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The Story of *Ingersoll-Rand v. Ciavatta*: Employee Inventors in Corporate Research & Development—Reconciling Innovation with Entrepreneurship

Armand Ciavatta, the son of a working-class Italian-American family from New England, was a born inventor. Interviewed at age 76, he said he still has ideas for inventions that he hasn't found the time to develop. While working as a research program manager for Ingersoll-Rand, a New Jersey-based manufacturer of heavy equipment, he submitted a dozen ideas for new products to the hierarchy at the research facility where he worked. The company rejected all of them. After Ciavatta was fired in a dispute with a higher-up over the quality of the mine roof stabilizer for which Ciavatta was the manufacturing manager, he had an idea for an improved stabilizer. Now unemployed, Ciavatta went back to tinkering in his home. He developed a prototype stabilizer with kitchen utensils borrowed from his wife and the assistance of a neighborhood boy. Investing his life savings along with money borrowed from a bank and from his brother, Ciavatta patented his stabilizer and he started his own small business to market his invention. When Ciavatta's invention proved a success in the marketplace, Ingersoll-Rand sued to force him to relinquish the patent. Though Ingersoll-Rand claimed that Ciavatta had improperly used information gained during his employment there, Ciavatta eventually won the litigation battle in a unanimous decision of the New Jersey Supreme Court.¹ But he lost the war, as Ingersoll-Rand sales representatives waged a successful campaign to persuade their clients not to switch to Ciavatta's product. The struggle to keep his business afloat consumed much of the rest of Ciavatta's career, and he suffered the fate of long-term unemployment not uncommon for a middle-aged engineer who suddenly found himself out of work. As for Ingersoll-Rand, the denouement of the story isn't much happier. The company eventually disbanded the research and development facility where Ciavatta had worked and ultimately gave up most of its mining business.

Ciavatta's story is not unique. Many inventors believe that their former employers have unfairly claimed their ideas and refused to share the profit or the credit for the invention. Some tell a story of a bureaucratic research and development culture that fails to stimulate, support, or reward innovation. Some become frustrated and go out on their own to work on a promising idea. When the idea succeeds, as the employees tell it, the employer suddenly decides that the invention should be pursued and demands the former employee assign the patent to the firm. These employees understandably see the employer's behavior as opportunistic, and regard contractual provisions that would enable the employer to claim the invention as unconscionable.²

¹ *Ingersoll-Rand Co. v. Ciavatta*, 542 A.2d 879 (N.J. 1988).

² Other leading cases raising similar issues include: *Wommack v. Durham Pecan Co.*, 715 F.2d 962 (5th Cir. 1983) (granting shop right to employer of general laborer whose duties included unloading trucks and sweeping floors for an invention for removing worms from pecans because laborer developed patented process at work); *Francklyn v. Guilford Packing Co.*, 695 F.2d 1158 (9th Cir. 1983) (granting employer shop right to device for harvesting clams invented by fisherman); *Dewey v. Am. Stair Glide Corp.*, 557 S.W.2d 643 (Mo. Ct. App. 1977) (rejecting employer's claim to shop right due to evidence of an express prohibition against working on a device for solving a

Petr Taborsky, for example, made national headlines in 1997 when he went to prison rather than comply with a court order that he hand over his laboratory notebooks and his patents to an invention he developed in his spare time while a student at the University of South Florida. Taborsky had taken a job in 1987 for \$8.50 an hour working as a lab technician at the university to help pay his tuition. He was originally assigned to work on a project in which the university had contracted with the local power company to develop a process for removing ammonia from a clay used to filter water. The power company terminated the project when the university was unable to solve the problem, and Taborsky was reassigned to menial jobs around the lab paid for by sources other than the power company contract. But Taborsky was determined to solve the problem even without the support of his employer. Working after hours for months without pay, Taborsky eventually devised a solution to the problem. Unsurprisingly, both the university and the power company became interested and insisted that the power company owned the process. Because he worked as an employee of the university, Taborsky would get nothing for his discovery. Taborsky took his lab notebooks and dropped out of school. The professor who ran the lab got the university police to confiscate Taborsky's lab notebooks and Taborsky was criminally prosecuted and convicted of theft of the notebooks and of the data and ideas that he had developed. Undaunted, Taborsky patented his invention. In his view, it was not theft to steal his own ideas and the results of work he had done on his own time after the laboratory director had abandoned the project. The trial judge saw it differently, and sentenced Taborsky to prison, where he worked on a chain gang for two months.³

Though their circumstances are in important ways quite different, the common intensity of Petr Taborsky's and Armand Ciavatta's convictions about owning their ideas reflects how far patent ownership extends beyond simple economic analysis. It is about dignitary and autonomy issues as well. For these and other inventors, control over their patents is control over their creativity, and owning their patents is often as much about receiving credit for that creativity as it

problem of falling Stair Glide chair elevators and evidence that the invention was devised entirely at home and during employee's lunch hour); *Waterjet Tech., Inc. v. Flow Int'l Co.*, 996 P.2d 598 (Wash. 2000) (entitling employer to a patent over the method and apparatus for using high-pressure waterjet developed by former lab technician and associate engineer); *Hewett v. Samsonite Corp.*, 507 P.2d 1119 (Colo. Ct. App. 1973) (granting employer shop right to patents for improved luggage invented by foreman who designed inventions on work time using company material but denying employer ownership of the patent because employee was not hired to invent); *Crowe v. M & M/Mars*, 577 A.2d 1278 (N.J. Super. App. Div. 1990) (granting candy manufacturer shop right to an improved pump that could be used for spraying coating on chocolate candy invented by mechanical engineer employed as independent contractor). See Paul C. Van Slyke & Mark M. Friedman, *Employer's Rights to Inventions and Patents of its Officers, Directors, and Employees*, 18 AIPLA Q.J. 127 (1990); Steven Cherenky, Comment, *A Penny for Their Thoughts: Employee-Inventors, Preinvention Assignment Agreements, Property, and Personhood*, 81 Cal. L. Rev. 595 (1993); Marc B. Hershovitz, Note, *Unhitching the Trailer Clause: The Rights of Inventive Employees and Their Employers*, 3 J. Intell. Prop. L. 187 (1995).

³ Leon Jaroff, *Intellectual Chain Gang*, Time Magazine, Feb. 10, 1997, at 64 (detailing Taborsky's invention and incarceration); *Dateline: Taking Liberty? Man Goes to Prison to Fight His Right* (NBC television broadcast Dec. 12, 1999) (recounting Taborsky's story); Greg Saitz, *Inventor Squares Off with Employer*, Times-Picayune, Jan. 10, 2002, at 3 (reporting on employee inventor fired from M&M/Mars candy company for refusing to assign patent to invention for spray paint can). See generally David F. Noble, *America By Design: Science, Technology, and the Rise of Corporate Capitalism* (1977) (recounting criticisms of alleged anti-competitive and innovation-stifling consequences of corporate control of patents to employee inventions).

is about money. Just as employment for most people is as much about dignity, self-respect, and autonomy as it is about a paycheck, so, too, is control over intellectual property rights.

From the employer's point of view, of course, it's a different story. Innovation is notoriously expensive and difficult, particularly in those fields where complex modern technology requires the sustained inventive efforts of many people to develop new products. When one employee claims as his own all the profit and all the credit for an invention to which many of his co-workers and predecessors at the firm contributed, the firm is entitled to resist that opportunism by insisting that the patent and the profits should belong to the firm that fostered the culture and financed the work. From the point of view of the University of South Florida's general counsel, the contract between Taborsky and the university entitled the university to all his inventions. As she put it, "It is irrelevant to us who invented the process. We own it." Employers are worried that if employees can claim the results of their inventions, no employee would ever admit to having an inventive idea during working hours. Any employee who developed an idea on the job, even with the financial assistance of the firm and the creative and technical assistance of co-workers, would quit as soon as the invention appeared to be possibly profitable, claiming sole credit for work when it should be shared with the company and other employees. Employers tend to doubt the veracity of employee claims (though not necessarily Taborsky's or Ciavatta's claims) to have done their work after hours or after quitting or being fired. Moreover, aside from a university's concerns as employer, there is the question of a university's concerns as a producer of scientific knowledge. Should individual scientists who produce major breakthroughs in important scientific problems be able to claim their work for themselves, thereby using intellectual property law to exclude other scientists from benefiting from their work?

As these disputes filter through litigation, employment contracts become increasingly important. In addition to their significance to the legal issues, interpretation and enforcement of these contracts will shape the ethical, economic, and political debates about reconciling individual creativity with collaborative work, about how credit and profit for creativity should be allocated, and about desirable incentives for individual entrepreneurship and corporate investment in research and development (R & D). Most inventors work as employees for the majority of their careers and are often required as a condition of employment to sign a contract drafted by the firm's lawyers giving the firm exclusive control over as broad a range of economically valuable information and innovation that the lawyers think is legally feasible. Such contracts typically claim as firm property—both during and after an employee's term of employment—the nebulous category of "proprietary information," along with the slightly more clearly (though still poorly) defined category of "trade secrets." These contracts, variously known as "invention assignment agreements" or "holdover clauses" or "trailer clauses," also claim as firm property any invention the employee might make that has any relationship to the firm's business or, less frequently, to the business of the firm's subsidiaries and affiliated companies. Armand Ciavatta's contract, for example, claimed for Ingersoll-Rand all inventions that might have anything to do with the company's twenty diverse subsidiaries and affiliates, regardless of whether Ciavatta had any contact with the affiliates or their work. In other words, since one Ingersoll-Rand subsidiary manufactured the Kryptonite bicycle lock, if Ciavatta had invented a new bike lock, the contract would have covered it even though Ciavatta never had a

thing to do with that line of business. In short, opportunistic behavior by employees is confronted by contractual overreaching by employers.

