invention made by any federal government employee if the

According to at least two legal scholars,⁵⁵ the judicial system's tendency to "favor the capital contributor over the labor contributor"⁵⁶ by upholding pre-invention assignment agreements is grounded in the erroneous belief that enforcing these contracts will benefit the nation's economic and technological growth.⁵⁷ Others have posited that patent assignment agreements survive judicial scrutiny because such agreements became popular "at a time when the gospel of freedom of contract was preached in every pulpit;"⁵⁸ and that courts "seem to ignore the employer's inherently stronger bargaining position and superior legal knowledge."⁵⁹ Regardless of the explanation, it is clear that the courts are likely to find mainstream, pre-invention assignment agreements enforceable now and in the future.⁶⁰

A. *Pre-Invention Assignment Agreements Work in Concert with Institutional Factors to Discourage Innovation*

As explained above, employee-inventors sign pre-invention assignment agreements as prerequisites for simply receiving employment in a corporation, university or government run laboratory.⁶¹ Estimates of the number of American patents

invention is: (1) made during working hours, (2) made with government resources including money, facilities, materials, information or other government employees' time, or (3) one that bears a direct relation to, or is made in consequence of the official duties of the employee-inventor. Should the government not plan to file a patent application or promote the invention's commercialization, the government is required to allow the inventor to retain title. If the contribution of the government is inadequate to warrant an assignment of the invention under the three criteria, the government retains a shop right. Compared with the common law, the federal employee loses ownership rights in general inventions. However, the Technology Transfer Act of 1986 enacted mandatory compensation for inventors employed by the federal government. The act requires a minimum 15% share of any royalties or income received from the government be given to the employee-inventor as compensation. In this scheme, the employee benefits are relative to the success of the invention.").

⁵⁵ Baker & Brunel, *supra* note 17, at 399.

⁵⁶ Baker & Brunel argue that "the unspoken, inchoate economic rationale of protecting capital to promote economic growth" is based on weak judicial economic development assumptions, and is detrimental to the American economy because courts fail to consider "promotion of innovation as a public policy goal that would spur economic growth." Baker & Brunel, *supra* note 17, at 399, 402.

⁵⁷ *Id.* at 399.

⁵⁸ Dratler, *supra* note 17, at 142. *See also* Pisegna-Cook, *supra* note 18, at 173 ("Pre-invention assignment agreements are generally enforced on the basis of freedom of contract principles.").

⁵⁹ Hovell, *supra* note 17, at 876.

⁶⁰ Interestingly, judges have declined to apply the same analysis to noncompetition agreements, which are not valid unless an employee receives compensation beyond employment or retention of employment for executing such a contract.

⁶¹ *See* discussion *infra* Part I.

awarded to employee-inventors range from 80% and 90%.⁶² In addition to depriving them of any right to share in the profits that their inventions might beget, pre-invention assignment contracts render employee-inventors unable to control the exploitation of their inventions, and strip them of the ability to develop their inventions on their own, or to take their inventions to other institutions more sympathetic to the inventors' goals or more able to successfully launch and/or support the actual inventions. Innovation is not simply insufficiently fostered as a result of pre-invention assignment agreements acting in tandem with other corporate practices; it is actually repressed.

In 1979 one disgruntled physical scientist-inventor turned lawyer, Jay Dratler, described two reasons why corporations in particular inadvertently or intentionally repress innovation: Incentives for individuals to invent are inadequate, and corporate profit maximization may require innovation to be discouraged or suppressed.⁶³ Though the focus of this article is primarily on corporate inventor employers, the operational dynamics of other research institutions, such as universities and government run laboratories, repress innovation in a similar fashion.⁶⁴

1. *Inadequate Institutional Incentives to make "Innovative Waves"*

⁶² See Hovell, *supra* note 17, at 863 ("Eighty-four percent of American patents are awarded to employed inventors...." (citations omitted)); Parker, *supra* note 17, at 604 ("80% to 90% of all inventions in the United States are made by employed inventors."); Pisegna-Cook, *supra* note 18, at 172 ("80% to 90% of all patentable inventions are the result of employee-inventors.").

⁶³ Dratler, *supra* note 17, at 174-77.

⁶⁴ Most faculty members and university employees engaged in research are compelled to adhere to academia's version of pre-invention assignment agreement. See Kulkarni, *supra* note 54, at 235 ("The majority position among University policies ... claims substantial rights in patentable inventions...."). See also Sandip H. Patel, *Graduate Students' Ownership and Attribution Rights in Intellectual Property*, 71 *IND. L.J.* 481, 482 (1996) ("University intellectual property policies have become standard for policies varying only slightly in substance from one university to another. At their core, these policies provide guidelines that govern intellectual property ownership issues that may arise in the context of university research. The policies seek to harmonize these issues with the university mission to generate and disseminate information for the benefit of the university and society as a whole. Faculty employment contracts often refer to these policies, noting that they are part of the contractual agreement between the university and the professor. In this context, the policies serve as pre-invention assignment agreements where faculty agree to assign rights in inventions and creations conceived and reduced to practice during the course of their employment in exchange for continued employment and a share in the royalties."); Dratler, *supra* note 17, at 148-54 (government researchers are similarly required to sign over the rights to inventions not yet conceptualized); Pisegna-Cook, *supra* note 54.

Entities such as corporations may offer monetary bonuses and other corporate perks and "pats on the back" to creative technical employees. However, these "incentives" may pale in comparison to the rewards available for teamwork, cooperation, and attainment of production goals, objectives which are hampered rather than fostered by even moderate innovation: If the best interests of technical personnel, supervisors and midlevel managers are served by following the prevailing team ethic of large corporations, "that [team] ethic will dilute or counteract the incentives for innovation created by top management, and those incentives will be ineffective."⁶⁵ Additionally, managers want to protect their power by preserving the system that they have advanced through.⁶⁶ After succeeding with a given set of behaviors, managers can be reluctant to deviate from entrenched company practices.⁶⁷ Managers may also "hate being upstaged by their creative subordinates,"⁶⁸ and therefore may discourage innovative impulses in underlings.

2. *Maximization of Institutional Profits May Require Suppression of Inventions*

By definition, innovation requires change, which even moderately successful companies may resist for bottom line reasons.⁶⁹ A corporation that has substantially invested in manufacturing facilities, personnel, advertising and marketing may recognize that it is more profitable to suppress innovation than to retool and begin advertising and marketing a new or substantially changed product, even when the new or changed product is technologically superior.⁷⁰ Exploitation of inventions that "compete" with a corporation's profitable "status quo" product or process will therefore be delayed unless or until market forces make development and use of these inventions more attractive.

Exploitation of inventions "outside the mainstream of the corporation's business activity" might be suppressed out of inadvertence or neglect, especially if management does not recognize the importance of the invention or its potential value to other industries. A company would be understandably reluctant to devote significant resources to the development of inventions of uncertain applicability or worth, and an

⁶⁵ Dratler, *supra* note 17, at 174.

⁶⁶ Costello, *supra* note 2, at 60.

⁶⁷ *See id.*

⁶⁸ Stipp, *supra* note 40, at 24.

⁶⁹ Corporations, like most institutions, resist unplanned change in general. Dratler, *supra* note 17, at 179 (citation omitted).

⁷⁰ *Id.* at 174-76.

individual inventor would be understandably unlikely to invest her own time to pursuits that will not be appreciated by her employer.⁷¹

One observer carefully pointed out that disincentives to innovate arise not from any evil intent on the part of corporations, but from "the very nature of the corporate enterprise."⁷² According to this view, "a corporation is only a sub-unit of the larger society, and each corporation has its own financial difficulties, limited resources, and industrial and commercial goals."⁷³ Because "both patentable and unpatentable innovation occur in a random and haphazard way," it is too much to expect that the particular corporation in which a given innovation was first conceived will nurture it in a manner calculated to maximize the welfare of the larger society."⁷⁴

Others are less charitable when assessing institutional actions and motives in the context of their behavior toward employee-inventors. Two legal scholars considering the mistreatment of employee-inventors sardonically point out near the conclusion of their article (discussed in detail below) that "employers present through their remarkable ability to mistreat employed inventors many tempting cases" which illustrate the need for changes,⁷⁵ in the way employee-inventors are treated by their employing corporations and the courts.⁷⁶

While it is unclear from just the press coverage and reported court opinions exactly what transpired in the cases referenced below, a survey of recent litigation (past and pending) at least demonstrates the range of challenges faced by employee-inventors who initiated or were drawn into law suits over patent rights. In *Georgia-Pacific Corp. v. Lieberam*,⁷⁷ the Eleventh Circuit summarily ruled for Georgia-Pacific in a dispute over patent ownership where the disputed invention was developed prior to the signing of a pre-invention assignment agreement by Mr. Lieberam, the employee-inventor. Similarly, in *Harsco Corp. v. Zlotnicki*⁷⁸ the Third Circuit affirmed a declaratory judgment that an inventor employer owned a patent because the scope of the pre-invention assignment agreement signed by the employee-inventor reached inventions conceived before such an agreement was signed. The court also found that where keeping his job was all the employee received in exchange for signing a pre-invention assignment agreement *after* he conceived a valuable invention, continued employment

⁷¹ *Id.*

⁷² *Id.*

⁷³ *Id.*

⁷⁴ *Id.* at 177.

⁷⁵ See Baker & Brunel, *supra* note 17, at 427.

⁷⁶ See *supra* note 130.

⁷⁷ 959 F.2d 901 (11th Cir. 1992).

⁷⁸ 779 F.2d 906 (3d Cir. 1985).

of one month (before he was fired) was adequate consideration for his patent assignment, and that even given the obvious pressure the employee was under, he did not sign the disputed patent assignment agreement under duress.

In *Ingersoll-Rand Co. v. Ciavatta*,⁷⁹ though not hired to invent, an employee named Ciavatta submitted thirteen patent disclosure forms to upper management, which were ignored, so he terminated his employment. Nine months after changing jobs, he applied for a patent, and was sued by former employer for assignment of rights to his patent pursuant to a "trailer clause" contained in pre-invention assignment agreement.

In *MAI Basic Four, Inc. v. Basis, Inc.*,⁸⁰ the company shut down an entire plant and terminated several employees, and these now unemployed individuals formed their own software company, which they called Basis, Inc. MAI Basic Four, Inc. then sued its former employees, claiming that the product Basis, Inc. was marketing had been developed during their employment with MAI Basic Four or within 90 days of their termination, and was therefore subject to patent-waiver, confidentiality and non-disclosure agreements they had been required to sign as a condition of employment.

