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### Gender and Invention: Mapping the Connections

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# GENDER AND INVENTION: MAPPING THE CONNECTIONS

VICTORIA PHILLIPS\*

The essays in this extraordinary volume are based on presentations given at the Seventh Annual IP/Gender: Mapping the Connections Symposium at American University Washington College of Law.<sup>1</sup> This symposium, cosponsored for the past seven years by this Journal and the law school's programs on Intellectual Property and the Public Interest and Women and the Law, has provided a unique forum to examine and discuss research on gendered dimensions of intellectual property (IP) law. Because issues of gender in intellectual property have been under-appreciated and under-theorized, much of the work unearthed in these annual conferences has been exploratory and pioneering. We have come a long and fascinating way since we first gathered interested scholars together to start thinking about applying a gender lens on intellectual property and theory in an attempt to map the points of intersection of these seemingly parallel fields. When we started the project, we identified some initial potential topics for inquiry, including: the role of women in the formation and history of the IP disciplines; notions of gender discrimination in the construction and application of IP doctrine; issues of disparate impact, or the way in which apparently neutral doctrines of intellectual property law may have dramatically different effects on different groups within society; and the incidence of gendered rhetoric in IP discourse, especially around ideas of creativity and innovation. Indeed, as the work was so exploratory, we titled the first four conferences "IP/Gender: The Unmapped Connections."<sup>2</sup> By the fifth convening, we agreed that the mapping had unquestionably begun.<sup>3</sup>

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1. *Seventh Annual IP/Gender: Mapping the Connections, Gender and Invention Symposium* at American University Washington College of Law (Apr. 16, 2010).

2. *See, e.g., Fourth Annual IP/Gender: The Unmapped Connections Symposium* at American University Washington College of Law (Mar. 23, 2007).

3. *See Fifth Annual IP/Gender: The Mapping the Connections Symposium* at American University Washington College of Law (Apr. 4, 2008).

The topics explored and essays published in the intervening years have ranged from the impact of intellectual property law and policy on gender-related imbalances in wealth, cultural access, political power, and social control; creative production and gender; the effects of stereotyping on intellectual property stakeholders; the gendered development of IP doctrine and the practice of IP; feminist jurisprudential insights about intellectual property law; and female fan cultures and intellectual property. We also started the process of reaching out to scholars around the world to help us understand how this intersection plays out in other cultures. As the pieces in previous volumes demonstrate, this project has sown the seeds for a fertile field of scholarship engaging the theory and doctrine of intellectual property from feminist and gender perspectives. While a good number of scholars have initiated inquiry into how these insights play out in the laws of copyright and trademark, very few have taken on an examination of our patent laws and systems through a feminist or gender lens. To nurture more exploratory work in this area, we chose “Gender and Invention” as the special theme of this symposium. With the help of our longtime colleague and collaborator, Dan Burk of University of California at Irvine, we were fortunate to assemble a wide-ranging group of interdisciplinary projects examining how this intersection might play out in the field of patent law and practice here and around the world.

Pennsylvania colonist Sybilla Masters is often acclaimed as the first female American inventor.<sup>4</sup> In 1715, Masters was awarded an English patent under her husband’s name for a method of cleaning and curing Indian maize for corn meal. The patent noted that the method was “found out by Sybilla his wife.” Several years later she also invented a fabric made out of palmetto and straw leaves and again received a patent under her husband’s name. Surely the prevailing view that “a woman’s place is in the home” limited women’s opportunities for any scientific or technical education, much less a career. Almost all state laws also prohibited married women from owning property in their own names. Indeed, it is no surprise that most, if not all inventive activity by women was largely confined to the domestic realm, and if patent protection was sought at all, the right was issued in the name of the husband.

While historians of science and other historians have examined the evolution and stories of women inventors, very little legal scholarship has focused on their activities or explored the gender dynamics related to legal doctrine and practice. As the women’s rights struggles of the late-nineteenth and early-twentieth century began to reshape the gender-related imbalances in wealth, cultural access, political power, and social control,

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4. See J.E. Bedi, *Exploring the History of Women Inventors*, INNOVATIVE LIVES (July 1999), <http://invention.smithsonian.org/centerpieces/ilives/womeninventors.html>.

the number of patents issued to women also increased. However, by the turn of the twenty-first century, women still held less than 1% of patents in the United States patent register. As the research presented in this volume demonstrates, these figures remain markedly low more than a hundred years and numerous victories for equality later. Though the United States Patent Office does not require gender identification on patent applications, it is estimated that less than 10% of issued patents each year are awarded to women.<sup>5</sup> We are also reminded in the symposium findings that the same imbalance seems to be true all over the world. Despite the changed landscape, most women do not choose to secure rights in their inventive activity through available patent systems.<sup>6</sup> The contributions in this volume explore these statistics, search for potential reasons for this imbalance, and suggest both areas for further inquiry and potential solutions.