Reluctant simply to let the market power of one party or the other dictate who wins and who loses these disputes when they come to litigation, many courts have tried to carve a middle path by insisting that reasonable contracts will be enforced. *Ingersoll-Rand v. Ciavatta* was one such case.

Social Background

Among the statutes enacted by the first Congress of the United States was the Patent Act of 1790. Congress accorded patent protection high priority because of the widespread belief that intellectual property protections were essential to stimulate invention, and invention was necessary to economic development. Many, perhaps most, early nineteenth century inventors worked alone or with a few others in a small workshop in a town or village or on a farm. Most technology was relatively simple and thus it was possible for skilled craftspeople and ordinary laborers to understand the technology behind the devices that they used and to find the tools they would need to develop improvements to them. Invention was both democratic and entrepreneurial in the sense that many people with inventive talent had a realistic chance of becoming inventors, owning a patent, and being able to profit from their patented invention by either manufacturing and selling it themselves or by assigning or licensing the patent to someone who could.⁴

The early United States was a country obsessed with the need for and benefits of innovation. Compared to Europe, America was rich in natural resources and land but poor in skilled labor, technological sophistication, and investment capital. Acquisition of technology, whether by importation from Europe or invention in America, and immigration of people skilled enough to use and develop technology were widely considered to be essential to the development of the country. Both political leaders and local business folk thought that encouraging invention would lead to economic development that would dramatically improve the lives of ordinary

⁴ The history of American technological innovation and corporate R & D in this and following paragraphs is drawn from Thomas Hughes, *American Genesis: A Century of Innovation and Technological Enthusiasm, 1870-1970* (1989); Joel Mokyr, *The Lever of Riches: Technological Creativity and Economic Progress* (1990); Doron S. Ben-Atar, *Trade Secrets: Intellectual Piracy and the Origins of American Industrial Power* (2004); B. Zorina Khan, *The Democratization of Invention: Patents and Copyrights in American Economic Development, 1790-1920* (2005); Steven Lubar, *The Transformation of Antebellum Patent Law*, 32 *Tech. & Culture* 932 (1991); Walter Licht, *Industrializing America: The Nineteenth Century* (1995); David A. Hounshell & John Kenly Smith, Jr., *Science and Corporate Strategy: Du Pont R&D, 1902-1980* (1980); Naomi R. Lamoreaux & Kenneth L. Sokoloff, *Inventors, Firms, and the Market for Technology in the Late Nineteenth and Early Twentieth Century United States*, in *Learning By Doing in Markets, Firms, and Countries* (Naomi R. Lamoreaux, Daniel M.G. Raff & Peter Temin, eds., 1999); David F. Noble, *America By Design: Science, Technology, and the Rise of Corporate Capitalism* (1977); Leonard S. Reich, *The Making of American Industrial Research: Science and Business at GE and Bell, 1876-1926* (1985). For a full history of the law governing employee inventors see Catherine L. Fisk, *Removing the 'Fuel of Interest' from the 'Fire of Genius': Law and the Employee-Inventor, 1830-1930*, 65 *U. Chi. L. Rev.* 1127 (1998); Catherine L. Fisk, *Working Knowledge: Trade Secrets, Restrictive Covenants in Employment, and the Rise of Corporate Intellectual Property, 1800-1920*, 52 *Hastings L.J.* 441 (2001).

people and increase the wealth of the nation. Consequently, the Framers of the Constitution empowered Congress to enact patent and copyright laws “To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” Technological innovation, both in the form of new inventions made in the U.S. or patented technologies imported from Europe, were eagerly sought by every possible means. And by the late nineteenth century, the efforts paid off. The U.S. went from being technologically backward and a net consumer of intellectual property to a technological leader and exporter of intellectual property to Europe and the world.

As the nineteenth century wore on, technology grew more complex and required greater resources to innovate in economically significant ways. While many people with some inventive ability, education, skill, and access to a workshop might have been able to design and patent an improvement to the relatively simple steam engines of the early nineteenth century, by the end of the century only those with highly specialized knowledge of metals and mechanical engineering who had access to a locomotive and several miles of railroad track would be in a position to patent a major improvement. While crucial technology grew exponentially more complex, firms and factories grew larger. Opportunities for individual invention and entrepreneurship based on individual patent ownership became less prevalent. Instead, it was far more likely in the early twentieth century that an inventor would be an employee of a large corporation and work with other employees using the tools and material of his employer to develop a patent. Invention became less democratic and entrepreneurial at the individual level. Both invention and entrepreneurship became corporate.

In the two decades bracketing the turn of the twentieth century, many large American firms founded research and development facilities. In 1902, Du Pont founded a sophisticated R & D operation that produced innovations in explosives (the company’s original business) and eventually in plastics, artificial fibers, and chemicals. In the same period, Bell Telephone founded the famed Bell Laboratories, the Eastman-Kodak Company established a lab that produced major innovations in photographic film and printing, and General Electric instituted a research facility that produced major innovations in electricity. Many other firms similarly approached research and development with a degree of sophistication that was unprecedented in the U.S. Along with a transformation in industrial research came a transformation in how research and development employees were managed. Between 1870 and 1910, patentees became more likely to assign away rights to their patents at the time the patent was issued than they were before. Assignments to corporations jumped from 24% of recorded assignments in 1870 to 64% of recorded assignments in 1910. Contracts between firms and their employees requiring employees to assign all patents to the firm were relatively rare until World War I but became routine in the twentieth century. The explosive growth of corporate research and development dramatically changed both the environment in which workplace innovation occurred and how the lay and legal public imagined invention. In the popular and judicial imagination, perhaps more than in actual fact, the hero inventor experimenting alone in his laboratory or workshop ceded his place to company men in laboratory coats working collaboratively—and on a corporate payroll—to advance the progress of technology. Legal doctrine changed accordingly, with twentieth century courts becoming far more likely than their nineteenth century predecessors to conclude either that employees were hired to invent, and the firm therefore owned all employee

patents, or that the employee and the firm had validly contracted for assignment of employee patents.

The growth of corporate R & D was but one facet of a dramatic change in American business generally over the course of the early twentieth century. Corporations grew exponentially in size. As a result, the management of the tens of thousands of blue collar and white collar workers employed in the behemoth firms became ever more systematic and bureaucratic. The rise of managerial capitalism in the mid-century meant that inventive employees were even less likely to be entrepreneurs founding their own small firms, tending instead to be mid-level quasi-managerial employees of a research division of a large corporation. But the era when employees were not expected to be individually entrepreneurial did not last.

By the mid-1980s, the link between job stability and innovation began to be severed. The stability of corporate jobs was disappearing as firms faced new global competition and unprecedented pressure from Wall Street to reduce labor costs. Suddenly, firms that had once offered stable jobs in exchange for the long-term loyalty of their employees began laying off massive numbers of employees and insisting that workers should be much more entrepreneurial. As the Vice President of Human Resources at AT&T said in 1996 when eliminating 40,000 jobs, “People need to look at themselves as self-employed, as vendors who come to this company to sell their skills [W]e have to promote the whole concept of the work force being contingent.”⁵

By the late 1980s, scholars of innovation and economic development had begun to worry about the ability of managerial capitalism and corporate R & D to continue to deliver innovation and economic growth. Firms had long worried about how to provide incentives for employees to innovate since individual employees, who typically were required to assign patents to the firm, no longer stood to profit from their patents. Beginning in the 1940s, firms adopted a variety of bonus systems that promised modest financial rewards for employees whose work produced patents, but these bonus schemes often were either too small or too arbitrary to provide adequate incentives. [source?] As anxiety about the success of R & D at large corporations grew, a new, different, and wildly successful phenomenon emerged in Silicon Valley. Silicon Valley was characterized by rapid innovation, extraordinary levels of mobility among highly educated technology workers, constant start-ups of new firms, and a degree of entrepreneurship among technology employees that had not been seen since the nineteenth century. The Silicon Valley phenomenon caused both scholars and business people to wonder whether the days of R & D at large and bureaucratic firms were numbered.⁶

⁵ Edmund L. Andrews, *Don't Go Away Mad, Just Go Away: Can AT&T Be the Nice Guy As It Cuts 40,000 Jobs?* N.Y. Times, Feb. 13, 1996, at D1, D6. See also Catherine L. Fisk, *Knowledge Work: New Metaphors for a New Economy*, 80 Chi.-Kent L. Rev. 839 (2005).

⁶ See Eric Von Hippel, *Democratizing Innovation* (2005); Eric Von Hippel, *The Sources of Innovation* (1988); Joel Mokyr, *The Lever of Riches: Technological Creativity and Economic Progress* (1990); David C. Mowery & Nathan Rosenberg, *Technology and the Pursuit of Economic Growth* (1989); AnnaLee Saxenian, *Regional Advantage: Culture and Competition in Silicon Valley and Route 128* (1994).