Not all employee-inventors who feel mistreated resort to the courts. One employee-inventor of a large corporation who was a co-inventor of an anti-tuberculosis drug, reports not being rewarded at all, though the drug brought American Cyanamid \$ 50 million a year in sales.⁸¹ He stayed with the company despite this mistreatment because at age fifty-five he didn't feel he had alternative employment prospects.⁸² In 1982, when American Cyanamid was reaping \$ 30 million in sales for a herbicide that killed wild oats, it laid off the inventor of the herbicide as a cost cutting measure.⁸³

Lockheed Corporation, which championed an award program to stimulate creativity, gave \$ 20,000 to the inventor of a \$ 50 million invention, and initially, nothing to the co-inventors of a \$ 330 million invention. After they complained, each co-inventor received an award of \$ 1,250.⁸⁴ They eventually brought this dispute into the judicial arena.⁸⁵ Similarly, Dr. Daniel Bradley filed suit against biotech giant Chiron Corporation in January of 1995 alleging that he was "deliberately and unlawfully excluded from patent rights obtained by the company," after "Chiron systematically

⁷⁹ 542 A.2d 879 (N.J. Sup. Ct. 1988).

⁸⁰ 880 F.2d 286 (10th Cir. 1989).

⁸¹ Stipp, *supra* note 40, at 24.

⁸² *Id.*

⁸³ *Id.* at 1.

⁸⁴ *Id.* at 24.

⁸⁵ Subsequent litigation brought these inventors judicially allocated awards of \$ 2.6 million. *Id.*

diminished his role on the discovery [of the hepatitis C test] in order to claim a monopoly in the marketplace."⁸⁶

Inventors in academia who seek to retain control of their patentable inventions can face similar obstacles. For example, a dispute over patent ownership between the University of Pennsylvania and a part time faculty member who invented Retin-A, a treatment for both acne and wrinkles, led the University of Pennsylvania to sue one of its distinguished faculty members, even though he had never signed a pre-invention assignment agreement, and had voluntarily donated to the University hundreds of thousands of dollars that he received as royalty payments after licensing his invention.⁸⁷

Not surprisingly, the government also appears ready to exploit individual inventors whenever the opportunity arises. Since promulgation of Executive Order 10096 by President Truman in 1950 (around the time that corporations began requiring employee-inventors to sign pre-invention assignment agreements) the government is the presumptive owner of any patented invention developed by a government employee⁸⁸ Government agencies are free to license government employee originated patents to private industry,⁸⁹ but even with these broad powers Uncle Sam has been known to overreach. In *Lariscey v. United States*⁹⁰ a prisoner was found to have intellectual property rights in an invention he developed during incarceration. The appropriation of this invention by a government corporation without just compensation was found to be an unconstitutional taking after the invention was exploited without any credit or compensation given to Lariscey, who risked retaliation from prison officials when he contested the usurpation of his invention.

IV. GOVERNMENT ATTEMPTS TO STIMULATE INNOVATION ARE GENERALLY AIMED AT INVESTORS

A. *The Federal Circuit*

Prior to the establishment of the Federal Circuit, patents were unlikely to be found valid by the federal courts in the context of an infringement action or declaratory

⁸⁶ Plaintiff's Opening Brief, *Bradley v. Chiron Corp.*, No. 96-1516, 1996 U.S. App. Lexis 31136 (Nov. 13, 1996).

⁸⁷ *University Patents, Inc. v. Kligman*, 762 F. Supp. 1212 (E.D. Pa. 1991).

⁸⁸ Dratler, *supra* note 17, at 151; *Kaplan v. Corcoran*, 545 F.2d 1073 (7th Cir. 1976) (holding constitutional an Executive Order giving U.S. Government presumptive ownership of inventions patented by government employees).

⁸⁹ Dratler, *supra* note 17, at 152.

⁹⁰ 949 F.2d 1137 (Fed. Cir. 1991).

judgment on validity.⁹¹ This reluctance of the courts to uphold patent validity and protect patent rights was believed to repress incentives to innovate, and the Federal Circuit was established in part to stimulate research and development among companies in the United States.⁹²

Federal Circuit Judge Pauline Newman has written that the Federal Circuit fosters innovation by simply enhancing the predictability of the outcome of patent litigation through implementation of consistent standards and a reasonable interpretation of the patent laws.⁹³ Alternatively, legal scholar Gerald Sobel characterizes the Federal Circuit as philosophically disposed to upholding patent validity,⁹⁴ and attributes the Federal Circuit's positive impact on innovation to its patent friendly jurisprudence.⁹⁵

⁹¹ See Gerald Sobel, Article, *The Court of Appeals For the Federal Circuit: A Fifth Anniversary Look at Its Impact on Patent Law and Litigation*, 37 AM. U. L. REV. 1087, 1091-93 (1988).

⁹² See J. Pauline Newman, *The Federal Circuit: Judicial Stability or Judicial Activism?*, 42 AM. U. L. REV. 683 (1993).

[The controlling reason for establishment of the Federal Circuit was] the forceful concern of the nation's technological leadership about the effect on industrial innovation of judge-made patent law... The interest of industry was the restoration of the patent system's constitutional and statutory incentive to promote technological progress. That incentive had been diminished by the inconsistencies of judge-made law concerning patent rights and remedies.

Id. at 684-85.

The idea was ambitious yet simple: the idea that consistent application of the law, achieved by eliminating the opportunity for forum-shopping, would have a direct and salutary effect on industrial innovation, and thereby on the nation's technological strength and international competitiveness. Patent rights are a factor in much of the research, investment, and commercial risk-taking that comprise industrial innovation; yet the marked variations among judicial patent decisions in the regional circuits suggested to the technology community that this aspect was not always well understood.

Id. at 685.

⁹³ *Id.* at 687-88.

⁹⁴ See Sobel, *supra* note 91, at 1090-105.

⁹⁵ The changes brought about by the Federal Circuit have profound practical effects not only in patent infringement litigation, but also in the design of new products and in licensing negotiations. Although the court has preserved defenses to infringement and enhanced some of them, the overriding change has been on the validity issue. The increased likelihood of success on the critical issue of validity has transformed the outlook in patent infringement litigation for patentees. The likelihood

Establishment of the Federal Circuit may have increased inventive productivity to some degree by increasing "predictability,"⁹⁶ or simply by being "patent friendly,"⁹⁷ but the magnitude of the effect of this predictability and/or patent friendliness on any increase in technological innovations in this country is not clear.⁹⁸ The jurisprudence of the Federal Circuit may have led to increased investment in research and development, which may have in turn produced more patentable inventions, but no one has yet been able to demonstrate or quantify this effect. What is apparent is that improving the "predictability of patentability" failed to directly aim incentives to innovate where they are most needed, at the individual inventor.

B. *Federal Legislation*

Prior to establishment of the Federal Circuit, several "pro-inventor" pieces of legislation were introduced into Congress, but all died in committee, including the Moss Bill of 1969⁹⁹ (which was reintroduced four times throughout the 1970s without

of suits for infringement is greater, and the likelihood and authority with which patentees will make threats of suit is correspondingly greater.

Sobel, *supra* note 91, at 1090.

⁹⁶ The Federal Circuit applies a more consistent interpretation of the standards of patentability, leading to a "greatly enhanced degree of predictability of the outcome of patent litigation" which may encourage contestants to avoid litigation. *See* Newman, *supra* note 92, at 687-88.

⁹⁷ "The net effect of the Federal Circuit's work ... has been to strengthen the incentive to innovate." Sobel, *supra* note 91, at 1092.

⁹⁸ The Federal Circuit was born in the recessive economic period of the late 1970s, and was charged with the expectation that correct and wise judicial application of patent law would support technological innovation, as the law was intended to do, thereby contributing to capital formation and the industrial activity that is the foundation of our nation's economic and political strength. It is not easy to measure the impact of this change in judicial structure, and accompanying changes in jurisprudence, on industrial innovation. I have seen no definitive economic study, and perhaps none is possible, for the nation's economy is not a controlled experiment.

Newman, *supra* note 92, at 686. But see Sobel, *supra* note 91, at 1091-92:

The patent system stimulates invention and commercialization by providing a seventeen-year exclusive right to the invention. This exclusive right can be exploited to provide financial rewards to patent owners and investors who are able to successfully commercialize their inventions. The net effect of the Federal Circuit's work, therefore, has been to strengthen the incentive to innovate.

⁹⁹ H.R. 15512, 91st Cong. (1969), *reprinted* in 116 Cong. Rec. 744 (1970), *reintroduced* as HR 1483, 92d Cong. (1971).

success), the Hart-Owens Bill of 1973¹⁰⁰ and the Kastenmeier Bills of 1982.¹⁰¹ Each of these proposed federal statutes would have required the government to determine what compensation an employee-inventor would receive from the exploitation of a patented invention,¹⁰² which undoubtedly would have introduced a bureaucratic entity into the process which would be subject to political pressure. Legislative intervention into the relationship between employers and employee-inventors is not likely to benefit employee-inventors when the majority of Congress is markedly pro-employer, even assuming that this or any Congress would pass such legislation in the first place, which is empirically unlikely.¹⁰³

V. PROPOSED REMEDIES

A. *Allocation of Patent Ownership Rights Between Employee-Inventors and Inventor Employers Based on the Proportional Contribution of Each to the Development of the Invention*

In 1979, physical scientist-turned-lawyer Jay Dratler, Jr. called for "a free marketplace for new ideas, in which various individuals and corporations can bid for the right to develop and exploit an innovation - at any stage of its development - to the best of their abilities and the fullest extent of their resources."¹⁰⁴ He argued that even if an innovation could potentially render a corporation's assembly line obsolete, that corporation should not be allowed to suppress the invention.¹⁰⁵ Instead, he advocated allowing another corporation to exploit the unwanted invention, thereby permitting the purchasing public to decide, "by continuing to purchase the old (and presumably cheaper) product rather than switching to the more desirable new one, or vice versa, whether continued operation of the expensive but outmoded assembly line maximizes the welfare of society as a whole."¹⁰⁶ Similarly, he asserted that "if an innovation lies outside the mainstream of expertise in the corporation which gave it birth, other individuals and corporations should have an opportunity to nurture it to its full stature

¹⁰⁰ S. 1321, 93d Cong. (1973), reprinted in 119 Cong. Rec. 9102 (1973), and H.R. 7111, 93d Cong. (1973).

¹⁰¹ H.R. 4732, 97th Cong. (1981), and H.R. 6635, 97th Cong. (1982).

¹⁰² See Hovell, *supra* note 17, at 883-88.

¹⁰³ See Baker & Brunel, *supra* note 17, at 412-13.

¹⁰⁴ Dratler, *supra* note 17, at 177.

¹⁰⁵ *Id.* at 177-78.

