



United States Patent

AUTOMATIC TELEPHONE

INVENTOR
MANN

Fig.

Inventor:

Inventor

PATENTED

998,681.

J. R. P.
PERFORATING

Patented July 20, 1915

John D. Morgan

DEPLOYING OUR SECRET WEAPON

DRAWING MORE WOMEN AND UNDERREPRESENTED MINORITIES INTO INVENTING AND PATENTING WILL SERVE AMERICAN INTERESTS, INCLUDING IN GLOBAL COMPETITIVENESS.

By Margo A. Bagley

I consider it a privilege to deliver the Nies Lecture on Intellectual Property, named in honor of the late Helen Wilson Nies, the great jurist of the U.S. Court of Appeals for the Federal Circuit, and am grateful to everyone at Marquette Law School who was involved in the invitation and this visit. My topic—the importance of innovator diversity and, indeed, the imperative of such diversity for global competitiveness—involves a logical step in my academic and personal journey.

Over time, I have increasingly infused my scholarship with a strong *justice* theme, influenced by both my faith and my experiences as an African American female. Whether a topic grounded in patents, for example, relates to access to medicines, new biotech inventions, or benefit-sharing

obligations for Indigenous peoples and local communities, I often find myself supporting the position of the marginalized. I seek justice and fairness for those who may not be able themselves to effectively articulate their compelling narratives in various forms.

Let me begin by recalling some features of patents that are pertinent to my remarks. Patents, most simply, are rights granted by the government to one entity to exclude others from making, using, selling, or importing into the United States an invention for a term of time (currently about 20 years) from application filing. The law also permits one to buy, sell, bequeath, or otherwise dispose of patents, like other personal property. Yet patent rights are territorial; there is no global patent. So an inventor wanting protection in multiple places will need to seek patents in various countries or regions.

In the United States, Congress's authority to create a patent system stems from the Constitution: Article I, Section 8, Clause 8 authorizes the creation of exclusive rights, for limited times, for authors and inventors in their writings and discoveries. In the words of Abraham Lincoln in 1859—the only president to obtain a patent on an invention—patents are designed to add “the fuel of interest to the fire of genius.”

The U.S. government historically has pushed a fairly pro-patentee agenda (certainly in international negotiations, even if not always at home), which is well-reflected in a seminal article by Heinrich Kronstein and Irene Till in 1947. They noted:

This American view toward patents . . . stemmed from an actual faith that . . . patents under the control of private owners would not be subjected to abuse. The files of the United States Patent Office contain a constant reiteration of this theme; they reveal an absolute faith in the beneficial effects of an uncontrolled patent system. It was precisely this freedom, it was believed, which accounted for the rapid technological advance in the United States.

Thus, our leading the world in patent filings during the latter twentieth century was a normal, expected outcome. We did see a flip in leadership going to Japan for a time. However, it was widely perceived that Japan's approach, in many cases, was to patent fairly incremental changes and create patent portfolios *around* strong American patent families, as opposed to coming up with numerous pathbreaking inventions.

As the American tech industry started to take off in the 1970s, the U.S. government began pushing other countries more forcefully to adopt stronger IP protections, particularly for patents and copyrights. In recent United States Patent and Trademark Office (USPTO) strategic plans and United States Trade Representative (USTR) reports, we see a focus on expanding

the nation's international leadership on intellectual property and pressuring other countries to ensure adequate protection of intellectual property rights. Why?

The concern, as eloquently stated by Professor J. Thomas McCarthy in 1995, was that Americans should care if other countries do not protect IP covering technical and entertainment information because, otherwise, we have very little to sell to the rest of the world. He pointed to the replacement of U.S. Steel by Disney on the Dow Jones Index as a sign of the growing importance of intellectual property to the U.S. economy.

Here is how the U.S. Chamber of Commerce puts it today:

America's IP is worth \$6.6 trillion, more than the nominal GDP of any country in the world. IP-intensive industries account for over 1/3 . . . of total US GDP . . . The direct and indirect economic impacts of innovation are overwhelming, accounting for more than 40% of US economic growth and employment.