Thus, Armand Ciavatta's fight against Ingersoll-Rand occurred in the early 1980s at the convergence of a number of significant real-world, academic, and public policy developments. He was the company man who was fired by a firm at a time at which stable corporate jobs for middle-aged employees were becoming harder to find and long-term unemployment was likely to be a particularly severe problem for a group who had not expected to become or remain unemployed mid-career.⁷ Layoffs occurred because firms were beginning to feel significant pressure from Wall Street to reduce labor costs in order to boost share prices. Corporate R & D departments were often targeted because they were perceived by cost-cutters to have become too bureaucratic, too cautious, and insufficiently creative and entrepreneurial. The impact of these job losses was exacerbated by the contracts departing employees had signed. Although the holdover agreements, restrictive covenants, and other contractual devices used by firms for security were well-suited to prevent opportunistic quits in a workplace characterized by internal labor markets and implicit promises of job security, those same devices conceivably gummed up the works of the highly mobile and productive labor market that seemed to drive rapid innovation in Silicon Valley. The plight of the unemployed middle-aged engineer who sought to remake himself as an entrepreneur competing with one of the giants of American industry presented a particularly juicy challenge for a court to sort out. The case invited the court to craft legal doctrine capable of dealing with some of the most salient and pressing issues at the intersection of American business and technology.

Legal Background

Although United States patent laws have been revised significantly since the first Patent Act of 1790, most of the basics have not changed. The government may, upon application, issue a patent for an invention it deems new and useful. Patentable inventions can be devices (such as a better mousetrap) as well as processes (such as a recipe). A patent application must describe the invention with reasonable specificity, must explain how the invention meets the statutory requirements of being novel, useful, and non-obvious, and must identify the true inventor. A patent lasts for a term of years and entitles the patent owner to a monopoly for the manufacture of the patented device. The patent application is a public disclosure designed to enable any person to read the patent and see how the patented device or process works, thereby allowing later inventors to come up with new ideas for improvements over existing patents.⁸

Federal patent law says nothing about ownership of patents produced by employees. While the Patent Act provides for the assignment of a patent upon issuance, state law governs the validity of assignments. When the patentee or the person identified in the patent application as the true inventor is an employee, the law of employment governs the rights to the patent. Beginning in the late eighteenth century, the patent law requirement that the "true inventor" be listed in the application encouraged the notion that an individual person was both the inventor

⁷ On the phenomenon of restructuring or opportunistic firings unsettling the individual and social expectations of the career employee, see chapter one of this volume by Professor Grodin.

⁸ On the general requirements of modern patent law, see Janice M. Mueller, *An Introduction to Patent Law* (2003); Roger E. Schechter & John R. Thomas, *Principles of Patent Law* (2004).

and the proper owner of the patent. One of the common grounds for attacking either the Patent Office's decision to award a patent or the patent's validity when defending against a claim of patent infringement was to assert that the patentee was not the true or first inventor. The legal structure thus invited patentees to identify, in their legal documents and in their own minds, an invention as the product of one individual's effort rather than the collective creation of a collaborative workshop. For this and other reasons the default rule during the nineteenth century was that any invention that an employee patented belonged to the employee, regardless of whether the employee had made the invention at work. Occasionally, employers and employees thought to agree in advance on who would own patents to workplace inventions. Courts often either very narrowly interpreted or declined to enforce agreements to assign future inventions to the employer. The rationale for both the default rule of employee ownership and the narrow interpretation of pre-invention assignment agreements was a sense of both the intrinsic justice and instrumental benefit of a rule of individual ownership of valuable ideas. The pro-employee character of the nineteenth century law of employee inventions may be attributed both to the pre-industrial tradition of craft autonomy and control over craft knowledge and to the early Industrial Revolution's ideology that the genius inventor was the catalyst of technological change and economic growth.⁹

In the latter half of the century, courts made limited incursions on the relatively pro-employee law. First, courts developed a doctrine that eventually became known as the "shop right" rule. An employee who developed an invention at work using the employer's tools was still entitled to the patent, but the law gave the employer a shop right—a free license to use and to manufacture the invention. Originally, the shop right was a sort of equitable estoppel, existing only where the employee had allowed the employer to use the invention in the business and then later tried to restrict its use. Eventually, the employee's acquiescence was no longer required. The shop right also expanded over time. When first conceived, the right was non-transferable, such that an employer could not sell the shop right, and if the business were sold or liquidated, the shop right was not transferred with the other business assets. In the twentieth century, the shop right became a transferable asset.

Around the turn of the twentieth century, courts became more willing to conclude that employers owned employee patents based either on a finding that an employee had been hired to invent or on a contract assigning future inventions. Undergirding this judicial receptivity was the thought that, even where an employee was clearly the originator of an idea, employers could still justly own employee patents because the employee's idea would be worth little without the firm's investment that created value in the idea and brought it to market. Reasoning that invention is a long and arduous endeavor to which many employees contribute while on the firm's payroll and not solely the product of a stroke of individual genius, courts tended to find the public interest to lie not in the individual employee owning the patent but in corporate

⁹ The legal change described in this and the following paragraphs is detailed in Catherine L. Fisk, *Removing the 'Fuel of Interest' from the 'Fire of Genius': Law and the Employee-Inventor, 1830-1930*, 65 U. Chi. L. Rev. 1127 (1998).

control. “Protection for the future requires that inventions already controlled [by a firm] be not undermined and diverted by other inventions along the same line.”¹⁰

Over the course of the twentieth century, the law of employee inventors stabilized into three doctrinal categories. First, the default rule was that employees not hired specifically to invent owned the patents to all their inventions, regardless of when or where the employee conceived or developed the invention. Second, if the employee used work time or the employer’s facilities to develop the invention, the law gave the employer a shop right to the invention, but the employee could still license or sell the patent to others or manufacture or market the invention herself. Third, firms and employees could contract around the default rules of employee ownership and shop right in two ways. First, an employer who hired an employee specifically on the understanding that the employee’s job was to invent would be entitled to all patents produced in the scope of the employment contract. In this sense, the employment contract of a hiring to invent was deemed to overcome the default rule. Alternatively, the employer could contract around the default rule by requiring that all patents or inventions the employee might make during or for some period after the employment would be the employer’s property and that the employee would be obligated to assign them. This last category affords the employer the broadest rights to employee inventions, for the obligation to assign the patents would not be limited to inventions made during the employment or even to those relating directly to the employee’s work. *Ingersoll-Rand v. Ciavatta* presented a question about the limits on such pre-invention assignment agreements. Could an employer require an employee to assign the patent to any invention on any topic the employee might ever acquire for the rest of his or her life? If not, what are the limits of such contracts?

The law of employee inventors developed on a parallel track with two other bodies of law governing rights to economically valuable workplace knowledge: the law of trade secrets and the law of restrictive covenants. As explained in chapter six of this book, courts will prevent an employee from using economically valuable knowledge in subsequent or competitive employment when the knowledge qualifies as a trade secret. In addition, an employer may enter into a “restrictive covenant” or “noncompete agreement” with an employee to prevent the employee from engaging in competitive employment. In both the trade secret and the restrictive covenant areas, courts recognize that excessively broad protection for the employer’s desire to prevent former employees from using knowledge gained at work can stifle competition, prevent the employee from finding employment, and retard the economic development and innovation that comes from the diffusion of talent and knowledge throughout the economy. On the other hand, courts also recognize that, to provide adequate incentives for firms to invest in the development of human capital and to invest in new technologies, the law should allow some contractual or default rule protection against employees opportunistically quitting their jobs before the employer has had the chance to recoup its investment in the employee’s training or other development of human capital.

Most twentieth-century courts developed a variety of multi-factor balancing tests to mediate the disputes over trade secrets and non-compete agreements, and the balancing tests

¹⁰ *Nat’l Wire Bound Box Co. v. Healy*, 189 F. 49, 55 (7th Cir. 1911).

generally focus on the nature and extent of the employer's legitimate interest in restricting employees' use of knowledge, the proper geographic, temporal, and occupational scope of the restriction on competitive work, the hardship on the employee of limiting his or her employment opportunities, and the public interest in either the free diffusion of knowledge through employee mobility or the restriction on competition. Some courts treat contracts regarding employee inventions, however, without the special reasonableness and public policy restrictions that dominate in trade secret and non-compete cases; contracts to assign future inventions in these courts are enforced like any other contract.¹¹ Some courts refuse on public policy grounds to enforce pre-invention assignment agreements that are without time limit and without limit on the subject matter of inventions covered.¹² A few states have statutes limiting the enforceability of pre-invention assignment agreements; under such statutes only inventions relating to the employee's job may be subject to compulsory assignment.¹³ In most states, the law of trade secrets, the law of restrictive covenants, and the law of employee inventions have little explicit doctrinal overlap. Indeed, one of the novel features of the New Jersey Supreme Court's decision in *Ingersoll-Rand v. Ciavatta* was its liberal borrowing from the law of trade secrets and restrictive covenants in devising a rule about the permissible scope of invention assignment agreements. Whether explicitly, as in *Ingersoll-Rand v. Ciavatta*, or implicitly, as in many other states, all three areas of law attempt to devise rules to regulate the labor market with an eye toward fostering the optimal level of innovation consistent with the dignitary and economic interests of the inventive employee.