¹⁰⁶ *Id.* at 177.

and importance in the larger industrial community."¹⁰⁷ Therefore, according to Dratler's express analysis "productive innovation will in general be maximized only if each new idea is put up for sale to the highest bidder (presumably the one who can use it most efficiently), without requiring that bidder to pay for internal inefficiencies in the corporation in which the idea happens to have been conceived."¹⁰⁸

Dratler's recommendation for achieving this "free market place of ideas" is to divide patent ownership rights between the inventor and her employer, allocating these rights based on the "extraordinary effort [in overcoming human resistance to new ideas] which each of the participants contributes to its part of the process of innovation,"¹⁰⁹ a weighing of "the relative contributions of the inventor, on the one hand, and the supervisors and middle management, on the other."¹¹⁰ He proposed measuring each contribution not against an absolute standard, but rather "against the contributions expected of each of the parties in the ordinary course of research and development."¹¹¹ Initially, Dratler would have the employer and inventor privately bargain over the allocation of rights in an invention, with "compulsory arbitration subject to a statutory standard" as a "backstop" if the parties could not reach agreement.¹¹²

¹⁰⁷ *Id.*

¹⁰⁸ *Id.*

¹⁰⁹ *Id.* at 191.

¹¹⁰ Dratler, *supra* note 17, at 191.

¹¹¹ *Id.* at 192.

¹¹²

A system of bargaining and arbitration might work as follows. After making an invention, an employee would apply for a patent in his own name. He would ordinarily fund patent prosecution out of his own pocket, but if the employer took a special interest in the invention, the employer might be allowed to contribute the time of its own attorneys, or fees for outside counsel, subject to the inventor's approval. If the employer were ultimately denied rights in the invention by arbitration, its expenses for patent prosecution would be reimbursed from the inventor's royalties.

Once a patent issued [sic], the employee could begin negotiations with his employer and with other firms for exclusive licensing. Negotiations with the employer would be subject to the statutory standard, as would subsequent arbitration: that ownership should be divided according to the relative effort of the parties, above and beyond the ordinary, in overcoming human resistance to new ideas. There would, however, be a presumption of inventor ownership, so that the employer would be inclined to make reasonable offers for patent rights. Since the inventor would know that the employer's statutory share in the invention could be enforced by arbitration, he would also be reasonable.

In the absence of agreement, either the inventor or the employer could demand compulsory arbitration by a board consisting of three arbitrators, one chosen by each of the two parties and the third chosen by agreement between the first two. The employee could not license the invention to a third party until the conclusion of arbitration.

2. Critique of Dratler's Proposal

According to Dratler, the system he suggested "would produce incentives for inventors by prohibiting advance assignment of patent rights and giving the inventor a share of those rights proportional to his extraordinary effort in overcoming resistance to his new idea," but not "at the expense of the corporation, which would retain a share of the patent rights proportional to the extraordinary inventive efforts of its supervisory and management personnel."¹¹³

Dratler claimed quite forcefully that the "extraordinary effort in overcoming human resistance to new ideas" standard "is no more unfathomable than others regularly applied under common and statutory law" and can be successfully applied when the factfinder has an "inherent understanding of what is ordinary and what is not ... based both upon knowledge of the particular situation at issue and upon a general reservoir of knowledge of similar situations."¹¹⁴ Even assuming that this standard is, as Dratler asserted, no more difficult to apply than the test for negligence in a medical malpractice case or a determination of "nonobviousness" in a patent case, he failed to acknowledge that power balance differentials provide employers with overwhelming leverage.

If an inventor wants to keep her job, she is apt to capitulate to the desires of her employer during the course of the initial "private bargaining," allowing the employer to overstate its contribution to the invention, and acquire a larger share of the patent rights than it is entitled to. Alternatively, if she is confident of both the value of her invention and her ability to prove that she has invested "extraordinary effort" in its conception and development (and can afford competent legal counsel) the employee-inventor may assume a more aggressive bargaining posture. However, she would risk angering the management of the corporation for which she works, which could jeopardize her job, and make her highly unattractive to other prospective employers. If her invention is

The arbitration panel would determine the relative share of rights in the patent according to the statutory standard, subject to the presumption of inventor ownership. If the employer were the only bidder for the invention, the panel would determine reasonable terms for licensing, whether exclusive or nonexclusive, taking into account the statutory standard and estimates of the utility and value of the invention. If the employee had offers from third parties for rights in the invention, the panel would decide whether to allow him to accept any such offer in preference to the employer's best offer. If a license to a third party were allowed, the panel would decide what share of the royalties the employer should receive.

Id. at 199-200.

¹¹³ *Id.* at 202.

¹¹⁴ *Id.* at 194/

valuable enough and she triumphs during the bargaining process and any subsequent compulsory arbitration, licensing her invention may render her financially secure despite likely unemployment, but without a laboratory she is unlikely to spawn any future inventions, to the detriment of society, and may be thereafter personally frustrated and unfulfilled.

A more fundamental problem with this approach is that, while it has the commendable effect of rewarding maverick inventors who are not afraid to take risks and buck the system, it has the unfortunate effect of punishing inventors who are lucky enough to work in healthy, supportive environments. An inventor who toils beneath "supervisors and middle-level managers ... [who show] initiative and alacrity at every step" of the invention's development pays dearly for the beneficence and foresight of her employer, as under Dratler's analysis, where management is supportive and helpful during the innovative process, "the employer clearly should get most of the patent rights."¹¹⁵

Inventors, therefore, have financial and "control" incentives NOT to work well with others on the job. In order to position themselves for maximum control of and return from their inventions, inventors would need to hide things from their employers and do everything possible to undermine the value and productiveness of any assistance provided by supervisors and managers. This is not a recipe for either encouraging innovation or fostering industrial peace.

B. Modification of the "Shop Rights" Doctrine and
Establishment of a Minimum Royalty Payment for
Employee Inventors

Alternatively, legal scholars Mark B. Baker and Andre J. Brunel have proposed judicial alteration of the currently existing "shop rights" doctrine which would benefit employee-inventors who are not pre-invention assignment agreement signatories, and mandatory minimum royalties for employee-inventors who are bound by such contracts. Baker and Brunel are very critical of the common law jurisprudence concerning the rights of employee-inventors, asserting that judges are pro-employer and prefer to favor capital contributing parties over employee-inventors based on the erroneous assumption that this promotes economic development.¹¹⁶

¹¹⁵ *Id.* at 192.

¹¹⁶ Baker & Brunel, *supra* note 17, at 401.

The co-authors take a two-pronged approach to securing "rough justice for the employed inventor," by proposing changes in the common law of shop rights, and changes in the contract analysis of typical pre-invention assignment agreements.¹¹⁷ They acknowledge that altering the common law will not affect inventors who have signed pre-invention agreements with their employers, but argue that such changes will benefit both "informal employee inventors" who were not hired to invent but did anyway, and employees who were not originally hired to invent but later take on inventive responsibilities on the job, assuming that these two categories of workers were not already required to sign pre-invention assignment agreements.¹¹⁸

Baker and Brunel suggest that the current policy of granting an employer shop rights when an employee inventor has made "substantial use of the employer's facilities, materials or time" should be changed to exclude any use of the employer's shop, because, assuming the shop would not otherwise have been used, the employer is not harmed or inconvenienced, and "a more effective use of this nation's existing industrial facilities" is encouraged.¹¹⁹ With respect to use of the employer's materials, Baker and Brunel would give the employee-inventor the option of avoiding a dedication of shop rights to her employer by repaying the employer for the materials used.¹²⁰

Under the two scholars' reforms, where use of an employer's materials was minor or the employer was reimbursed as described above, the employer would acquire shop rights in an invention only where the invention was developed using substantial amounts of time that the employee should have been dedicating to the employer, and/or the time of other employees. Baker and Brunel would not allow an employee to avoid a dedication of "shop rights" by reimbursing the employer for the cost of the time spent on the invention "taken" from the employer based on distinctions the authors make between materials and time. According to Baker and Brunel "the measurement of the value of the employee time used to aid the inventor would be unwieldy and impractical for the parties and the courts" if other workers were salaried rather than paid on an hourly basis.¹²¹ They also argued that it would be "unfair to the employer to simply calculate damages based on the wages of the employees because the missed opportunities resulting from his employees working on a project he did not authorize cannot really be compensated in damages."¹²² It is therefore only with respect to materials and supplies, which are fungible and have easily assessed values, and the

¹¹⁷ *Id.* at 419-27.

¹¹⁸ *Id.* at 419.

¹¹⁹ *Id.* 419-20.

¹²⁰ *Id.* at 420.

¹²¹ *Id.*

¹²² Baker & Brunel, *supra* note 17, at 420.

usurpation of which can be characterized as an inconvenience, that Baker and Brunel believe an employer can be financially compensated out of a shop right.¹²³

This overall proposal also encompasses a restructuring of the shop right such that rather than existing for the life of the patent, employers would retain shop rights to the invention only as long as employee-inventors remained in their employ, thereby enhancing the bargaining power of the employee-inventor and making it more likely that the employer will "adequately" compensate the employee for her invention, because if the employer does not, the employee can leave and take her invention with her.¹²⁴ According to Baker and Brunel, "the employee, if his invention has real value, will be compensated for his invention because the employee's potential employers must bid among themselves for the right to use the invention by hiring the employee at an above market salary. The employee, on the other hand, may go it alone and start his own company ... [and be] fully compensated for his new invention by whatever he earns as the owner of his new company."¹²⁵

Baker and Brunel argue that only by making these changes in the common law shop rights doctrine can bargaining strength be equalized between employers and employees who were not hired to invent.¹²⁶ They would also impose a notification requirement, to insure that employee inventors understand their ownership rights in their inventions before they begin bargaining over allocation of these rights with their employer.¹²⁷

The second and more significant prong of their approach is what Baker and Brunel entitled "Specific Recommendations to Change the Contract Analysis of Typical

¹²³ *Id.*

¹²⁴ Restructuring the duration of the shop right to last only for the time that the employee remains working for the employer will raise the traditional concern of business lawyers about the potential for employee economic extortion. Employees may threaten to leave their employer after the employer has spent significant sums on a project involving the employee's invention. This is a risk that the employer should accept if he does not take measures to retain the employee. The employer can realistically be assumed to recognize the risk of spending such sums without first securing the right to continue using the invention after the employee no longer works for the employer. Through express terms in a new employment contract, with higher wages or a promotion for the employed inventor, the employer could protect his right to continue using the invention for the duration of the patent if the employee should breach. If the employer proceeds without such precautionary measures, he should be required to accept the attendant consequences.

Id. at 422.

¹²⁵ *Id.* at 421.