Even if the numbers are somewhat inflated, they make clear that intellectual property is important to the American economy.

Professor McCarthy also noted the movement abroad of significant amounts of manufacturing to China, further supporting the idea that we needed to ensure global protection for what we were still good at: information products and entertainment. Yet he, and seemingly others, may not have fully considered the ramifications of “copiers” eventually moving from imitation to innovation, spurred on by U.S. protectionist interests.

Responding to China with more women and minorities in IP

China has long been an American concern due to rampant copying and counterfeiting activity, lax intellectual property laws, and low damages awards for infringement. The 2013 and 2019 reports of the Commission on the Theft of American Intellectual Property declared that “China is the world's

largest source of IP theft” and that China is “the most active and persistent perpetrator of economic espionage.” Of course, as the two largest economies, with each striving for dominance, China and the United States have a complex relationship, and the political, military, and economic tensions cannot be disentangled from the intellectual property challenges.

Specific American reactions to China's intellectual property practices include the following: In 1989, both countries entered into a memorandum of understanding for China to create a copyright law and to protect software from rampant counterfeiting activity. This memorandum was of particular importance as the United States had recently begun to treat software as copyrightable. Then, in 2007, the U.S. government pursued a partially successful World Trade Organization (WTO) action against China's intellectual property policies.

Intellectual property has been rapidly increasing in importance in China, and China's Indigenous Innovation Policy includes innovation through coopting and copying technology developed elsewhere—that is, forced technology transfer, including through the “Made in China 2025” program, whose goal, according to one scholar (Kal Raustiala), is to have “China dominate technology markets by 2049.”

For many years, China consistently has been on the USTR's “Section 301 priority watchlist” as a country that does not adequately protect intellectual property. In fact, according to a 2011 report from the International Trade Commission, China's intellectual property rights infringement cost the U.S. economy approximately \$48 billion in 2009. The report stated that if China complied with its current international obligations to protect and enforce intellectual property rights, 2.1 million jobs could be created in the United States, with “[t]he most direct jobs impact in high-tech, innovative industries.”

It is not surprising that China is not concerned about creating jobs in the United States: China wants to create jobs in China. And, with pressure from the United States and others, China has evolved to view intellectual property as a tool for economic growth and geopolitical dominance.

When I initially saw China's 2011–2020 intellectual property strategy plan, I almost panicked. The plan called for 2 million patent applications to be filed by Chinese citizens or entities by 2015. At that time, there probably were not 2 million total applications filed globally—in all countries combined. I was concerned that China would simply overwhelm patent examining systems worldwide. Thankfully, my worries did not come to fruition, as China reached its goal without breaking the system. Yet that does not mean there were no untoward consequences.

When foreigners obtain patents in a country, that generally leads to money flowing out of the country to the pockets of the foreign entities. Constantine Vaitsos described it well in 1976: “[T]he monopoly privileges granted through patents have, among other repercussions, an international, rather than simply a domestic, income distribution effect. They also have, as a result of income flows across national boundaries, balance of payments implications.” Historically, this outward flow has often meant wealth transfer from low- and middle-income countries to higher-income countries whose inventors are obtaining patents abroad. For a high-income country such as the United States,

the balance between foreign and resident patenting for many years has been closer to 50/50, with a slight majority for domestic patent applicants.

But then something strange started happening: Chinese citizens began filing patent applications at an unheard-of rate. After a few years, not only did we see more applications filed in the USPTO by foreign applicants than domestic applicants, but also China's patent office overtook the USPTO as the patent office receiving the most patent applications worldwide, a title it shows no sign of relinquishing any time soon.

In 2019, Chinese entities were the fourth-largest group using the U.S. patent system, dramatically increasing their filings by 93 percent over the prior 10 years. This increase has largely been attributed to China's patent subsidy program and the national and provincial-level financial support provided to putative inventors. For several years, Chinese patent applicants could receive a wide variety of incentives for developing inventions and filing for patent protection. Incentives could be monetary, such as payment of filing fees and payments to inventors, and non-monetary, including reduced prison sentences for convicted criminals. Not surprisingly, these policy interventions opened a floodgate of patent application filings by Chinese residents.