Factual Background

The Ingersoll-Rand Company, headquartered in New Jersey, is a large and diversified company that manufactures heavy equipment, power tools, locks, and a wide array of machinery and parts for the auto, construction, and industrial equipment industries. "We are not a glamorous company," quipped the company chairman to *Forbes* in 1993.¹⁴ But when the company was founded, its emphasis on designing and building drills and construction and mining equipment seemed quite glamorous, as it furnished the machines that built the infrastructure of America and some of the rest of the world. As the *New York Times* obituary of one company founder breathlessly explained, "It was his development of the drill which made possible many of the great engineering feats of the last century and those now in progress."¹⁵

The company was founded in the late nineteenth century by a number of inventor-entrepreneurs who parlayed their inventions and business acumen into a very successful business

¹¹ See, e.g., *Cubic Corp. v. Marty*, 229 Cal. Rptr. 828 (Cal. Ct. App. 1986) (enforcing agreement to assign invention developed during term of employment and relating to employee's work); *Shaw v. Regents of Univ. of Calif.*, 67 Cal. Rptr. 2d 850 (Cal. Ct. App. 1997) (stating that invention assignment agreement is a contract and therefore, unlike other employment policies, it cannot be unilaterally modified).

¹² See, e.g., *Guth v. Minnesota Mining & Mfg. Co.*, 72 F.3d 385, 388 (7th Cir. 1934).

¹³ See, e.g., Cal. Lab. Code § 2870 (assignment agreement covering inventions developed without employer resources or unconnected to employer's work is, with some exceptions, unenforceable).

¹⁴ Paul Klebnikov, *A Traumatic Experience*, *Forbes*, Jan. 18, 1993, at 83.

¹⁵ Obituary, *Henry C. Sergeant*, *N.Y. Times*, Feb. 1, 1907, at 9.

based on new technology using compressed air. Simon Ingersoll invented and patented a rock drill that became the foundation of the company's business. He sold the patents to the firm he founded in 1871. He himself never enjoyed a large share of the wealth generated by the company that bore his name because he had sold his patents to the firm. Henry Clark Sergeant received over sixty patents for various inventions and is credited with the innovation that made the rock-drill successful. He formed his own company to market his inventions, and that company eventually merged with the Ingersoll Drill Company in 1888; the Ingersoll-Sergeant Company specialized in tunnel driving and quarrying. Meanwhile, brothers Albert, Jasper, and Addison Rand founded a firm specializing in mining work based on their own, independent drill technology. When Ingersoll-Sergeant merged with Rand in 1905, the announcement of the merger focused on the uniting of the patents as much as anything else.¹⁶

The early history of the companies that eventually united to form Ingersoll-Rand was characterized by the ability of each firm to combine the mechanical ingenuity of its founder with the business acumen necessary to make the patented inventions a success in the marketplace. For decades, it was a firm that prided itself on its employees' and leadership's strong combination of engineering talent and business savvy. And there was reason for the corporate pride: An 1887 *Scientific American* article on the construction of the New York Aqueduct reads like an advertisement for Ingersoll drills. Ingersoll-Rand drills were used on the construction of the New York Subway, the Panama Canal, the Hoover Dam, the Cascade Tunnel (then the longest mountain railroad tunnel on the North American continent), and on Mt. Rushmore. Just as notably, Ingersoll-Rand patented the original jackhammer.¹⁷

If the early success of the firm exemplified the happy marriage between invention and entrepreneurship that characterized many nineteenth century technology businesses, the history of the firm in the middle decades of the twentieth century exemplified the life story of the large, vertically-integrated, and massively diversified manufacturing corporation whose fate was linked to the fortunes of American manufacturing, construction, and mining. The company employed about 47,000 people and reported sales of \$3.4 billion in 1982. It enjoyed a solid return on equity even as its stock price fluctuated a bit (along with the American economy as a whole) in the 1970s. The men who ran the company had spent their careers there, rising through the ranks.¹⁸ It was the kind of place where white-collar workers like Armand Ciavatta enjoyed an implicit understanding of lifetime employment so long as they performed competently.

In the early 1980s, that abruptly changed. In 1981, Ingersoll-Rand enjoyed record earnings of \$9.71 per share, which was up 21 percent over 1980. But the company had a bad year in 1982. Its stock price tumbled and orders fell. In 12 months in 1982 and early 1983, the

¹⁶ George Koether, *The Building of Men, Machines, and a Company* (1971); Obituary, *Henry C. Sergeant*, N.Y. Times, Feb. 1, 1907, at 9; Johannes H. Wisby, *Compressed Air*, L.A. Times, Nov. 19, 1899, at A10.

¹⁷ Ingersoll-Rand Co., *The Story of the Hoover Dam* (1932-1936); Charles W. Hobart, *The Cascade Tunnel and the Man That Made It*, 13 Mag. W. Hist. 534 (1991); Johannes H. Wisby, *Compressed Air*, L.A. Times, Nov. 19, 1899, at A10; *New York Water Supply*, Sci. Am., June 4, 1887 at 351 (describing the use of Ingersoll drills in the construction of the New York aqueduct).

¹⁸ John A. Byrne, *And Then the Bottom Fell Out*, Forbes, Feb. 14, 1983, at 142; Paul Klebnikov, *A Traumatic Experience*, Forbes, Jan. 18, 1993, at 83.

company laid off 11,900 employees (so that it was down to 35,500) and shut down 11 plants. A corporate culture that favored a stable, if unglamorous, career in research and development, marketing, or manufacturing collided with the rapid change in the business environment of the 1980s. Armand Ciavatta was a company man of the 1960s who suddenly found himself without a company.

The company had a research and development division in Princeton, New Jersey, where Armand Ciavatta worked as a program manager. The research division, known as Ingersoll-Rand Research, employed researchers with doctoral degrees from top science and engineering programs like the Massachusetts Institute of Technology and the California Institute of Technology. Along with the stability and solidity of the large American corporation came a bureaucratic culture that perhaps did not make the most of the research and development talent it employed. Cautious managers may have found it easier to nix innovative product development ideas than to pursue them and risk the embarrassment and career setback of a flop. As one leader of a major corporate R & D facility commented years later, “If a rising corporate star brings forth a risky innovation that ends up failing, his or her career is apt to be damaged considerably more than that of the executive who squelches an innovation that could have been a winner.”¹⁹ Ingersoll-Rand’s research culture, like that of many corporate R & D facilities, was designed to weed out poor ideas. It was less concerned with the possibility that a good idea would go undeveloped than that resources would be invested in development of a bad idea that would fail when it hit the market. But as a consequence, the product development process had become a cumbersome affair that could last three or four years from idea to market. As one engineer described it, the marketing department might dream up a product and “toss the idea over the wall” separating marketing and engineering. Engineering would work up a design and toss it over another wall to the manufacturing department that would make the product and then heave it over yet another wall to sales. Too often, however, engineering would toss an idea back to marketing because the engineers thought the idea was unworkable, or manufacturing would return an idea to engineering for reworking when they thought the design or prototype was flawed. By the late 1980s, the company thought product design had become so problematic that it initiated a major overhaul to try to reunite the innovative and the entrepreneurial.²⁰

Armand Ciavatta was born into a working class Italian-American family in New England. He graduated from Rhode Island School of Design in 1953 with a B.S. in machine design. He served in the National Guard in an engineering battalion as a training officer and company commander. Later he took classes in mining, tunneling, and heavy construction engineering. Before coming to Ingersoll-Rand in 1972, he spent twenty years working as an engineer for major firms in various capacities; he conducted quality control tests for instrumentation used in the first commercial nuclear reactor; he was chief project engineer for the Revere Corporation, where he worked with transducers and other force-measuring devices; and he served as Vice President of Engineering and Quality Control for Iona Corporation, where he was responsible for engineering, development, and testing of the company’s line of kitchen and consumer

¹⁹ John Seely Brown, *Foreword* to Henry W. Chesbrough, *Open Innovation: The New Imperative for Creating and Profiting from Technology* (2003).

²⁰ N. R. Kleinfeld, *How ‘Strykeforce’ Beat the Clock*, N.Y. Times, Mar. 25, 1990, at section 3 p.1 (Mar. 25, 1990).

appliances. He had also been an inventor: while employed by Revere Corporation, Ciavatta invented and patented a force transducer using strain gauge.²¹

Ciavatta served as the Director of Engineering and Quality Control of a division of Ingersoll-Rand from 1972 to 1974 before becoming Program Manager for the research division of Ingersoll-Rand in 1974. Shortly after joining the research division, Ciavatta signed Ingersoll-Rand's form "Agreement Relating to Proprietary Matter," which broadly restricted his rights to use certain knowledge. In exchange for the symbolic consideration of one dollar and, of course, employment by the company "during such time as may be mutually agreeable to the COMPANY and myself," the agreement obligated Ciavatta not to "divulge, either during my employment or thereafter . . . any secret, confidential or other proprietary information" of Ingersoll-Rand or of any of its many affiliates. In addition, he agreed:

To assign and I hereby do assign, to the COMPANY, its successors and assigns, my entire right, title and interest in and to all inventions, copyrights and/or designs I have made or may hereafter make, conceive, develop or perfect, either solely or jointly with others either (a) during the period of such employment, if such inventions, copyrights and/or designs are related, directly or indirectly, to the business of, or to the research or development work of the COMPANY or its affiliates, [check: semi-colon?] or (b) with the use of the time, materials or facilities of the COMPANY or any of its affiliates; or (c) within one year after termination of such employment if conceived as a result of and is attributable to work done during such employment and relates to a method, substance, machine, article of manufacture or improvements therein within the scope of the business of the COMPANY or any of its affiliates.²²

In the summer of 1974, the Director of Research, Dr. McGahan, assigned Ciavatta to investigate methods of coal haulage, which sparked Ciavatta's interest in underground mining. During his four years at Ingersoll-Rand Research, Ciavatta worked on a variety of development projects in the mining field. Ciavatta became interested in underground mining and read extensively in the literature on the subject. He was never formally involved in research or development relevant to Ingersoll-Rand's product for stabilizing mine roofs, which was a "friction stabilizer." Nevertheless, his boss, Dr. McGahan, the Director of Research, "encouraged the research staff to be creative, to discuss ideas for projects or potential projects beyond those to which they had been assigned." The office's system for handling invention ideas was typical of research facilities: employees were to submit any invention ideas to superiors on "disclosure forms." In his first two years at Ingersoll-Rand Research, Ciavatta bubbled with ideas. He submitted thirteen disclosures for mining technology and instrumentation, several of which were proposals for devices to support or stabilize roofs of underground mines. Most of them used a different principle than Ingersoll-Rand's friction stabilizer; only one disclosure was an improvement to Ingersoll-Rand's "split-set friction stabilizer." Ingersoll-Rand chose not to pursue any of his concepts. Concluding that Ingersoll-

²¹ *Ciavatta*, 542 A.2d at 881.