¹²⁶ *Id.*

¹²⁷ *Id.*

Pre-invention Assignment Agreements to Reflect a New Public Policy Concern for Innovation."¹²⁸ Their first recommendation is that courts use the quantum meruit doctrine to establish minimum royalties that an employer must pay an employee-inventor bound by a pre-invention assignment agreement, to increase the correlation between an employee's inventive productivity and her pay.¹²⁹ Such minimum royalties would either replace or supplement the voluntary salary increases, bonuses and promotions that employers currently use to compensate employee inventors when they so choose.¹³⁰

¹²⁸ Baker & Brunel, *supra* note 17, at 423.

¹²⁹ *Id.* at 423-25.

¹³⁰ *Id.* at 423.

Courts could, under the doctrine of quantum meruit reasonably require the employer to pay the employee minimum royalties, for example, two percent, of the profit or savings to the employer attributable to the invention. Such a requirement provides five substantial advantages. First and foremost, it exemplifies in concrete form the economic assumption that innovation is the most significant factor in economic growth. The original connection made by the founding fathers, between an employee's labor in creating new technology and his compensation through the ability to charge monopoly prices with a patent, would be restored. The intelligent assumption of the founding fathers that reorganizing incentives so that private incentives corresponded with the public good would also once again be in place.

Second, this proposal would provide employees with rough justice because a sense of proportion would once again exist between the contribution of the employee and his compensation. Deeply bitter feelings about the lot of employed inventors will improve and thus allow those who wish to remain inventors to remain inventors. The significantly better managerial pay encourages employed inventors to become managers and thus hinders economic growth by shrinking the pool of present inventors. "The smart people ... quit innovating and become management types." The present economic reward system also limits the potential pool of future investors in an unexpected and very significant way. "For all practical purposes - [employees hired to invent] are very much like the medieval serfs. I have seen to it my two children went into other professions.

Third, this compensation plan is simple. Unlike the bureaucratic Moss-Kastenmeier plan modeled after West Germany's system, this proposal would only become relevant in the one in one hundred patents that are economically viable and does not create an extra layer of bureaucracy when it does come into play. The Moss-Kastenmeier proposal applied to all inventions that an employer sought to patent, regardless of economic worth, for example, defensive patents were included under the Moss-Kastenmeier bill. The Moss-Kastenmeier bill did not recognize a significant cultural difference between West Germans and Americans. West German culture typically responds to social issues with very bureaucratic answers; American culture typically

Baker and Brunel would have the Courts find pre-invention assignment agreements that are not limited to reasonable terms wholly unenforceable as unconscionable adhesion contracts.¹³¹ Reasonable terms would be narrowly defined, such that the scope of the employer's business would be limited to the scope of business of the smallest bureaucratic unit that employed the employee, and only inventions that related to an employer's products could be covered, rather than "all inventions of the employee" approach currently promulgated by most employers in their pre-invention assignment agreements.¹³²

1. Critique of Barker and Brunel's Proposals

Although Baker and Brunel's article is interesting and provocative, their proposed alterations to the "shop rights" doctrine are too extreme, while their recommendations for improving the situation of employee-inventors subject to pre-employment assignment agreements fail to increase incentives to innovate as fully as possible.

demands a direct answer to a social dilemma. Providing a minimum royalty payment would be such a direct answer, albeit not as refined as a bureaucratic solution might present.

Fourth, this proposal would only be a minimum and would leave the parties to negotiate on their own the exact structure and level of the payments.

Finally, this proposal would not require employers to assess in advance the merit of a new invention in order [to] see whether it is worth paying the employee some lump sum prior to its use. Fixing the payment to the employee as a percentage of the royalties eliminates the need for the employer to estimate what is sometimes impossible and usually difficult to estimate: the value of an invention before it is tested in the market.

Id. at 424-25.

¹³¹ Instead of following the unstated, and unsubstantiated, premise that the protection of capital is the best way to encourage economic growth, courts should explicitly consider the promotion of innovation as a more significant way of increasing economic growth. The present common law governing the rights of employed inventors should be restructured to eliminate the pro-employer bias. As a matter of public policy, pre-invention agreements that seek to assign rights to the employer beyond those permitted by the restructured common law should be deemed void.

Id. at 403.

¹³² *Id.* at 420.

As Baker and Brunel concede, alteration of the "shop rights" doctrine will effect very few employee-inventors, those who obtain employment without signing pre-invention assignment agreements, probably because at the time they are hired there is no expectation that they will be inventive. Baker and Brunel would make the ownership rights that these individuals retain in their inventions contingent upon the amount and variety of the employer's resources used during the inventive process; employee-inventors could avoid dedicating shop rights to an employer by compensating the employer for any materials used, but are compelled to grant shop rights where labor has been "taken" from the employer.¹³³ There would therefore be a strong incentive for an employee inventor to use as few of the employer's resources as possible when developing a patentable invention, in order to minimize any financial reimbursals and circumvent "mandatory" shop rights. Incentives to eschew the tools, materials, and machinery one is most comfortable using, and to avoid the assistance or feedback of colleagues, hardly seem to foster innovation in an efficient and maximally productive manner.

Moreover, in any dispute over the quantity of the employer's resource contributions, or whether any of the employer's time was taken, one wonders how many employee-inventors would be financially and emotionally capable of hiring legal counsel and taking on the employer and the employer's attorneys. The employee would undoubtedly be fired immediately, but the employee's invention could be months or years away from profitability, assuming she was even able to license it at all, given that the exclusivity of the license would be in question during the pendency of the litigation. Given the circumstances of her termination, she may have difficulty securing alternate employment while simultaneously incurring what are apt to be significant legal expenses. Considering the stakes for the corporate employer, which will be left with nothing if not held to be entitled to shop rights, one might reasonably expect a dispute (and subsequent scorched earth litigation) to arise over every potentially profitable patented invention developed by its employees.

The concept of requiring *quantum meruit* derived minimum royalty payments to employee-inventors, thereby insuring that they are compensated for their inventions roughly proportionately to the market value of what they have created, is appealing. However, the problem with this approach is the feasibility of persuading judges, with their entrenched pro-capital (and therefore pro-employer) biases,¹³⁴ to start making such awards. Baker and Brunel's article, published five years ago, was obviously not enough of a push, and it is not clear who or what employee-inventor aligned organization might

¹³³ Baker & Brunel, *supra* note 17, at 420.

¹³⁴ *Id.* at 406.

be well organized and powerful enough to successfully advocate such a change in the face of well funded corporate opposition. As discussed above, federal legislation mandating possible minimum royalties to employee-inventors did not even make it out of committee,¹³⁵ and that was when Democrats, who are generally more sympathetic to labor interests than Republicans, held a majority in both houses of Congress.

C. *Disaggregation of Patent Rights such that Employee-Inventors Retain a Non-Exclusive, Non-Transferable Right to Practice their Inventions (A "Reverse Shop Right")*

Another technologist who left the laboratory to go to law school, Steven Cherenky, also recognized that employee-inventors are often bereft of any real incentive to innovate.¹³⁶ He considers "pre-inventions" (essentially inventions that have not yet been conceived of) entities, and argues that both employee-inventors and employers have significant, cognizable proprietary interests in pre-inventions.¹³⁷ In his thoughtful and philosophically driven article, appropriately titled A Penny for Their Thoughts: Employee-Inventors, Pre-Invention Assignment Agreements, Property, and Personhood, he presents an alternative property approach for the resolution of pre-invention assignment disputes which is labelled "personhood theory."¹³⁸ According to

¹³⁵ See *supra* notes 99-103 and accompanying text.

¹³⁶ Cherenky, *supra* note 17, at 593.

¹³⁷ *Id.*

¹³⁸ The personhood theory of property focuses on the relationship between property and personality. Property, it is argued, is justified because it is conducive, perhaps necessary, to the development of personality. Personality has many meanings. For example, personality can refer to the 'moral and political personhood,' 'awareness of individuating characteristics,' or 'the desirable integration of the self's thoughts and attitudes.' Every meaning of personality contains some notion of the person as an autonomous, moral, individuated agent. Although different formulations of personhood theory emphasize different meanings of personality, elements of each of these meanings are always present.

Personhood theory has been characterized here as an alternative theory of property in the sense that the analysis is, to some extent, outside the mainstream of judicial, if not philosophic, thought. However, personhood theories of property are by no means new. Elements of a personhood theory of property are evident in the works of Plato and Aristotle, although personhood theory as we understand it today was first hinted at in the work of Kant in the eighteenth century. Kant, however, was working within a natural rights framework, and thus Kantian personhood is really more a variant of traditional property theory than an alternative theory.

Id. at 642 (citing Stephen R. Munzer, A Theory of Property 18-19 (1990)).

Cherensky, "personhood theory suggests that certain rights of employee-inventors in their inventions be non-appropriable when those rights are justifiably constitutive of the inventor's personhood."¹³⁹ The first consequence of applying personhood theory to pre-invention assignment agreements is that an employee-inventor retains rights in her invention "only when she can demonstrate a justifiable personhood interest in the invention."¹⁴⁰ Otherwise the employer "retains all interests in the invention, including credit as the inventor-entity."¹⁴¹ Second, "when the employee-inventor can demonstrate a justifiable personhood interest in her invention, this personhood interest should be protected by removing the protected interest from the market."¹⁴² A determination of whether an inventor is in possession of these "personhood interests" is, therefore, critical to apportioning patent ownership rights between employee-inventors and their employers.

"Personhood interests," as described by Cherensky, include an inventor's desire to remain connected to her inventive works.¹⁴³ He points out that "under the Patent Code, applications must be made by human inventors, not their corporate assignees," and that patent applications "must include an oath by the human inventor."¹⁴⁴ Therefore, he asserts, "patent law ... recognizes the personhood interests of inventors in two ways: by requiring the identification of the human creators responsible for the invention on the patent application, and by notation of the inventor on the issued patent," a "non-transferable, non-assignable, market-inalienable inventorship identification" which "protects... a personhood interest - the association of the person with her invention."¹⁴⁵

Cherensky proposes that personhood interests are present only in "employee pre-inventions,"¹⁴⁶ - those innovations that employees might develop in the future. He distinguishes employee pre-inventions from other inventions and pre-inventions because "an employee-inventor's 'decision' to alienate her pre-inventions is particularly suspect" because "the employee-inventor must decide to alienate her interests before she even conceives of the invention and before she has invested any personality."¹⁴⁷ Therefore, "the employee-inventor has no meaningful choice but to accept the terms offered by the employer if she wishes to develop her personhood by participating in the

¹³⁹ *Id.* at 601.

¹⁴⁰ *Id.*

¹⁴¹ *Id.*

¹⁴² Cherensky, *supra* note 17, at 601.

¹⁴³ *Id.*

¹⁴⁴ *Id.* at 649.

¹⁴⁵ *Id.* at 653.