So what is the United States to do in response? Fight back and deploy our secret weapon: women and underrepresented minority group members who can be drawn into the inventor ranks. Our nation is now attempting to activate and deploy

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that weapon in the battle for innovation supremacy.

The problem is that these group members face historical and continuing barriers to patenting from a variety of causes and in varying forms. The U.S. government seeks to identify and address those causes, with the recent draft of the strategic plan for the USPTO having as its primary goal to “[d]rive inclusive U.S. innovation and global competitiveness.”

The SUCCESS Act (Study of Underrepresented Classes Chasing Engineering and Science Success Act of 2018) required the USPTO, in conjunction with the Small Business Administration, to prepare a study on the number of patents applied for by women, veterans, and minorities; this would use publicly available data, as the USPTO does not collect demographic data. The resulting USPTO study reported that innovation in the United States is highly concentrated, with vast swaths of our population not fully participating. A different study in 2018, led by Alex Bell, of more than one million inventor-patentees shows that, among women, minorities, and individuals from low-income families, there are many “lost Einsteins”—i.e., high-ability

individuals who would have contributed valuable inventions had they been exposed to invention and innovation as children. The findings indicate that increasing the rate of invention by members of these underrepresented groups could quadruple the total number of inventor-patentees in America.

Historic barriers to expanding the ranks of patent owners

Many of the barriers to inventing or patenting for women and for underrepresented minorities in America are not new; they stem from long-extant discriminatory stereotypes that serve to hinder progress for individuals and the country as a whole. The 1857 *Dred Scott* decision that Blacks were not citizens was the basis of a U.S. attorney general opinion, the next year, concluding that Blacks also could not be inventors on patents and that the persons who enslaved them could not claim ownership of the enslaved person's invention via the patent system. The 1858 matter involved the invention of "an enslaved African American man named Ned [who had] invented an improved 'double Cotton Scraper, and two plows.'" The novel and valuable machine could speed up the process of preparing fields for planting.

Although the legal effect of the *Invention of a Slave* decision was short-lived, its impact in facilitating a belief that African Americans could not invent was and remains detrimental. In her brilliant article, "Race and Selective Legal Memory: Reflections on *Invention of a Slave*," Professor Kara Swanson notes how Black activists, over many decades, have sought to bring to light the inventions of Black and brown people in the face of a persistent myth of innovative and intellectual inferiority.

Citing a Black patent examiner, Henry Baker, who collected evidence of patents granted to Blacks, Professor Swanson wrote: "In 1913, Baker noted that although his list of nearly 400

African American patentees sat in a book on the shelves of the Library of Congress, a candidate for Congress in Maryland, fighting a 'hotly contested' election, had recently asserted 'that the colored race should be denied the right to vote because . . . "no one of the race had ever yet reached the dignity of an inventor.'" This trope was used to justify white supremacy and to support, as proof of Black inferiority, the assertion that African Americans could not invent, despite voluminous evidence to the contrary. Swanson also noted the lofty symbolism of patents in this country as an indicator of American might and exceptionalism and even of citizenship, such that the results of being excluded from or having reduced access to the benefits accruing from patents can be profound.

The USPTO's efforts in this area are not just diversity for diversity's sake. Real national competitiveness issues are driving this push, in addition to equity, inclusion, and social justice concerns. A 2015 McKinsey report on 366 public companies found that those in the top quartile for ethnic and racial diversity in management were 35 percent more likely to have financial returns above their industry mean and that those in the top quartile for gender diversity were 15 percent more likely to have returns above their industry mean. In a 2012 global analysis of 2,400 companies conducted by Credit Suisse, organizations with at least one female board member yielded a higher return on equity and higher net-income growth than those without any women on the board.

But does that matter for *inventing*? Yes. The data clearly show that R&D follows power—or at least money. For example, companies direct their efforts to diseases that affect wealthy people, even though more disability-adjusted life years are lost to infectious diseases than to cancers. Similarly, we may be underproducing certain inventions because those with the greatest incentive to find solutions are not engaged in innovation.