²² *Id.* at 615; Agreement Relating to Proprietary Matter (copy on file with author).

Rand was not interested in his innovations, Ciavatta lost his motivation to invent and did not submit any further disclosures.²³

In March 1978, Ciavatta became the manufacturing manager of the Ingersoll-Rand split-set friction stabilizer. The stabilizer was a 4-foot length of steel tube that was split down its length such that when viewed from the end it looked like a C rather than an O. A steel band was welded around the circumference of the tube at one end for extra strength. Ingersoll-Rand customers had been complaining that the stabilizers, particularly the ring at the end, had a tendency to split and peel while being driven into the rock roof of a mine. McGahan was convinced that the problem was with the steel used to make the stabilizer. Ciavatta disagreed. He thought the problem was in the design of the tube and the welded ring. They argued about it for awhile, but McGahan prevailed and assigned Ciavatta and metallurgists to study the problem. A few months of study produced no answer. In a staff meeting Ciavatta reiterated his belief that the cause of the problem was the radius of the driver, but again McGahan refused to listen. According to Ciavatta, McGahan insisted that if Ciavatta continued to defy him he would be fired. Frustrated, Ciavatta went to the rock pile at the back of the Ingersoll-Rand Research laboratory and drove stabilizers into granite with two different drivers to prove his point. The test confirmed Ciavatta's suspicion: the problem was in the design, not in the metal. He wrote a memo to McGahan and to McGahan's superiors describing the results of the futile months of testing the metal, documenting his own experiments in the yard, and proposing a solution. He was fired the next day.²⁴ According to the facts as found by the New Jersey courts, the apparent motivation for his abrupt firing was unrelated to the memo: Ciavatta tried to stop shipments of the stabilizer because of his concerns about quality control problems. Ciavatta's superior in the manufacturing program, John Irwin, countermanded Ciavatta's order. According to Ingersoll-Rand, Ciavatta was fired "because of unsatisfactory performance and his poor relations with fellow employees."²⁵

While looking for a new job, Ciavatta spent his spare time experimenting with ideas for inventions, just as he always had. One day in the summer of 1979, Ciavatta got the idea for the invention that sparked the litigation, literally by having a light bulb turn on over his head. He had his eureka moment while installing an overhead light fixture in the ceiling of his home in August of 1979, about two months after being fired from Ingersoll-Rand. His wife had picked out a new light fixture, and Ciavatta was up on a ladder hanging the fixture from the ceiling when he got an idea for a new mine roof stabilizer. Stabilizers are pounded into holes drilled in the roof of a mine and use the friction between the metal and the rock surrounding it to reduce separation of the rock strata. Ciavatta's idea was to use a tube that was not split along its length and which had a cross-section shaped like an ellipse.

While working on his invention, Ciavatta looked diligently for work but found few offers, a situation not unusual for a middle-aged engineer in a recessionary economy. He took a

²³ *Ciavatta*, 542 A.2d at 882; Telephone Interview with Armand Ciavatta, August 3, 2005.

²⁴ *Ingersoll-Rand Co. v. Ciavatta*, 509 A.2d 821, 824 (N.J. Super. Ct. Ch. Div. 1986); Telephone Interview with Armand Ciavatta, August 3, 2005.

²⁵ *Ingersoll-Rand Co. v. Ciavatta*, 542 A.2d 879, 883 (N.J. 1988).

job with a firm in Michigan in the winter of 1979–1980, but quit when he learned that the people running the company were engaged in business practices that Ciavatta considered unethical or at least unsavory. Ciavatta returned to New Jersey, but still could not find a job. He found it humiliating to have to rely on his wife’s income to support the family, but he felt himself fortunate to have that.²⁶

Ciavatta made a sketch of his idea and, to test it, borrowed some canoli tubes from his wife to stand in for the stabilizers. He drilled holes in a wooden board and had a neighborhood boy stand on a bathroom scale holding the board while Ciavatta pushed the tubes into the holes and measured the reaction force on the scale.²⁷ When his idea seemed to work, he tried building a prototype with supplies purchased from a hardware store. When that worked, he sought the advice of counsel about whether the invention was patentable and whether the Ingersoll-Rand Proprietary Agreement would require him to assign it to the company. The patent lawyer whom Ciavatta consulted advised him in October 1979 that the patent would belong to Ciavatta. In March 1980, Ciavatta filed for a patent, which was granted in February 1982, for a “tubular shank [that] can be employed either for fastening or for stable mounting in unconsolidated underground strata.” According to the patent, when driven into a hole, “the shank is compressed from its oblate shape into a nearly circular shape” which “renders the shank relatively immune to vibration or shifting of strata” around the hole.²⁸ Ciavatta received a second patent for an improvement to the first patent in March 1982.²⁹

While his patents were pending, Ciavatta prepared a business plan and sought venture capital. Finding none, he used his life savings plus \$125,000 borrowed from his brother and from a bank to begin manufacturing the device. In October 1982, shortly after the patents were issued, he exhibited his device at the annual mining equipment trade show, and a few months after that he made his first sale. Ciavatta’s invention began to catch on in the market, and, by June 1985, his total sales were about \$270,000.

Prior Proceedings

When Ingersoll-Rand learned of Ciavatta’s invention in December 1981, various Ingersoll-Rand employees exchanged memoranda about whether his device was feasible, whether it was a competitive threat to any Ingersoll-Rand products, and whether it infringed any of the company’s patents to the split-set stabilizer. About seven months later, in July of 1982, Ingersoll-Rand’s lawyer wrote to Ciavatta demanding that he assign the patent to the company. Ciavatta refused. As Ciavatta’s stabilizer caught on in the market, Ingersoll-Rand began to perceive it as a competitive threat. Ingersoll-Rand lowered the price of its split-set stabilizer to reflect Ciavatta’s lower price and, in April 1984, filed a suit in the Chancery Division of the New Jersey Superior Court for Somerset County.

²⁶ Telephone Interview with Armand Ciavatta, August 3, 2005.

²⁷ *Id.*

²⁸ U.S. Patent No. 4,316,677 (filed Mar. 7, 1980).

²⁹ U.S. Patent No. 4,322,183 (filed Mar. 4, 1981).

Ingersoll-Rand was represented by its corporate counsel and patent lawyers in New York and New Jersey, Mark S. Anderson (now a named partner at Woolson, Guterl, Sutphen & Anderson), and James M. Rhodes, Jr. and John M. Calimafde of Hopgood, Calimafde, Kalil, Blaustein & Judlowe. Ciavatta was represented at the trial level by Charles J. Walsh, a respected trial lawyer in the Newark area who later served as a New Jersey Superior Court judge for a number of years before his death in 2005. On appeal, Walsh was joined by Stuart M. Feinblatt, of the New Jersey firm of Sills, Beck, Cummis, Zuckerman, Radin & Tischman.

In the trial court, notwithstanding what Ciavatta recalled as a very effective trial performance by Walsh, Ingersoll-Rand prevailed. After a bench trial, the trial judge, William D'Annunzio, found that the Proprietary Agreement covered the invention and concluded that the agreement was enforceable under the only relevant New Jersey law, a line of cases governing the enforceability of contracts restricting post-employment competition by employees.

Throughout the litigation, both Ciavatta and Ingersoll-Rand relied heavily on two decisions of the New Jersey Supreme Court, *Solari Industries, Inc. v. Malady*³⁰ and *Whitmyer Brothers, Inc. v. Doyle*.³¹ This pair of decisions had held that covenants restricting former employees from competing are enforceable only if reasonable and are reasonable only to the extent that they prevent an employee from using trade secrets (including customer relationships) and confidential information. In *Solari*, the court held that a non-competition agreement by which a firm sought to restrict a former employee from obtaining a franchise to sell a competing firm's product in the United States was enforceable only to the extent "reasonably necessary to protect [the employer's] legitimate interests, will cause no undue hardship on the defendant, and will not impair the public interest."³² In *Whitmyer*, the Supreme Court reversed a preliminary injunction, finding unreasonable an agreement that prevented a plaintiff from starting a business that competed with his former employer's government contracting business. The employee would use no trade secrets, the court held, and a restrictive covenant could not be used to prevent an employee from using general knowledge and trade skills acquired in prior employment.³³

Judge D'Annunzio interpreted the *Solari-Whitmyer* restrictions on the enforcement of restrictive covenants as being designed to "protect the right of an employee to change employment and to use his skill, knowledge and experience to further his employment prospects in the job market," and "to promote the public interest in the most effective and widespread use of an employee's skills and limitations." Patent assignment agreements, by contrast, have no comparable adverse effect on the employee's ability to find another job or on the public's interest in the use of employee talent.³⁴ Rather, according to the trial judge, the principal rationale for enforcing a patent assignment agreement is "recognition of the sometime unstructured, informal and serendipitous processes that lead to invention. Processes that receive their impetus and inspiration from exposure to a subject and interaction with one's colleagues, co-employees and superiors. A process in which neither secrets nor confidential information

³⁰ 264 A.2d 53 (N.J. 1970).