¹⁴⁶ *Id.*

¹⁴⁷ *Id.* at 652.

inventive process, given that large firms dominate access to necessary resources and opportunities."¹⁴⁸

The changes in the patent law that Cherensky advocates to "overcome its current shortcomings in protecting the personhood interests of employee-inventors"¹⁴⁹ include recognition of corporate inventorship in "pre-inventions without justifiable personhood interests," meaning inventions that are "an anticipated result of corporate direction that was conceived and reduced to practice using significant corporate resources,"¹⁵⁰ and adoption of one of "three possible methods of applying personhood theory to employee pre-inventions."¹⁵¹

First, Cherensky argues that "the law could recognize the justifiable personhood interests of employee-inventors in their pre-inventions and make these interests inalienable."¹⁵² In other words, employee-inventors could be permitted to retain all of the rights in any patentable inventions they originate. Labeling this method the "non-appropriability approach," Cherensky rejects it out of concern that if employee-inventors were the only ones who could exploit or license inventions, corporations could be denied the "output of their own laboratories," which would reduce or eliminate incentives to invest in organized research and development.¹⁵³ Even if employers received "non-transferable, non-exclusive shop-rights" in employee pre-inventions, Cherensky asserts that "restrictions on alienability would preclude, at least for employee inventions, the patent licensing and transfer agreements that allow inventions to realize their optimal utility," again curtailing incentives to invest in innovation.¹⁵⁴ Cherensky, therefore concludes that "a regime of complete inalienability is not a desirable solution to the problem of the employee-inventor, even where schemes of ... employer shop-rights are available to soften its impact."¹⁵⁵

Second, he posits that the law "could recognize corporate proprietary interests in the pre-inventions of employee-inventors analogous to human personhood interests. The corporate interest could either cancel the employee-inventor's personhood interest in the same property - thus making the property alienable - or be balanced against the interests of the employee inventor on a case-by-case basis."¹⁵⁶ Cherensky rejects this "cancelling

¹⁴⁸ Cherensky, *supra* note 17, at 652.

¹⁴⁹ *Id.* at 597.

¹⁵⁰ *Id.* at 654.

¹⁵¹ *Id.* at 657.

¹⁵² *Id.*

¹⁵³ *Id.*

¹⁵⁴ Cherensky, *supra* note 17, at 659.

¹⁵⁵ *Id.*

¹⁵⁶ *Id.*

or balancing approach," because he concludes that "a cancelling or balancing approach that compares the personhood interests of humans and corporations has serious flaws."¹⁵⁷

According to Cherensky, "in the kingdom of corporate ends, everything has a price and nothing has a dignity."¹⁵⁸ Therefore, he reasoned that unlike human personhood interests, there are no interests that are inalienable to corporations. Per Cherensky, "[a] person cannot sell her body parts, but a corporation can sell its divisions, or even the entire corporation. Corporations can even sell what might be argued is analogous to personality - the corporate 'good will' - though in practice this might require the sale of the entire corporation."¹⁵⁹ He therefore concluded that "the concept of protecting the inalienable or noncommodifiable interests of firms is not supportable" and "the canceling or balancing approach is unsatisfactory as a means of allocating rights in employee inventions."¹⁶⁰

Finally, Cherensky asserts that "the law could reject corporate 'personhood' interests and disaggregate the rights incidental to employee pre-inventions." He maintains that "those interests that are justifiably constitutive of the personality of the employee-inventor could be identified and made market-inalienable. All other rights incidental to employee pre-inventions would then be freely alienable."¹⁶¹ It is this, the "disaggregation approach," that Cherensky contends is the key to using personhood theory to resolve pre-invention disputes, through establishment of a "fungible/personal" dichotomy. He posits that the inventor's interests which should be protected are "those that contribute to the inventor's self-conception in ways inseparable from the inventive process, those that contribute to her continuity in the inventive process, and those that contribute to her control over the inventive process,"¹⁶² which he claims can all be protected by "granting the inventor continued access to her invention independent of her employment relationship with the assignee."¹⁶³ Under this scenario, an inventor's handiwork would always be accessible to her, but her employer would still exercise dominion over the use and exploitation of employee created inventions.

1. Critique of Cherensky's Proposal

¹⁵⁷ *Id.*

¹⁵⁸ *Id.* at 660.

¹⁵⁹ *Id.*

¹⁶⁰ Cherensky, *supra* note 17, at 660.

¹⁶¹ *Id.* at 657-58.

¹⁶² *Id.* at 662.

¹⁶³ *Id.*

Like the jurists that Baker and Brunel describe and criticize, Cherensky's fatal flaw is his bias in favor of capital contributors. Though he recognizes and decries the lack of incentives for employee inventors to innovate,¹⁶⁴ he offers no real proposal to motivate them. By declining to deprive inventor employers of financial rewards or meaningful control over inventions developed by employee-inventors, Cherensky ruled out any practical solution to the lack of incentive problem he described so articulately.¹⁶⁵ All Cherensky is willing to do, essentially, is grant a "reverse shop right" to the employee-inventor, which would allow the employee-inventor to make "private personal" and experimental use of her own invention, but would be of financial value to the employee-inventor only if she personally founded a company to compete with the employer,¹⁶⁶ something few employee-inventors are likely to have the resources to accomplish. The ability to retain the right to use or practice one's own invention would, to many employee-inventors, be at least a minor improvement over the status quo. However, under Cherensky's scheme, changing jobs even after being involuntarily terminated would not allow an employee-inventor to confer a license on a new employer,¹⁶⁷ so she could not use her "reverse shop right" to make herself desirable to potential alternative employers in her field of inventive expertise.¹⁶⁸

D. Adoption by Each State of a Uniform Statute
Governing the Content of Pre-Invention
Assignment Agreements

A manager at an electrical products concern has bragged that most employees working there "must sign an agreement specifying in effect, that 'even if they invent something in their sleep, it belongs to the company.'"¹⁶⁹ Not surprisingly, most pre-invention assignment agreements are exceedingly broad. In response to a marked tendency of employers to overreach within the four corners of what are already very restrictive contracts, eight states have enacted statutes that mildly and to varying

¹⁶⁴ *Id.*

¹⁶⁵ *Id.*

¹⁶⁶ Cherensky, *supra* note 17, at 663-66.

¹⁶⁷ *Id.* at 664-65.

¹⁶⁸ Another scholar who proposed giving employee-inventors a "reverse shop right" asserted that they should retain a "royalty-free, non-exclusive, singly-transferable license to use any patent" they are contractually forced to assign to their employers. Hovell, *supra* note 17, at 887. He suggested that this version of the "reverse shop right ... would make the inventor more valuable because he could sub-license his invention to a new employer upon changing jobs." *Id.*

¹⁶⁹ Stipp, *supra* note 40, at 1 ("Inventors are seeking bigger share of gains from their successes.").

degrees¹⁷⁰ protect the rights of employee-inventors who are subject to pre-invention assignment agreements.¹⁷¹ It has been suggested that every state should enact a model pre-invention assignment agreement statute which protects an employee's rights in private inventions unrelated to an employer's business. Such a statute, it is argued, could also require employers to notify employees of this protection in writing, in order to "clarify for employers the acceptable limits of pre-invention employment contracts," thereby reducing "both employer-employee disputes and litigation regarding patent and invention ownership."¹⁷² However, it is highly unlikely that such statutes will be promptly and uniformly passed, and it seems very improbable that the legislatures of traditionally "pro-employer" states would enact anything that even slightly protects employee-inventors.¹⁷³ Moreover, although one commentator wrote that "an extremely bold position for employee invention state legislation would be a provision to require mandatory compensation above regular salary compensation for any invention covered under a pre-invention assignment agreement, comparable to the mandatory provision for federal employees,"¹⁷⁴ there is no indication that any state is considering incorporating such a provision in any pre-invention assignment agreement statute that is already in effect, or likely to be passed. The state statutes currently in place may somewhat enhance an employee-inventor's bargaining power with respect to her

¹⁷⁰ All of the state statutes except Utah's typically contain the following provisions: "1. Employment pre-invention assignment agreements shall not apply to an invention developed by [an] employee on his or her own time and without using employer resources. 2. An exception to the rule in item 1 may exist if the invention: a. relates to the employer's business, or anticipated research or development of the employer; or b. results from any work performed by the employee for the employer. 3. Any provision in an employment agreement requiring the employee to assign an invention exempted from assignment by a state statute and not an exception is against public policy and is void and unenforceable. 4. The employer cannot require a provision that is unenforceable by way of the statute as a condition of employment or continued employment. 5. Employment agreements containing provisions to assign or offer to assign inventions must include written notification that the agreement does not apply to inventions as described under the statute. 6. The burden of proof is on the employee to prove that an invention is not assignable because it meets the requirements of the statute and is not an exception. 7. Confidential disclosures of inventions made during the term of employment are allowable for purposes of employer review." The Utah statute is more strongly employer-oriented.

Pisegna-Cook, *supra* note 18, at 179-80.

¹⁷¹ These states include California, Delaware, Illinois, Kansas, Minnesota, North Carolina, Utah and Washington. *Id.*

¹⁷² *Id.* at 185.

¹⁷³ See Baker & Brunel, *supra* note 17, at 414-15.

¹⁷⁴ Pisegna-Cook, *supra* note 18, at 185.

employer, but under them "an inventor must still assign certain patents without present or future compensation. Therefore, [the statutes] do not address the more fundamental problem of giving the inventor a stake in [her] invention."¹⁷⁵

VI. Using Collective Action to Eliminate Coerced Pre-Invention Assignment Agreements

In Japan and many industrialized European countries, employee-inventors are statutorily entitled to compensation beyond salary and job retention for devising patentable inventions.¹⁷⁶ Similar legislation has been proposed in the United States Congress, most recently in 1982, but none of the bills passed, and in fact never even reached a vote on the floor of either the House of Representatives or the Senate.¹⁷⁷ As discussed above, American courts have an entrenched pro-inventor mind set that does not favor employee-inventors,¹⁷⁸ and like federal legislators, are not currently championing the cause of employee-inventors.

One way to address the current disincentives to invent without waiting for Congressional action or relying on courts to substantially alter jurisprudence concerning pre-invention assignment agreement would be for "pre-inventors" to organize and act collectively, by refusing to sign any pre-invention assignment agreements in the future, by "revoking" pre-invention assignment agreements currently in effect either through negotiations with the companies they work for, or by changing jobs (and refusing to sign such agreements with new employers). Employee-inventors would then retain ownership of their patented inventions, and could exploit these inventions themselves or license them to others with the assistance of a patent collective organized by and for inventors. Because the common law allows employee-inventors to retain ownership of their patented inventions, while still giving the inventor employer benefits from the invention¹⁷⁹ (and therefore an incentive to continue to invest in research and development), collective activity by inventors that allows this sensible jurisprudence to prevail is hardly a radical approach to improving the incentives to invent.