Overcoming R&D's neglect of women and minorities

There is a long history of neglect of diseases that predominantly impact women. A study of patents from 1976 to 2010, led by Rem Koning at Harvard Business School, found that patents from all-female teams were more likely than those from all-male teams to focus on women's health. Such patents also were more likely to identify differential side effects and treatments that work better for women. Moreover, male inventors were more likely to generate patents that addressed topics like "erectile" or "prostate" than "menopause" or "cervix." Male inventors, according to the study, "also tended to target diseases and conditions like Parkinson's and sleep apnea that disproportionately affect men." Koning notes that the "findings highlight how demographic inequities in who gets to invent lead to demographic inequities in who benefits from invention."

Recent work also shows how increasing the number of Black physicians in an area benefits Black patients, and more generally it discloses the benefits of matching minority patients with minority physicians. So the world needs more inventors like Dr. Patricia Bath, a Black woman who invented a laser treatment to remove cataracts, which was inspired by her observation that Black Americans were twice as likely as white Americans to suffer from blindness.

Now, to be clear, this does not mean that women only invent for women or Blacks only invent for Blacks. For example, a librarian helping me gather research for this talk told me of a female inventor who patented a prosthetic testicle for men who need to have one removed for testicular cancer or other reasons. Women are just *more likely* than men to invent solutions to problems that affect women uniquely.

I saw a similar phenomenon on the continent of Africa while lecturing in the Emory Advancing Healthcare Innovation

in Africa (AHIA) program. The AHIA project teamed law and MBA students from the United States with African scientists in a bootcamp for learning innovation commercialization fundamentals. One of the things that struck me was that inventors in other countries also often focus on developing solutions to local, domestic problems. Thus it is important also to support researchers in low- and middle-income countries and to support inventors from underrepresented groups, including veterans.

So all of this is about more than just which country wins the race to have the most patents. The concern is really about who gets to *benefit* from technological developments. It also is about who gets to be seen as intelligent, even as “American,” as Swanson explains. And, of course, who gets to benefit has other implications for our global competitiveness. If we have an undereducated workforce, a sick workforce, those ills will affect productivity and creativity, and there is plenty of evidence that systemic justice deficits contribute to poorer health outcomes, educational outcomes, and more.

A friend recently had to begin kidney dialysis. Through her struggles, I learned that a substantially disproportionate percentage of dialysis patients in the United States are African American or Hispanic, relative to their composition of the U.S. population. It made me wonder if there is an underproduction of innovation in the kidney disease space because of the race of a significant percentage of the population of patients relative to the race of the predominant population of inventors.

For these and many other reasons, we need, as a country, to deploy our secret weapon. As an African American woman, I have interacted with the patent system in many ways—including as an engineer and as a named coinventor on three patents, as a patent attorney obtaining and enforcing patents for clients, and as a patent law professor teaching hundreds of future attorneys about patent law. In each of these areas, I am one of a fairly small number of people who look like me.

Thus, I was thrilled when Professor Colleen Chien, now of the University of California Berkeley School of Law, who is doing pathbreaking and important work with agencies, companies, and firms on piloting rigorous innovator diversity initiatives, invited me to join her in this area of research. We organized a conference in fall 2022 at Santa Clara University, in conjunction with the USPTO and various firms and companies, on Innovator Diversity Pilots—the first conference of its kind. I personally learned so much from our conference, which was packed with creative and compelling “fire starters”—presenters speaking about diversity, equity, and inclusion (DEI) projects that they had already begun, as well as researchers making pitches, including to USPTO Director Kathi Vidal, who was one of our keynote speakers.

One pitch, by Professor Jordana Goodman, now of the Illinois Institute of Technology’s Chicago-Kent College of Law, was based on her research showing that women are less likely to be signatories on documents filed with the USPTO, such as patent

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applications and responses to office actions, than are men. Partners often sign such documents, but that practice can give a distorted, incomplete, and inaccurate view of who is doing the work and can hinder women as they seek to advance in a firm. Goodman proposed an elegantly simple solution: that the USPTO add an additional line in response documents to allow for more than one person’s signature, for example, on an application cover sheet. A small intervention, but one that can have an outsized impact on the visibility of women in the field of patent law.