³¹ 274 A.2d 577 (N.J. 1971).

³² 264 A.2d at 61.

³³ 274 A.2d at 31.

³⁴ 509 A.2d at 828.

plays a part.”³⁵ Thus, where *Solari-Whitmyer* might be read to validate the economic benefits of information spillovers associated with employee mobility, the trial judge viewed Ciavatta’s case as one involving an employee opportunistically claiming as his own the results of a collaborative and collective invention process thought to characterize the modern research lab.

Having determined that the *Solari-Whitmyer* reasonableness test did not apply to holdover agreements and that an employee’s use of trade secrets was not necessary to enforce a holdover agreement, Judge D’Annunzio applied a multifactor reasonableness test to assess the contract. The factors were:

- the degree of relationship between the invention and the former employment
- whether the invention was based on knowledge acquired in the former job
- the extent of collaborative sharing of knowledge and ideas in the former job
- whether enforcement of the agreement would restrict the employee from finding another job
- whether enforcement of the agreement would “violate any legitimate expectations of the defendant” or would come as a surprise
- whether the invention used confidential information of the former employer.

In the trial judge’s estimation, only the last factor favored Ciavatta. He rejected Ingersoll-Rand’s argument that Ciavatta had used two allegedly confidential drawings done by James Scott, the inventor of the Ingersoll-Rand split set stabilizer, and Dr. McGahan, the Ingersoll-Rand research division director, which were sketches of alternative possible designs for stabilizers including some elliptical shapes. Although the drawings had been kept in a file cabinet to which Ciavatta had access during his employment, the trial judge found insufficient evidence that Ciavatta had seen or copied them. He also tartly observed that the information contained in them was no secret: “There is nothing proprietary about an ellipse. It is also clear that Dr. Scott was very open and communicative about his ideas.” Moreover, continued the judge, “plaintiff’s manufacturing process has been in existence for over 50 years. . . . T]here does not appear to be anything secret about it or the principles it utilizes.”

What the judge found far more significant in assessing the enforceability of the holdover agreement was Ingersoll-Rand’s portrayal of Ciavatta as having learned everything he knew about mine roof stabilizers under the company’s tutelage. The invention grew directly out of Ciavatta’s work, and he owed everything he knew on the subject to Ingersoll-Rand. “Defendant was enriched through his experience with [Ingersoll-Rand]. . . . His enrichment was particularly relevant to the invention in question and came at the hands of an employer possessed of a wealth of experience in designing and producing underground mining equipment.” Moreover, the judge reasoned that enforcement of the contract “would not constitute a significant deterrent to a change of employment by Ciavatta” because, prior to working for Ingersoll-Rand research, he had worked for a number of firms on a variety of different engineering projects. [page cite]

³⁵ *Id.* at 829.

The trial judge also rejected Ciavatta's defenses that Ingersoll-Rand was barred by equitable doctrines of estoppel, laches, and unclean hands from an injunction ordering Ciavatta to assign the patent. Ciavatta argued that Ingersoll-Rand had waited nearly five years after firing him, and nearly four years after learning of his patent application, to file suit claiming the invention. He argued that it would be inequitable to allow them to claim the patent after they had watched him invest so much time and money into it. The trial judge found that Ciavatta had not relied on Ingersoll-Rand's inaction when he decided to go forward with the invention and that Ingersoll-Rand had good reason for delaying suit until Ciavatta's invention became a competitive threat. "Plaintiff should not be penalized because it exercised restraint and waited until there was some practical advantage to be gained from litigation."

Ciavatta appealed. The appellate division reversed and ordered Ingersoll-Rand's complaint dismissed. The appellate court held that the proper analysis was the three-part reasonableness test of *Solari* and *Whitmyer*. Under that test, the agreement was unenforceable because Ingersoll-Rand had no legitimate interest in enforcing it and the hardship on Ciavatta was considerable. The invention, the court explained, did not rely on Ingersoll-Rand trade secrets or confidential information. As to hardship, the court said that "an engineer in his 50's who for one year is required to assign to his former employer any inventions which might be conceived by him 'as a result of and attributable to work done during his former employment[?]' . . . most probably will remain unemployed in the same field for the proscribed period."³⁶ If Ingersoll-Rand could claim the fruits of Ciavatta's creativity, "it is not difficult to appreciate . . . why defendant had such difficulty in locating other employment following his dismissal by plaintiff. The net effect of the agreement is to impose upon the employee a prohibition, effective for one year . . . from working on mine supports for any company in the mining industry. If an employee does not possess sufficient wealth to bridge the one-year period, he may be forced into a different industry"

Finally, the appellate division emphasized that Ciavatta did not seek to invalidate the holdover clause in order "to bring to fruition for his own benefit an invention substantially developed by him or his coemployees during his prior employment." The court recognized that the employer has a legitimate interest in using holdover clauses "to foster the free exchange of ideas by its employees without fear that the employees will use trade secrets or confidential information learned during such interchange to the employer's disadvantage" after the end of the employment. Here, by contrast, Ciavatta was fired, suggesting that he had not acted opportunistically by quitting as soon as he conceived of an invention and that he used no confidential information. Summing up, the appellate division portrayed Ciavatta as using general knowledge and "our free-enterprise system" to bring a new technology to market after he was fired. Such use, the court held, could not be restrained by contract.

This time, Ingersoll-Rand appealed.

The New Jersey Supreme Court Decision

³⁶ *Ingersoll-Rand v. Ciavatta*, 524 A.2d 866, 869 (N.J. Super. Ct. App. Div. (1987).

The New Jersey Supreme Court ruled unanimously to affirm the Appellate Division. The opinion was written by Justice Marie Garibaldi. Justice Garibaldi was appointed to the Court by Republican Governor Thomas Kean in 1982 when she was nearly 48 years old. A 1959 graduate of Columbia Law School with a master's degree in tax from NYU School of Law, Garibaldi had been a lawyer for the IRS in New York for seven years immediately after graduation, a lawyer in private practice with two Newark, New Jersey law firms for fifteen years, and a municipal court judge for two years. The *New Jersey Law Journal's* guide to the state supreme court described her as "the conservative bulwark of a Court whose other members are distinguishable only by shades of liberality." Yet the paper also described her as an "enigmatic presence" who seldom dissented, and whose "opinions show a careful deference to the Legislature, to precedent, and to administrative agency interpretations." She was "a staunch protector of contractual rights" who generally came down "on the side of business interests," though notably not in *Ingersoll-Rand v. Ciavatta*. Justice Garibaldi wrote opinions in a number of cases besides *Ingersoll-Rand v. Ciavatta* showing sensitivity to the rights of employees and other historically disadvantaged groups. She wrote the opinion for the court forcing the all-male eating clubs at Princeton University to admit women. She wrote another opinion finding compensable under the Workers' Compensation Act claims of psychiatric disability due to fear of having been exposed to toxic substances in the workplace. Her opinions both for the Court and in dissent showed some sensitivity to civil liberties; the *New Jersey Law Journal* remarked that she "generally comes down on the side of the First Amendment" in cases involving freedom of the press. She wrote the opinions for the Court in a 1987 trilogy of cases establishing a right to withdraw life-sustaining treatments in cases of grave illness or brain death, and she dissented from the Court's decision in *In re T.L.O.*, a 1983 decision upholding searches of student lockers without probable cause.³⁷

Justice Garibaldi's opinion for the New Jersey Supreme Court was long, scholarly, and thoughtful, but also characteristically pragmatic. The opinion began by noting the default rule that an employee's inventions are his own, absent an agreement to the contrary. After citing cases, the court went on to observe that the default rule seldom applies to inventive employees because, as the court deduced from its survey of case law and law review literature on the issue, "most large, technologically advanced companies today require their employees by contract to assign their patents to their employers."

The court then turned to the policy issues associated with enforcement of such contracts. Here, the court perceived a "dichotomy of our views on the rights of an inventor and rights of an employer" and on the public interest in providing incentives for employees to invent and employers to invest in invention. On the employee side of the dichotomy, the court particularly emphasized the need to provide incentives for invention. The opinion discussed the concern

³⁷ Ronald J. Fleury, *Garibaldi: A Liberal Dose of Restraint*, N.J. L.J., Feb. 17, 1982, at 12. See also *Frank v. Ivy Club*, 576 A.2d 241 (N.J. 1990) (holding that Princeton eating club's exclusion of women violates the New Jersey Law Against Discrimination); *Saunderslin v. E.I. du Pont Co.*, 508 A.2d 1095 (N.J. 1986) (holding that fear of exposure to workplace toxins is a compensable injury under workers compensation); *In re Farrell*, 529 A.2d 404 (N.J. 1987) (affirming a right to die when suffering from a terminal illness); *In re Subpoena Issued to Schuman*, 552 A.2d 602 (N.J. 1989) (finding state shield law prevented subpoenaing reporter to whom a crime had been confessed).

expressed by some scholars about a decline in patenting by Americans and cited a *Wall Street Journal* article stating that Japan “witnessed a dramatic increase in the number of inventions generated by employed inventors” after the country began tying employed inventors’ compensation to the market value of inventions in 1959. The employer side of the balance was characterized in terms of the employer’s investment in research: “It is becoming a more collective research process, the collaborative product of corporate and government research laboratories instead of the identifiable work of one or two individuals. Employers, therefore, have the right to protect their trade secrets, confidential information, and customer relations.”