Beyond its positive implications for employee-inventors, collective activity by inventors could benefit society enormously through dramatic increases in technological

¹⁷⁵ Hovell, *supra* note 17, at 882-83.

¹⁷⁶ See Orkin, *supra* note 7, at 654. See also Parker, *supra* note 17, at 615.

¹⁷⁷ Hovell, *supra* note 17, 883-88.

¹⁷⁸ See *supra* note 52 and accompanying text.

¹⁷⁹ For a detailed discussion of the "shop rights" doctrine, see Baker & Brunel, *supra* note 17; Parker, *supra* note 17, at 606; Pisegna-Cook, *supra* note 18.

innovation, though admittedly at the expense of inventor employers.¹⁸⁰ However, inventor employers could act to minimize any losses, and the net effect on the United States as a whole would be disproportionately positive. If employee-inventors use collective action to retain ownership rights in any invention they develop and patent, incentives for innovation will increase radically, leading to higher productivity by existing inventors and inducing larger numbers of people to become inventors. In addition, as explained below, the problem of "blocking patents" will be significantly reduced, and industrial efficiency will increase as patented inventions are more easily licensed by companies most willing and able to profitably exploit them. Despite the cost and loss of control that this proposal will extract from inventor employers, most companies would still be motivated to hire potential inventors and to continue to invest in research and development at current levels because they would retain "shop rights" and possibly an exclusive compulsory license (if a company chooses to purchase one) in any invention developed by an employee. In addition, inventor employers would no longer incur litigation expenses when the validity of a patent is challenged, and would no longer have to fear that a disgruntled former employee-inventor on the payroll of a competitor would use inside information to attempt to invalidate a patent on an invention she conceived and helped to develop. Instead, inventor employers would receive litigation and technical assistance, even from former employees, to insure that the validity of any patent they license is upheld and the patent is not infringed.

Only through the strength of numbers can technological employees hope to avoid pre-invention assignment contracts of adhesion and use their inventive prowess to elevate themselves to a position of bargaining strength that at least roughly correlates to the value of the contributions they make to their employers, if not to society in general. If increased certainty in the rewards of invention encourages the owners of patents to invest money in research and development, it is only logical that the increased likelihood of sharing in the rewards of invention would similarly stimulate actual inventors to invest time, thought and energy.¹⁸¹

A. *Formation of Patent Collectives*

¹⁸⁰ The term "inventor employer" is used throughout this Article to refer to entities that employ inventors or potential inventors, such as for-profit companies, (the primary focus of this analysis) public and private universities, and research institutions run under the auspices of the U.S. Government.

¹⁸¹ See Parker, *supra* note 18, at 605.

For a variety of reasons, employee-inventors are unlikely to unionize,¹⁸² and even if they did, most labor unions are not designed or prepared to address the problems identified above.¹⁸³ The most effective form of concerted activity for employee-inventors is therefore the formation of patent collectives. Although the idea of patent collectives is apparently somewhat novel, several copyright collectives are long established in this country, and have been quite successful at attracting members.¹⁸⁴

On behalf of their members, copyright collectives, known as "performing rights societies," collect "license fees from radio and television stations, networks, and establishments such as nightclubs, restaurants, and bars that present their members' works."¹⁸⁵ Copyright holders such as composers and lyricists become members of copyright collectives by granting them the non-exclusive right to license the public performance of their musical compositions; the collectives, in turn, license these rights to radio and television stations, nightclubs, hotels and other venues.¹⁸⁶

¹⁸² *Id.* at 609; Dratler, *supra* note 17, at 144.

¹⁸³ If technical employees joined unions, they could oppose assignment agreements through the collective bargaining process. Scientists and engineers have not organized, however, and for several reasons, they are not now likely to do so. First, they consider unionization unnecessary and demeaning to their status as white collar employees and independent professionals. Second, many inventors aspire to management positions and have no desire to alienate their superiors. Third, even when inventors do attempt to organize, conflicts with blue collar workers create difficulties in defining the appropriate bargaining unit, because those workers, represented by existing unions, often do similar or related work. Finally, when technical personnel do join existing unions, the patent rights issue is of concern only to a minority of union members, and so falls to the bottom of the agenda.

Dratler, *supra* note 17, at 157-58.

¹⁸⁴ The earliest copyright collectives licensed nondramatic musical performances, where many separate works were performed in a wide range of locations. The United States today has two major performing rights organizations, the American Society of Composers, Authors and Publishers ("ASCAP") and Broadcast Music, Inc. ("BMI"). ASCAP is an unincorporated nonprofit association with a membership of about 29,000 writers (composers and lyricists) and 12,000 music publishers, and a repertory of about 3 million songs. BMI is a corporation owned entirely by broadcasters with approximately 53,000 writers and 32,000 publisher affiliates, and a repertory of about 1.5 million songs. In addition to ASCAP and BMI, performance rights for some works are licensed by SESAC, Inc., a family-owned corporation with about 1,800 writer and about 1,130 publisher affiliates. ASCAP and BMI writers and publishers grant to their respective organizations the nonexclusive right to license nondramatic public performances of their works. Performing rights societies also exist in many other countries.

Stanley M. Besen et al., *An Economic Analysis of Copyright Collectives*, 78 *V.A. L. REV.* 383, 385 (1992).

¹⁸⁵ *Id.*

¹⁸⁶ *Ocasek v. Heggglund*, 116 F.R.D. 154, 156 (D. Wyo. 1987) (as excerpted in Latman et al., *Copyright for the Nineties* 573 (3d ed. 1989)).

Licensing fees vary from industry to industry and fees for establishments such as restaurants and bars depend on factors such as the seating capacity, frequency of musical performance, and admission charges.¹⁸⁷ "Performing rights societies" also "have reciprocal relationships with foreign societies that allow them to license each other's repertoires."¹⁸⁸ Blanket licenses, which give licensees the right to use any of the music in the collective's repertoire, allow copyright collectives to collect licensing fees simply and efficiently. The licensing fees these copyright collectives garner for their members are impressive. ASCAP, which has the largest membership, had worldwide receipts of about \$358 million in 1990 while "BMI's revenues for the fiscal year ending June 30, 1991 were about 276 million."¹⁸⁹

In addition to the performing rights societies, "during the past decade or so, copyright collectives have also been formed to administer rights to photocopy books and articles. These 'reproduction rights organizations' ('RRO's') license business firms, universities, photocopying services and individuals in most developed countries."¹⁹⁰ "Other collectives administer a variety of rights, including the rights to authorize sound recordings of musical works ('mechanical' rights), rights to performances of dramatic works, rights to cable retransmission of broadcasts, and home taping rights."¹⁹¹ New varieties of copyright collectives are "expected to arise as technologies such as the videocassette recorder, the personal computer, and the photocopying machine facilitate more widespread and decentralized use of copyrighted materials and make individual monitoring even more difficult."¹⁹²

A patent collective would operate differently from currently existing copyright collectives in some respects, as blanket licenses, whereby a licensee can acquire the right to use or perform every work in the collective's "library,"¹⁹³ are unlikely to be a

¹⁸⁷ *Id.*

¹⁸⁸ Besen et al., *supra* note 184, at 385.

¹⁸⁹ *Id.* at 386.

¹⁹⁰ *Id.*

¹⁹¹ *Id.* at 387.

¹⁹² *Id.*

¹⁹³ Jay M. Fujitani, Comment, *Controlling the Market Power of Performing Rights Societies: An Administrative Substitute for Antitrust Regulation*, 72 CAL. L. REV. 103, 105-06 (1984).

Composers, lyricists, and publishers become members of ASCAP by assigning the organization the nonexclusive right to license nondramatic public performance of their works. ASCAP in turn grants licenses to networks, local television and radio stations, theaters, bars, restaurants, and other users of copyrighted music. ASCAP offers licenses to these users on either a blanket or per-program basis. Blanket licenses entitle licensees to perform any work in ASCAP's repertoire for the duration of the license -

profitable or desirable mechanism for licensing most technological inventions. However, a patent collective could still duplicate or adapt the aspects and qualities of copyright collectives that have made them so successful. Member employee-inventors would authorize a patent collective to negotiate patent licenses with entities wishing to use or manufacture members' inventions and to administer these licenses. The collective would retain a portion of the licensing fees to cover its costs, pay its employees, and fund legal work, such as defending the validity of members' patents and bringing infringement actions against any entity that misappropriates a member's intellectual property. Once it had a large enough membership base, a patent collective might also underwrite the costs of patent prosecution on behalf of member inventors.

A sensible patent collective will behave in a manner that gives corporations and other institutions strong incentives to make substantial investments in research and development even after employee-inventors are no longer bound by pre-invention assignment agreements. One mechanism to achieve this would be to allow a company to meet the last, best offer made for any patented invention developed by that company's employees, thereby giving that company the opportunity to obtain an exclusive license of these patented technologies, rather than simply a shop right. This de facto "right of

generally one year. Fees for such licenses depend on the nature of the licensee's business, although all similarly situated licensees must be treated equally. Generally, however, fees are a flat rate or are based upon a fixed percentage of some measure of the licensee's gross revenues. Fees thus do not reflect the actual number of such works used or the number of performances rendered. Per-program licenses, like blanket licenses, enable the licensee to use any work in the society's repertory. While fee percentages for per-program licenses are generally higher than those for blanket licenses, such a percentage is exacted from the revenues for only those programs that make use of ASCAP music.

Id. at 105-06.

In addition to eliminating the transaction and enforcement costs that would otherwise substantially hinder the efficient exploitation of statutory performance rights, performing rights organizations neutralize the bargaining leverage many users would otherwise exert over individual composers. In particular, the blanket license provides the composer with some market leverage against the monopsony power of the major licensees from whom he derives a substantial portion of his royalties. Without ASCAP and BMI, television networks could exploit their superior market positions vis-a-vis individual composers, taking advantage of the intense competition among composers desiring that their works be performed on network television. By joining a collective organization that blanket licenses music performance rights, an individual composer can counterbalance such market power to assure receipt of fair compensation.

Id. at 111-12.

first refusal" would help motivate most companies to continue to employ and support inventors.

1. *Effect on Employee-Inventors*

a. *Advantages*

Pre-invention assignment agreements remove a powerful economic incentive from the people who actually create inventions.¹⁹⁴ Patent collectives would offer many advantages to employee-inventors, such as assistance in exploiting their patents, which would allow them to derive financial rewards commensurate with the market value of their inventions, while permitting the inventors to retain radically increased control over the scope and manner in which their inventions would be licensed and exploited. Inventors would also be increasingly able to move from corporation to corporation or start up their own companies,¹⁹⁵ as once unencumbered by pre-invention employment agreements, they would be free of the "trailer clauses" that such agreements usually contain,¹⁹⁶ which restrict their ability to obtain work in the same field as a former employer.¹⁹⁷

b. *Disadvantages*

¹⁹⁴ Dratler, *supra* note 17, at 147-48.