What law firms and corporations are doing

There is really no way I can do justice to the various presentations from the conference, but I will provide a sense of some of the highlights that relate particularly to the USPTO, law firms, and corporate initiatives.

First, several USPTO initiatives are an outgrowth of the Council for Inclusive Innovation, whose creation was proposed in the study required by the SUCCESS Act. These initiatives include an internship program for university and community college students, a first-time-filer expedited examination pilot, expansion of free legal services (which tend to support disadvantaged communities), and a community

outreach campaign that leverages the USPTO's expansive network of teleworking patent examiners across the country.

In terms of law firm and corporate initiatives, Caren Ulrich Stacy, CEO of Diversity Lab and a special advisor to the USPTO on DEI issues, developed the "OnRamp Fellowship." Ulrich Stacy had spent decades hiring talent for major firms and noticed that the classic stereotypical criteria of success, such as the prestige of the law school one attended, did not always correlate highly with actual success in practice. She used a "Moneyball approach" to see what factors actually correlated with success, and she developed a pilot program for women returning to the workforce after leaving for several years to have and raise children. For such returners, Ulrich Stacy looked at varying indicators of success and created a formula to calculate the likelihood that they would be successful after a 10 to 20-year hiatus from the practice of law.

Four law firms—Cooley, Baker Botts, Sidley Austin, and Hogan Lovells—piloted one-year fellowships for these women. The pilots were very successful and led to Diversity Lab's OnRamp Fellowship, used by 50+ legal departments and firms, bringing 200+ women lawyers back to legal work, of whom 20 percent have been patent attorneys and 30 percent women of color. Overall, 87 percent of OnRamp Fellowship participants have received and accepted offers of work.

You might have heard of the Mansfield Rule, named after Arabella Mansfield, the first woman admitted to the practice of law in the United States. The idea came from Diversity Lab's 2016 women-in-law hackathon. The Mansfield Rule evolved from a law firm's commitment to interview one woman for every leadership role in every search, to a commitment that 30 percent of candidates considered for leadership, equity partnership, and lateral partnership positions would be women,

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people of color, LGBTQ+ individuals, or individuals with disabilities. "Certification Plus" status is available for those who not only consider diversity in hiring but actually achieve those percentages in their firms/departments.

Participant firms also report data to Diversity Lab at multiple points in the process for transparency purposes. And the program continues to expand and improve. The 2020 certification program added the inclusion of transparent leadership position descriptions and, in 2021, transparent compensation criteria and processes. Interestingly, before the Mansfield Rule, only 12 percent of surveyed firms and legal departments were even tracking diversity. Today, 100 percent of 250 surveyed firms (in the United States, United Kingdom, and Canada) are doing so, as well as 75 legal departments. The certification process is annual, which is for accountability, transitions in leadership, and continued progress. There are monthly knowledge-sharing meetings for participating organizations and a yearly symposium where newly promoted partners from underrepresented groups are introduced to in-house counsel who make outside-counsel hiring decisions.

More and more firms are participating each year, with two-thirds of the current participants joining in the past two years. The results also show upward trends in the diversity of executive teams relative to non-adopter firms. The Orrick firm, for example, went from 38 percent underrepresented members on the executive committee before the Mansfield Rule to 61 percent in its most recent reporting cycle. The firm also went from

19 percent underrepresented practice group leaders to 43 percent, which seems pretty impressive.

Another firm, Schwegman Lundberg & Woessner, created the SLW Academy, motivated in part by the murder of George Floyd, as Minneapolis is the firm's headquarters. The academy aims to increase representation for underrepresented groups in patent law through educational opportunities geared to high school, college, and law students. The firm created a holistic series of free videos and quizzes on patents and other practice success information to educate and equip not only minority candidates but all who choose to avail themselves of the materials. The program also offers the opportunity for earning a certificate of completion and is working on facilitating career connections and ways to further partner and scale with others.