The court then canvassed New Jersey law, focusing primarily on the *Solari-Whitmyer* rules for restrictive covenants, and the law of other jurisdictions on holdover clauses. The court found the law of other jurisdictions consistent with the three-part *Solari-Whitmyer* test in that it focused on the employee’s interest in “enjoying the benefits of his or her own creation,” the employer’s interest “in protecting confidential information, trade secrets, and, more generally, its time and expenditures in training and imparting skills and knowledge to its paid work force,” and the public’s “enormously strong interest in both fostering ingenuity and innovation of the inventor and maintaining adequate protection and incentives to corporations to undertake long-range and extremely costly research and development programs.”

After discussing in general how the employee’s interest, employer’s interest, and public interest should be assessed under the three-factor *Solari-Whitmyer* test in the holdover invention context, the court turned to the facts of the case. The analysis of the facts was quite brief. The court began by noting that Ciavatta was not hired to invent or to work on design improvements for the stabilizer. “Ingersoll-Rand did not assign Ciavatta to a ‘think tank’ division in which he would likely have encountered on a daily basis the ideas of fellow Ingersoll-Rand personnel regarding how the split set stabilizer could be improved or how a more desirable alternative stabilizer might be designed.” Not only had he not been directed to invent improvements to the Ingersoll-Rand stabilizer, the court noted, but all his efforts to suggest inventions had been rejected. The court also explained that nothing in the Ingersoll-Rand stabilizer was a trade secret or was a product of company research program. In addition, Ciavatta had not left Ingersoll-Rand in order to capitalize upon an invention. Cautioning that “the manner of an employee’s departure” is not dispositive, the court nevertheless stated that it is a factor to be weighed and, on these facts, it weighed in Ciavatta’s favor. He was fired, and he later developed the product based on his general skill and knowledge. Drawing an analogy to the law of trade secrets, which prohibits employees from using their employer’s economically valuable secrets in competitive employment, the court noted that Ciavatta’s invention was not the product of any recent Ingersoll-Rand research and, indeed, “the technology Ciavatta employed was developed over fifty years ago and was well known in the industry.” Based on this, the court concluded that the holdover agreement was unenforceable. Having found such a dearth of evidence to support the employer’s interest in claiming the employee’s invention, the court did not need to balance the employer’s interest against the employee’s interest or the public interest.

The court concluded its discussion with two pieces of guidance for future cases. First, the court specifically stated that “the range of the employer’s proprietary information that may be protected by contract may narrowly exceed the specific types of information covered by the law

of trade secrets and confidential information.” Second, the court pointed out that the Ingersoll-Rand contract was significantly overbroad in that it claimed for the company any invention “within the scope of the company or any of its affiliates,” and since Ingersoll-Rand was a diversified firm with thirty divisions worldwide, such a provision was substantially broader than justified to achieve the purpose of protecting information that the employee would have had access to and learned in the course of his employment.

A number of questions were explicitly or implicitly left unanswered. First, the nature of the employer’s legally cognizable interest in preventing employees from using workplace knowledge in post-employment inventions was left undefined. Suggesting that the employer’s interest may “narrowly exceed” that which is a trade secret or “confidential information” does little to clarify the situation, inasmuch as the boundaries of trade secret law are somewhat uncertain, and the legal status of “confidential information” that does not qualify as a trade secret is entirely unclear. Although the opinion suggested that a holdover clause would be enforceable to the extent it required assignment of post-employment inventions that use trade secrets (which was not the case with Ciavatta’s stabilizer), it left unclear whether a former employee could patent an invention that uses information that the employer claims as proprietary but does not qualify as a trade secret.

Second, the case leaves uncertain the significance of the nature of the departing employee’s job. That Ciavatta did not work in R & D clearly mattered to the court, but how much? Recent research has shown that many firms get some of their innovations not from their own R & D employees but from users of their products who modify the products to suit their own needs.³⁸ The manufacturer then will incorporate the users’ modifications into improved versions of the product. Would an employee who worked to implement the users’ modifications into a new version be treated as a “think tank” sort of person or as a regular employee like Armand Ciavatta? A third open question is the significance of the employee’s reason for leaving for other employment. The New Jersey Supreme Court noted that Ciavatta did not leave to capitalize on his idea; he was fired, and he may have been fired unjustly (though that was specifically left undecided). What if Ciavatta had quit out of frustration or boredom after the company rejected all his product ideas? What if the employee promptly went to work for a competitor or promptly licensed his inventive idea to another firm rather than, as Ciavatta did, slowly and laboriously developing his product and his own little company to market it at considerable personal expense?

The Impact and Importance of Ingersoll-Rand v. Ciavatta

Although inventions are a subject of considerable popular interest, the law governing employee inventors is somewhat technical and often falls through the disciplinary gap between employment law and intellectual property law. Employment lawyers often regard invention assignment agreements as being part of the arcane specialty of patent law, and patent or intellectual property lawyers tend to think of the issue as being simply a particular application of the law of employment contracts. As a consequence, the law governing invention assignments is

³⁸ Eric Von Hippel, *Democratizing Innovation* (2005).

a topic that intellectual property and employment lawyers tend vaguely to gesture at, uniformly acknowledging its importance yet still essentially ignoring it because they assume it falls into someone else's bailiwick. The fate of the *Ingersoll-Rand v. Ciavatta* decision after it was handed down in June of 1988 perfectly illustrates this phenomenon.

One obstacle to the greater salience of the law of ownership of employee inventions is the disparate sources of law governing the issue. Federal law governs patent validity, but ownership of employee inventions is governed exclusively by state law, and the law varies from state to state. As noted above, several states have statutes regulating the enforceability of employment agreements governing employee inventions, while most rely on common law. Some states, like New Jersey in *Ingersoll-Rand*, have explicitly blended the employee invention doctrine with law governing trade secrets and restrictive covenants in a way that creates an overarching body of rules regulating ownership of workplace knowledge. But most states have distinct legal doctrines regulating the different areas. Thus, although in some states the law of invention assignment agreements has certain similarities to the law of trade secrets and restrictive covenants, few states have attempted explicitly to link the three areas in the way that Justice Garibaldi did in *Ingersoll-Rand*. For all these reasons, no one single decision is likely to have a large impact, and *Ingersoll-Rand v. Ciavatta* did not, at least as measured by the number or length of law review or judicial discussions of it.

Nevertheless, in the quotidian world of inventors and their employers and the lawyers who represent them, the enforceability of holdover clauses is important and the case is a significant precedent. Not surprisingly, therefore, both the Appellate Division and the Supreme Court's decisions were reported in the *New Jersey Law Journal* and the *Newark Star-Ledger*, though it was hardly front-page news.³⁹ In the year or so after the Supreme Court handed down its decision, one student published a case note on it, and in the following years a few other notes mentioned it.⁴⁰

Although the immediate impact of the case for people other than the parties was neither sensational nor substantial, the long-term importance of the case was greater than a simple citation count might suggest. The case remains a leading citation in New Jersey courts on the enforceability of both invention assignment agreements and non-compete agreements, with fifteen New Jersey cases relying on it since 1988. It has been cited as well in nine other decisions from around the country and the Federal Circuit (the federal court of appeals with exclusive jurisdiction over appeals from Patent Office decisions). It has been followed by state supreme courts in Iowa, Maine, and Washington. Judges have tended to regard the case as most

³⁹ Kathy Barrett Carter, *Inventor Wins Ruling Against Former Employer*, Newark Star-Ledger (n.d.); Kathy Barrett Carter, *State Court Voids Pact Restricting Ex-Employee's Use of Information*, Newark Star-Ledger, June 23, 1988, at 39; Kathy Barrett Carter, *When the Good News Arrives a Bit Too Late*, N.J. L.J., July 21, 1988, at 12.

⁴⁰ Hanna Bui-Eve, Note, *To Hire or Not to Hire: What Silicon Valley Companies Should Know About Hiring Competitors' Employees*, 48 Hastings L.J. 981 (1997); Kenneth F. D'Amato, Note, *Employer Not Entitled to Enforcement of Holdover Agreement Where He Does Not Have a Proprietary Interest in Conceiving the Invention—Ingersoll Rand v. Ciavatta*, 19 Seton Hall L. Rev. 947 (1988); Marc Hershovitz, Note, *Unhitching the Trailer Clause: The Rights of Inventive Employees and Their Employers*, 3 J. Intell. Prop. L. 187 (1995); Domenick Carmagnola, *The Changing Landscape of Restrictive Covenants*, N.J. L.J., June 24, 1996, at 10.

significant for its development of the multi-factor test for the enforceability of both invention assignment agreements and restrictive covenants, whereas law review articles have emphasized the aspect of the opinion that arguably broadened the employer's legitimate interest in preventing employees from patenting in areas where the employer has valuable proprietary information.⁴¹

One of the principal jurisprudential accomplishments of the *Ciavatta* decision was its melding of the law of holdover clauses with the law of restrictive covenants and trade secrets. The court's multi-factor reasonableness analysis, which explicitly relied on the *Solari* and *Whitmyer* decisions in the restrictive covenant area, attempted to create a unified reasonableness rule to govern a wide range of disputes between employees and firms over the control of economically valuable workplace knowledge. That approach has meant that *Ciavatta* has been as significant for its contribution to the law of restrictive covenants (an area that produces more published decisions) as it has been to the law of holdover agreements (an area of law that produces fewer published decisions).