¹⁹⁵ Inventors unencumbered by pre-invention assignment agreements may be the ideal candidates to exploit their own inventions. *See, e.g.,* Kirkpatrick, *supra* note 3, at 1.

¹⁹⁶ Hershovitz, *supra* note 8, at 197-98.

¹⁹⁷ Trailer clauses are analogous to the covenants not to compete frequently found in employment contracts. Both clauses operate to restrict the former employee's ability to work in the profession in which he is trained. Non-competitive or restrictive covenants explicitly restrict the employee's ability to work in the same field as his former employer. Trailer clauses have the same effect, but through a circuitous route. While a trailer technically does not prohibit an inventive employee from working for a competitor, business competitors do not desire to hire individuals obligated under such a clause because the work product of such employees may not accrue to the new employer's benefit. At best, employers that hire inventive employees obligated under such agreements will under-utilize the employees' inventive skills so as not to develop conflicts with prior trailer clauses. This under-utilization of a burdened inventive employee's creative capacity may concomitantly diminish his rate of compensation. At worst, the inventive employee is unemployed. In today's society, where technology is advancing at breakneck speed, under-utilization or non-utilization of inventive skill may cause an inventive employee's creative capabilities and talent to atrophy. *Id.* at 198-99 (citations omitted).

A patent collective cannot be successfully established until substantial numbers of inventors and potential inventors act collectively to retain ownership of their patentable inventions by refusing to sign pre-invention assignment agreements. Attempting to extricate themselves from pre-existing pre-invention assignment agreements and avoid signing such contracts in the future could be personally disruptive to employee-inventors and their families, as job changes and salary cuts may initially be required. If employee-inventors fail to act in sufficient numbers right from the outset, a patent collective would be difficult to form and sustain. Even temporary membership in a failed patent collective might brand an employee-inventor as a troublemaker, making it difficult to secure future employment. Optimally, some of the professional organizations that technologists belong to could aid organizing efforts, and otherwise assist the development of fledgling patent collectives.

Even assuming adequate participation, collective action requires that individual rights and interests be subverted to some extent for the good of the many, a notion that might be difficult for employee-inventors (who are often rugged individualists) to accept. In the context of a patent collective, though every member would be required to turn over the same percentage of patent-generated income to the collective, inventors of more profitable inventions would necessarily "carry" inventors holding patents that are less financially rewarding by providing a greater share of the collective's operating funds. One can only hope that given their current dismal situation, most technologists would see that the benefits of collective activity substantially outweigh the associated burdens.

Although employee-inventors already have institutional incentives and personal motives to jockey for inventive credit¹⁹⁸ and disputes currently arise over who gets to be a named inventor on a patent application under the current system,¹⁹⁹ if the rewards of

¹⁹⁸ See Jon Cohen & Gary Taubes, *The Culture of Credit*, SCIENCE, June 23, 1995, at 1706 ("In science, as in so many other professions, the coin of the realm is not collaborative generosity but credit - credit for individuals. One reason is that scientists need acknowledgment for the endless hours in the lab and for their own creativity... But ego isn't the only reason credit is crucial in science. At a time when budgets are tightening like vises and the number of bright competitors seems to grow exponentially, credit for discoveries can make the difference between treading water and sinking in a scientific career. With credit from one's peers comes access to all important grant funding, easier publication in leading journals, and a steady supply of the grad students and postdocs who make the lab run.").

¹⁹⁹ See, e.g., *Haskell v. Colebourne*, 671 F.2d 1362 (C.C.P.A. 1982); *Rival Mfg. Co. v. Dazey Prod. Co.*, 358 F. Supp. 91 (W.D. Miss. 1973).

being a named inventor increase, the contentiousness of disputes concerning designations of inventorship may intensify. On the other hand, given a larger "reward" pool (a guaranteed percentage of royalties rather than mere bonuses or raises doled out by stingy employers) that is both certain and proportional to the value of the patented invention rather than at the discretion of fickle employers, employee-inventors may be more willing to cooperatively share credit and inventorship.

Whatever the effect a larger and more predictable "reward pool" has upon the willingness of employee-inventors to share the inventor designation, shared control over inventions and patent rights is an issue patent collectives will have to contend with. By statute, each joint inventor can independently exploit a patent, even though this might be detrimental to her co-inventors.²⁰⁰ One might expect that in a typical situation today, all joint inventors are employed by the same or collaborating institutions, and all have signed pre-invention assignment agreements depriving them of ownership of inventions before any inventions even exist, so there are few conflicts between joint inventors. In the wake of collective action as called for in this article, co-inventors would retain ownership and control of their patented inventions (subject to the rights retained by their employers as described above and below), and may have conflicting views about how this control should be exercised. Where all joint inventors belong to the same or cooperative patent collectives, the rewards of a patent can be evenly distributed rather easily, but disposition of control issues within a collective may require implementation of a binding dispute resolution mechanism.

Where joint inventors were members of competing (and therefore noncooperative) patent collectives, or where one or more coinventor eschewed patent collectives altogether, non member inventors could exploit patents in a manner that was detrimental to both the member co-inventors and to the patent collective itself. For their part, inventor employers would be eager to have nonmember employees designated as inventors on patents emerging from their companies as a way to retain full control over such patents (as presumably, such employees would continue to be voluntarily bound by pre-invention assignment agreements). Such "split" ownership would also provide employers with a mechanism for undermining patent collectives, by depriving them of royalties and making them appear weak and ineffectual. At least initially, patent

²⁰⁰ [35 U.S.C. § 262](#) (1994) ("In the absence of any agreement to the contrary, each of the joint owners of a patent may make, use or sell the patented invention within the United States, or import the patented invention into the United States, without the consent of and without accounting to the other owners."). *See also* Deborah Perrotta, *Estate Planning for Owners of Patents and Copyrights*, EST. PLAN., Mar.-Apr. 1994, at 94; *Fina Tech., Inc. v. Ewen*, 857 F. Supp. 1151 (N.D. Tex. 1994); *Lemelson v. Synergistics Research Corp.*, 669 F. Supp. 642 (S.D.N.Y. 1987).

collectives will have to cooperate with each other to some extent to survive (hopefully such mutual assistance would fall short of antitrust violations); such survival may also depend upon high rates of membership within productive research and development laboratories.

2. Effect on Inventor Employers

There is no denying the fact that the financial rewards and control regained by employee-inventors come at the "expense" of inventor employers, whose ongoing ability to circumvent the dictates of the common law through pre-invention assignment agreements will be thwarted. This is entirely justified because the benefits to society disproportionately outweigh the "losses" of inventor employers when these employers are unable to contract around the common law as it pertains to patent ownership. The refusal of inventor-employees to sign pre-invention employment agreements is unlikely to significantly effect investment in research and development, as inventor employers would still be motivated by the promise of a shop right in anything developed by their employees, as well as the possibility of an exclusive "compulsory" license if it meets the last, best licensing offer negotiated by the collective. The same desire for a competitive advantage that propels corporations to invest in research and development in the first place²⁰¹ will drive them to adapt to a framework of patent collectives, wherein every player benefits from fruitful innovative strategies rather than just inventor employers.

Even now many patented inventions are not necessarily exploited by the companies whose employee-inventors develop them, as evidenced by the licensing disputes that frequently find their way into the federal courts. It should be easier for companies desiring to exploit potentially profitable inventions to negotiate licenses from patent collectives rather than from their competitors, leading to a more efficient distribution of inventions. The effect of patent collectives on companies that license, rather than originate, the inventions they exploit will therefore be positive, or at a minimum, neutral.

Though employer inventors will likely be adamant about retaining ownership of patents that are invented by their employees and will undoubtedly fight any attempt at collective action by employee-inventors to deprive them of this total possession, most have shown little interest in increasing their rates of innovation even when the spoils of a profitable patent are completely and squarely theirs. Despite their subjugation of

²⁰¹ See generally Kim Clark, *Investment in New Technology and Competitive Advantage*, in *THE COMPETITIVE CHALLENGE: STRATEGIES FOR INDUSTRIAL INNOVATION AND RENEWAL* 59 (David J. Teece ed. 1987).

employee-inventors through the widespread use of easily and predictably enforceable pre-invention assignment agreements as a condition of employment and the "pro patent" (or minimally, "predictable") jurisprudence of the Federal Circuit,²⁰² American companies have not been substantially or consistently increased their investment in research and development²⁰³ and high technology employment levels have been declining.²⁰⁴ This seemingly contradictory behavior by corporations is actually quite rational from the standpoint of corporate management: the fewer the profitable patentable inventions its employees develop, the tighter the stranglehold the corporation will exert upon the dwindling innovations emerging from the minds and hands of its inventive employees.

3. *Advantages to Society*

The big societal payoff for successful collective action by employee-inventors is clearly increased incentives for individual inventors to innovate.²⁰⁵ The benefits of this increased inventiveness can reasonably be expected to include improved productivity and profitability for existing U.S. companies, with a corresponding improvement in the GDP and balance of trade picture. Also, more start up companies are likely to be founded by inventors who opt to exploit their inventions on their own, and creating even more "wealth"²⁰⁶ and employment opportunities for fellow inventors and others

²⁰² See discussion *infra* Part III.

²⁰³ Robert H. Hayes, *U.S. Competitiveness: "Resurgence" Versus Reality*, CHALLENGE, Mar. 13, 1996, at 36 ("Despite the widely heralded increase of investment over the past three years, (not an unusual phenomenon when economies emerge from the bottom of a business cycle), ... American industry is still reinvesting a substantially smaller percentage of its revenues and profits than it did fifteen years ago. In addition, government spending on public infrastructure has steadily declined to less than half (as a percentage of GNP) the level of thirty years ago. And with the cutbacks in government-sponsored R&D, total R&D has also fallen. Even though nondefense R&D has risen somewhat to compensate, the total is still about the same percentage of GDP as it was twenty-five years ago - and a third less than Germany's and Japan's.").

²⁰⁴ Zoltan J. Acs, *Does Research Create Jobs?*, CHALLENGE, Jan. 1996, at 32.

²⁰⁵ Financial incentives alone will increase inventive productivity. See Parker, *supra* note 17, at 605; John P. Sutton, , *The Inventor's Interest in PATENT POLICY: GOVERNMENT, ACADEMIC, AND INDUSTRY CONCEPTS* 150, 152-53 (Willard Marcy, ed. 1978). But see Arvid Zuber, *Creativity in Industrial Research Laboratories*, in *PATENT POLICY: GOVERNMENT, ACADEMIC, AND INDUSTRY CONCEPTS* 148 (Willard Marcy, ed. 1978).