Professor Lateef Mtima of Howard University School of Law piloted a CLE program 20 years ago to expose underrepresented attorneys to cutting-edge issues of intellectual property, to help them connect with people of color in the field, to pique their interest in the area—to help diversify IP. Then, several years later, Mtima decided to expand and create a second day of programming with the same goal but targeted to students. An important element was the inclusion of "micro-scholarships" that would allow students of historically Black colleges and universities (HBCUs) to take unpaid intellectual property internships and still have funds to pay rent and meet their basic needs. This program started with Howard and is now scaling to add four more of the six HBCU law schools.

Professor Mtima also has mentioned the wealth of intellectual property resources available at the Michelson Institute for Intellectual Property, which includes videos, grant opportunities, and more, particularly directed to underrepresented groups. Harrity & Harrity's intellectual property team is also doing pathbreaking work in providing a plethora of diversity-related programs, all advancing under the DEI leadership of Elaine Spector. The firm has also teamed up with "ADAPT.legal" (Advancing Diversity Across Patent Teams) for data analytics and in other areas. One particularly interesting Harrity & Harrity initiative is the Patent Pathways Program, which aims to increase the number of diverse patent practitioners through training, mentoring, and job opportunities.

Jeremiah Chan, head of patents, licensing, and open source at Meta, the parent company of Facebook, describes the ADAPT.legal hub as a clearinghouse of sorts for a variety of innovator diversity piloting initiatives. The idea is that a company, law firm, or government agency wanting to begin a pilot but not knowing where to start can go to ADAPT and get a wealth of ideas based on what others have tried. The Patent Pipeline Program (PPP) is one ADAPT.legal initiative supported by Meta. Started by Braxton Davis, an African American patent attorney, the PPP focuses on helping minorities holding STEM degrees to become patent agents. When Davis joined Meta a few years ago, Chan helped with scaling the program. The program partners with law firms and corporate legal departments to recruit candidates, working primarily with HBCUs, and in the most recent cycle received 230 applications. PPP provides patent training, and firms monitor the training and offer internships. The first cohort of three individuals finished the program, the next cohort of eight are all at top firms or companies, and the pipeline is growing.

One may wonder why anyone should even care about diversity in

the ranks of intellectual property attorneys. I can provide an example from my own experience. Part of the reason I became a patent attorney is my positive experiences with patent attorneys while working at the Procter & Gamble Company. In fact, I might not be a coinventor on a patent on reduced-fat peanut butter today if it were not for a female patent attorney named Tara Rosnell, who saw my name in lab notebooks and other documents and sought me out (after I had moved to a different group in the company), for the patent application she was preparing, to investigate whether I had contributed to the conception of the invention. I have always been grateful for her diligence. We need patent attorneys who "see" diverse inventors and who can relate to their experiences and find value in their innovative solutions—who see them as inventors capable of making inventive contributions. This is not to say that others cannot, but let's increase the odds.

Are there potential barriers to the success of these efforts? Of course. Change often takes time, and if results are not seen quickly, initiatives may die. Alternatively, interest may wane given shifting financial priorities and judicial

decisions. Complacency may set in, or there may be active opposition to DEI initiatives. All of these can stunt or stifle actual, lasting, innovative progress.

I like this quote, which Jeremiah Chan shared, by Arthur Ashe, the great tennis player and humanitarian: "Start where you are. Use what you have. Do what you can." It speaks to people individually, organizations collectively, and the United States as a country. We can start from here and make a brand-new end, expanding our innovation ecosystem diversity and enhancing our global competitiveness.

There are myriad ways that discrimination and bias can combine to profoundly limit inventor participation in the patent process. The utilitarian purpose of patents is to incentivize inventors to invent and disclose, so it makes sense to incentivize as large and as diverse a group as possible in order to maximize the likely output of innovative activity. This incentive is important in terms of our geopolitical aspirations as a country but, hopefully, also because of our democratic commitment to provide opportunities for flourishing and reaching one's potential that are available to all. Thank you. ■



Margo A. Bagley is vice dean and the Asa Griggs Candler Professor of Law at Emory University School of Law. This is a version of the annual Helen Wilson Nies Lecture on Intellectual Property, delivered in April 2023 in Marquette Law School's Lubar Center. The lecture also appears in essay form in the most recent issue of the *Marquette Intellectual Property & Innovation Law Review*.