On the merits of the court's approach, as opposed to simply the breadth of its impact, reasonable minds might differ, but the court's approach reflects the majority view. Multifactor reasonableness tests are particularly appealing to judges who are unprepared to take an extreme view in one direction or another. For example, judges with an extremely expansive view of employer rights could take a bright-line position that all holdover agreements are enforceable; those with an extremely expansive view of employee rights could adopt an equally clear and easily administrable rule that such agreements are never enforceable. But this is an area where most judges (and the handful of legislatures that have weighed in on the problem) believe that a middle course is preferable, and that the justice of enforcing such agreements must depend on the facts. Even California's statute, which appears to create a clear rule that holdover clauses are unenforceable except when the employee uses the employer's materials *or* the invention relates to the employer's current or possible R & D, may not be as clear a rule as it seems. Under California law, the court would have to decide whether *Ciavatta's* stabilizer is sufficiently

⁴¹ See, e.g., *Maw v. Advanced Clinical Commc'ns*, 846 A.2d 604 (N.J. 2004) (holding that graphic designer fired for refusing to sign a 2-year non-compete not entitled to relief under New Jersey's "Conscientious Employee Protection Act"); *Lamorte Burns & Co. v. Walters*, 770 A.2d 1158 (N.J. 2001) (finding marine insurance investigative firm had legally protectable interest in client names and information and therefore was entitled to summary judgment on non-compete, duty of loyalty, and trade secret claims); *Johnson v. Benjamin Moore & Co*, 788 A.2d 906 (N.J. Super. Ct. App. Div. 2002) (holding paint company not liable to person who submitted a new product idea, citing *Ciavatta* for the proposition that novelty is not a requirement for a trade secret but that novelty is a requirement for a claim for misappropriation of a submitted idea); *Morris Silverman Mgt. Corp. v. W. Union Fin. Servs.*, 284 F. Supp. 2d 964 (D. Ill. 2003); *Freedom Wireless v. Boston Commc'ns*, 220 F. Supp. 2d 16 (D. Mass. 2002) (pre-invention assignment agreements should be construed narrowly, therefore space technology company not entitled to patent to a pre-paid cellular calling card system developed by former employee); *Campbell Soup Co. v. Destanick*, 58 F. Supp. 2d 477 (D.N.J. 1999); *Laidlaw v. Student Transp. Inc.*, 20 F. Supp. 2d 727 (D.N.J. 1998); *Neveux v. Webcraft Techs., Inc.*, 921 F. Supp. 1568 (D. Mich. 1996); *Campbell Soup v. ConAgra, Inc.*, 801 F. Supp. 1298 (D.N.J. 1991) (upholding a holdover contract against a former product development technologist, but concluding that the patented techniques for a new frozen chicken product were not covered by the contract), *vacated on other grounds*, 977 F.2d 86 (3d Cir. 1992); *Revere Transducers, Inc. v. Deere & Co.*, 595 N.W.2d 751 (Iowa 1999) (upholding claim against former employees who prepared designs that incorporated Revere's confidential information and disclosed that information to Deere, a Revere customer, after going to work for Revere); *Bernier v. Merrill Air Eng'rs*, 770 A.2d 97 (Maine 2001); *Waterjet Tech., Inc. v. Flow Int'l Corp.*, 996 P.2d 598 (Wash. 2000).

closely related to Ingersoll-Rand's business. One imagines that a court might bring in the same fairness concerns that the New Jersey court considered in deciding whether the relationship between Ciavatta's invention and Ingersoll-Rand's business was close enough to enforce the agreement. The effort to do justice in the particular case, however, has made this is an area of law that has proven remarkably resistant over the years to efforts to clarify and simplify. However, what a multifactor reasonableness test lacks in the way of certainty, it makes up for in its explicit focus on the need to accommodate conflicting policies. To the extent that the opinion's analytic approach has caught on in other jurisdictions, it has brought greater coherence and pragmatism to the effort to identify the employer, employee, and public interests in the enforcement of these contracts. That is a worthy accomplishment in a field of law that was previously characterized, at least in some states, by uncertain standards and archaic formalism.⁴²

Controversy remains both in New Jersey and elsewhere about where to draw the line between the knowledge that employees gain on the job which they should be free to use in subsequent employment, including in the development of post-employment patents, and that knowledge which the prior employer may claim as proprietary. Many of the reported decisions resolve the issue, as the New Jersey Supreme Court did, based on particular facts of the case, and the various results reached by different decisions often can be explained by factual distinctions about the circumstances of the invention and the employment. Yet fundamental policy debates persist. As recently as 2004, the New Jersey Supreme Court sharply divided over whether an employee who was fired for refusing to sign a possibly overbroad non-compete agreement could recover under a New Jersey statute prohibiting some forms of wrongful termination that violate public policy.⁴³ The majority concluded, over a sharp dissent, that a refusal to sign an overbroad non-compete agreement was a purely private dispute that did not implicate public policy, although the court also noted that the particular non-compete in question was not incompatible with a clear mandate of public policy. The court also stated that if the employee could not negotiate a narrower non-compete agreement, she could have signed it anyway and then disputed its enforceability when and if the employer attempted to enforce it against her. This suggests that at least some members of the court regarded overbroad non-compete agreements as being less obnoxious to the public interest than other illegal contract terms might be.

Conclusion

More than twenty-five years after Armand Ciavatta invented his friction stabilizer and seventeen years after the New Jersey Supreme Court ruled in his favor, Ciavatta remained resolute about the justice of his position but disappointed by the failure of the courts to do real justice. Though he said he would do the same thing again, his disaffection with the law is clear:

⁴² For a survey of the legal doctrine on the enforceability of non-compete agreements, see Brian M. Malsberger, *Covenants Not to Compete: A State-by-State Survey* (3d ed.2002). For an example of legislation regulating the enforcement of pre-invention assignment agreements, see Cal. Lab. Code § 2870 (2005) and *Cubic Corp. v. Marty*, 229 Cal. Rptr. 828 (Ct. App. 1986). Under the California statute, a pre-invention assignment agreement is unenforceable if the employee did not use the employer's equipment or information, the employee developed the invention on his or her own time, and the invention does not relate to the employer's business. That standard largely replicates the common law rule.

⁴³ *Maw v. Advanced Clinical Commc'ns*, 846 A.2d 604 (N.J. 2004).

“unfortunately for me and others the law is used to punish the creative and productive elements in our society.” In his view, the “sole purpose of the litigation was to put me out of business. I won the verdict. I lost my business with a better product. This will not stop until the financial penalties for this kind of litigation [are] significant.”⁴⁴ Petr Taborsky, the University of South Florida lab technician who went to jail rather than relinquish his invention of an improved method for using clay to extract ammonia from water, told a similar story. After defying the court order to relinquish his ideas and losing the appeal of his criminal conviction, he even refused to accept a pardon from the Florida governor because to do so, he said, would be an implicit admission of his guilt. The endless legal wrangling prompted his wife to leave him, about which Taborsky bitterly remarked, “I decided that the case was more important than our marriage.”⁴⁵

Ciavatta’s lament about the failures of law to do justice in his case, or in his life, identifies one of the most significant failings in our system of civil litigation, at least in the field of employment. Litigation is often ruinously expensive for the small business and the individual litigant. Remedies, when they come at all, often come too late. The problem is not unique to employment litigation. Stories of creative inventors whose lives were ruined and fortunes squandered in patent litigation are as old as Eli Whitney, who is said to have spent most of the money he made from his patents on the cotton gin prosecuting dozens of patent infringement cases that brought him no relief from his fear that others were pirating his ideas. The dogged determination of these inventors to claim both the credit and the control over their ideas suggests that what is at stake is more than money. At a basic level, these inventors and others feel that their creativity is essential to who they are and that intellectual property rights confirm the importance of the mark they have made in the world.

Of course, the Ciavattas and Taborskys of this world may or may not be right about whether protecting their rights to patents serves the long-term interest of the country by encouraging more inventions. Although the circumstances of Ciavatta and Taborsky differed in significant respects, in neither case did the heart of their arguments rest on the long-term national interest in encouraging innovation as much as their own strong attachment to their own inventive work. The law cannot ignore the psychic and emotional costs suffered by employees who feel that depriving them of their patents is akin to depriving them of parts of themselves. But their tenacity is revealing. Fundamentally, the law governing employee innovators and regulating the control over workplace knowledge has influenced and will continue to influence where innovation comes from and how society balances entrepreneurship and innovation, security and free inquiry.

⁴⁴ Letter from Armand Ciavatta to Catherine Fisk (undated; summer 2005).

⁴⁵ Leon Jaroff, *Intellectual Chain Gang*, Time, Feb. 10, 1997, at 64.