²⁰⁶ See Shawn Tully, *The I.P.O. Boom: How to Make \$400,000,000 in Just One Minute...*, FORTUNE, May 27, 1996, at 84.

than a large corporation would during the course of exploiting a single invention.²⁰⁷ Employee-inventors would no longer be foreclosed by pre-invention assignment agreements from joining or forming spin off companies, and would be immune to the potential sluggishness and disinterest of large corporations.²⁰⁸

Americans will also benefit from increased industrial efficiency. Inventions that are not quite right for the companies where they are developed can be more readily shopped around by the inventor, with assistance from a patent collective, to companies that are better positioned to productively exploit the invention. Moreover, employee-inventors unburdened by "trailer clauses" will be able to move to companies where they feel most comfortable and are likely to be most inventively productive.

Collective activity by inventors would also reduce or eliminate the difficulties and inefficiencies wrought by "blocking patents," because individual inventors belonging to patent collectives will be more apt to behave cooperatively than competing firms. A "blocking patent" problem occurs when the invention embodied by a patent, typically a "pioneer" or "revolutionary" invention, is improved upon by another inventor. The later inventor may obtain a patent on her improvement, but she will be unable to practice or license her patented improvement without the acquiescence of (and a license from) the holder of the original patent. The owner of the original invention is positioned to drive a very hard bargain with the holder of the improvement patent, who can expect to derive revenue from her invention which is significantly less than its market value because the excess value will go to the original patent holder in the form of licensing fees. In addition, the original inventor can prevent the "improvement invention" from being practiced at all by withholding a license and/or threatening an infringement action. Where the original and improvement patents are held by competing institutions, a desire by the original patent holder to protect market share, for example, could lead to a complete refusal to license the patent to an improvement patent holder, to the detriment of both the secondary patent owner and society at large, which is deprived of the improved product or process until the original patent expires. Obviously, the "blocking patent" problem is a strong disincentive for competitors to

²⁰⁷ See Dratler, *supra* note 18. See also Hanspeter Gassman, *Globalisation and Industrial Competitiveness*, OECD OBSERVER, Dec. 10, 1995, available in 1995 WL 8451848, at 10 ("It is generally recognised that [small and medium-sized enterprises] are becoming more important for four main reasons: they are often innovative; they contribute to the net creation of employment; they often are good exporters of new products; and they increasingly contribute to improving the skills of the workforce, especially in high-tech activities and in apprenticeship training.").

²⁰⁸ See Dratler, *supra* note 17, at 147.

innovate around "pioneer" or "revolutionary" ideas, despite the benefits that such innovation could offer anyone affected by the original invention.²⁰⁹

Where original and improvement patents were both controlled by members of the same or cooperating patent collectives, the collectives might initially struggle over the fairest manner of distributing royalties generated by an improvement patent between the original and improvement patentees. However, once a policy was in place, such royalties could be apportioned according to a preordained formula previously agreed to by each inventor as a condition for membership in the patent collective. In addition to decreasing patent related strife between corporations, collective action by employee-inventors would also reduce the unsavory (at least to this author) spectacle of Goliath corporations and their lawyers challenging underfunded and underrepresented individual inventors in court, as strong patent collectives could employ attorneys of the same caliber as those generally retained by large corporations.

In addition to the dramatic effect that patent collectives could have on the lives and productivity of employee-inventors, such collectives would also be a boon to independent inventors who lack the resources or talent to exploit their inventions themselves. Though such independent inventors are currently free to license their inventions, they may lack the sophistication or access to do so on their own, and no formal licensing programs are currently in place to assist them.²¹⁰ A patent collective could provide all the support independent inventors require to fully exploit their inventions, to the benefit of everyone.

4. *Potential External Barriers to Patent Collectives*

a. *Antitrust Concerns*

Just as copyright collectives did, and labor unions before them, the formation of patent collectives will raise the specter of antitrust violations. Antitrust concerns are generally raised in the context of copyright collectives when such a collective issues blanket licenses, whereby, for example, in exchange for royalty payments, a radio station is granted the right to play any song by any artist member of the collective.²¹¹ Blanket licensing practices by performing rights societies brought allegations of price fixing, to which many judges were sympathetic. However, after protracted litigation, the

²⁰⁹ See Robert Merges, Intellectual Property Rights and Bargaining Breakdown: The Case of Blocking Patents, 62 TENN. L. REV. 75 (1994).

²¹⁰ See R. Stephen Parker et al., *The New Independent Inventor: Implications for Corporate Policy*, REV. BUS., Mar. 22, 1996, at 7, available in LEXIS, News Library, Mags File.

²¹¹ See, e.g., Fujitani, *supra* note 193.

Supreme Court held that "reasonable" blanket licensing by A.S.C.A.P. and B.M.I. did not necessarily violate the Sherman Anti-Trust Act.²¹²

Because potential licensees are apt to want the rights to only one or, at most, a few patented inventions at a time, patent collectives are unlikely to be in a position to negotiate blanket licenses of anywhere near the scope of those issued by copyright collectives. Evidence of direct, unhindered negotiations between patent collectives and potential licensees would temper antitrust concerns,²¹³ and patent collectives could use the lessons of copyright jurisprudence to tailor legally sustainable licensing policies.

Pre-invention assignment agreements themselves can result in "undue concentration of economic power in a given area of technology."²¹⁴ Only large entities have the resources to engage in substantial levels of research and development, which enables them to obtain the bulk of government research contracts. The funding accompanying these contracts enables these entities to acquire the top researchers and most sophisticated equipment, which can lead to predominance in specific areas of technology and "a spiraling technological agglomeration which may concentrate both expertise and the most modern facilities in a few of the largest concerns."²¹⁵

Patents are monopolies by definition, granted as a means of fostering innovation. Corporations, universities and government institutions are currently permitted to hire as many inventors as they choose, and to hold the rights to as many patents as their employee-inventors can garner for them. It would be darkly ironic if inventors were precluded from collective activity on the basis of antitrust concerns, when the outcome of such collective action would be of such great benefit to society.

b. *Judicial Expansion of "Hired-To-Invent"
Doctrine by Employer-Friendly Courts*

Unlike the other proposals described and critiqued above, at the outset formation of a patent collective does not require enabling legislation or other Congressional or Executive action, or fundamental changes in judicial doctrine or interpretation. However, successful operation of a patent collective could be undermined by either. Employer friendly courts could start to decide that most inventor-employees are actually "hired to invent" even non-linear inventions so that, in accordance with existing

²¹² See *Broadcast Music, Inc. v. Columbia Broad. Sys., Inc.*, 441 U.S. 1 (1979). See, e.g., Fujitani, *supra* note 193.

²¹³ See *Broadcast Music*, 441 U.S. 1.

²¹⁴ Dratler, *supra* note 17, at 146-47.

²¹⁵ *Id.*

doctrine²¹⁶, employers receive ownership of patent rights regardless of whether a pre-invention assignment agreement is in place. An expansion of the scope of the "hired-to-invent" doctrine would be a disconcertingly simple matter, as even presently the definition of invention-for hire is both murky and malleable.²¹⁷ There is some indication that this doctrine is already expanding, as evidenced by recent judicial willingness to award ownership of patent rights to inventor employers based on "implicit" pre-invention assignment agreements.²¹⁸

A predisposition of the courts to find that inventorship is part of every technologists' job description would severely undermine the ability of employee-inventors to gain control of their inventions. Retention of ownership rights by employee-inventors could be effectively limited to patentable inventions outside the scope of the inventor employer's commercial and experimental fields. It would therefore be imperative that courts did not expand the common law definition of workers employed to invent. It would be far preferable if the courts were to abandon the "hired-to-invent" doctrine altogether, as even employees who are "hired to invent" potentially patentable linear inventions are not in reality provided with even moderately detailed instructions, despite the doctrine's assumption that they receive extensive and specific direction from their employing entity. Though the inventive process may be linear in some "hired-to-invent" contexts, with a clearly defined goal at the outset and provision of equipment and resources dedicated to that goal, invention is still serendipitous in nature.²¹⁹ While technological advancement might be an anticipated outcome of such linear resource dedication, contrivance of something that is sufficiently novel, useful, and nonobvious (in a word, patentable) cannot.

If an inventor employer could direct and predict the outcome of an inventor's research and development, any invention produced at the employer's specific direction would be unpatentable due to the invention's obviousness: Predictable, derivative inventions, are by definition "obvious" and therefore fail to meet an important criteria of

²¹⁶ If an employee is hired to invent, the employee must assign his entire right, title, and interest in any patents arising from inventions conceptualized during employment and stemming from the tasks delegated to him by his employer. If not specifically expressed in the employment contract, it is implicit that what the employee is hired to invent will become the sole property of the employer. An employee hired to invent is akin to a 'hired gun. Hershovitz, *supra* note 8, at 194-95 (citations omitted).

²¹⁷ See Christopher M. Mislow, "Necessity May Be the Mother of Invention, But Who Gets Custody?," *The Ownership of Intellectual Property Created by An Employed Inventor*, 1 SANTA CLARA COMPUTER & HIGH TECH. L.J. 59, 62-67.

²¹⁸ Baker & Brunel, *supra* note 17, at 405.

²¹⁹ See *supra* note 2 and accompanying text.

patentability.²²⁰ The hired-to-invent doctrine should therefore be exposed and rejected for what it is, unjustified, employee-inventor oppressing, judicial pro-employerism.

VII. Conclusion

If, as has been suggested, only one out of every ten inventions conceived by an employee-inventor warrants a patent application, and only one out of ten patent application (or one out of every hundred inventions conceived) is ultimately profitable, tremendous numbers of ideas must be generated to advance the state of any given art or science.²²¹ Cherenky asserted that in the current environment, employee-inventors forced to work under the constraints of pre-invention assignment agreements can protect their interests only by either starting their own companies before they conceive potentially profitable patentable inventions, which is probably an avenue open only to a few employee-inventors with an abundance of both self-confidence and financial resources, or by becoming "non-inventors," at the expense of whatever industry they work in, and of society at large.²²² To the detriment of us all, this is the option that creative minds are likely to continue to choose unless inventor-employees unite and engage in collective activity, such as the formation of patent collectives.

²²⁰ See generally ROBERT MERGERS, PAT. LAW & POLICY ch. 5 (1992).

²²¹ Parker, *supra* note 17, at 604.

²²² Ultimately ... employee-inventors are perfectly capable of acting to protect their personhood interest themselves, either by becoming independent inventors or by becoming non-inventors... However, their departure can turn into a serious resource allocation problem for society. In a perverse way, then current patent and contract doctrine may be reducing rather than enhancing social welfare.

Cherenky, *supra* note 17, at 668.