In “Examining Exclusion in Woman-Inventor Patenting: A Comparison of Educational Trends and Patent Data in the Era of Computer Engineer Barbie,” Annette Kahler compiles important empirical research confirming that women continue to be significantly underrepresented as named inventors on patents.<sup>7</sup> She argues that gender disparity in the inventor community persists despite great progress in recent decades toward closing the educational gap between men and women, and reducing bias and barriers that have long faced women in scientific and technical fields. Kahler notes that the literature has been limited by the absence of comprehensive and longitudinal empirical study of woman-inventor patenting. She examines recent educational trends and compares these with recent patent statistics, demonstrating only modest recent growth in woman-inventor patenting. Kahler notes that little is known about how participation in the patent system is affected by gender or other identity characteristics. She laments the various consequences of these low numbers, including the fact that women are disadvantaged by their comparative lack of access to the benefits of patent rights. In addition, Kahler identifies a larger loss to society and the innovations ecosystem, given the lack of diversity in the patent community. She calls for a comprehensive and longitudinal empirical study of woman-inventor patenting across technologies, organizations, and geography.

Turning to the experience in Chile, Bernardita Escobar Andrae’s research confirms that women’s participation in scientific production is

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5. See Annette Kahler, *Examining Exclusion in Woman-Inventor Patenting: A Comparison of Educational Trends and Patent Data in the Era of Computer Engineer Barbie*, 19 AM. U. J. GENDER SOC. POL’Y & L. 773, 780-81 (2011).

6. *Id.*

7. See generally *id.*

low, regardless of the degree of economic development of the country analyzed.<sup>8</sup> In “Scientific Productivity and Gender Performance Under Open and Proprietary Science Systems: The Case of Chile in Recent Years” Escobar studies “open science” and “proprietary science” regimes in examining patterns of gender productivity differences under each reported for developed countries and a less developed country like Chile. She also examines whether scientific production differs among genders across incentive structures, noting that if gender bias can be established for either open or proprietary systems, then changes in the relative prominence of either institutional framework might have a collateral effect in promoting or damaging female involvement in the production of scientific progress. Escobar finds that women produce less under a proprietary science regime compared to what they produce in an open science regime in the developed world. Her data on activity in Chile reveals similar general gender patterns in the scientific sector to those found in many developed nations. Escobar’s findings indicate that gender productivity gaps between regimes of incentives to accumulate knowledge are pervasive across all countries, similar at all levels of economic development, and are given different orientations towards the production of knowledge. She concludes that differences in incentive regimes are likely be at the core of the different levels of female involvement and sounds a warning bell to policy makers to consider and study gender issues closely when relying on the use of IPRs to incentivize knowledge creation, diffusion, and access.

It is clear from this research that the worldwide patent registers do not even begin to tell the real story of the contribution by women to inventive activity and productivity. Historians Rayvon Fouché and Sharra Vostral urge us to look beyond the registers and search for these hidden stories.<sup>9</sup> In “‘Selling Women’: Lillian Gilbreth, Gender Transition, and Intellectual Property” they challenge scholars to move away from a focus on activities at the patent office. They suggest that very little is learned about the workings of gender and intellectual property by returning to sites of “white male hegemonic control.” Fouché and Vostral propose instead an examination of women’s experiences from within American society and culture. They observe that often perceptions of what has traditionally been counted or valued as intellectual property are “deeply intertwined with deleterious representations of the gendered other.” Creative activities that cannot be effectively categorized within the familiar forms of intellectual

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8. Bernardita Escobar Andrae, *Scientific Productivity and Gender Performance Under Open and Proprietary Science Systems: The Case of Chile in Recent Years*, 19 AM. U. J. GENDER SOC. POL’Y & L. 799 (2011).

9. Rayvon Fouché & Sharra Vostral, “*Selling*” Women: Lillian Gilbreth, Gender Transition, and Intellectual Property, 19 AM. U. J. GENDER SOC. POL’Y & L. 825 (2011).

property “fall to the wayside.” Fouché and Vostral suggest that if we look to this “wayside” to understand that the location of women within American society is the historical byproduct of a businesslike effort to “fix” gender within American culture, a new set of questions to explore intellectual property and women’s lives can emerge. In doing just this, the authors recount the work of Lillian Gilbreth, who was retained in 1927 by the Johnson & Johnson Company to help create a study to help design and sell a better sanitary napkin. Gilbreth’s conceptualization of the product through the translation of the interviews with thousands of women ultimately materialized into a patent issued to Robert W. Johnson. Fouché and Vostral describe how Gilbreth’s contribution completely disappeared from the final product and the patent office granted Johnson legal protection to the ideas that were not his at all. They suggest that there are many more stories like this and encourage other scholars to travel a similar path by stepping outside the masculine corporate intellectual property world and working backwards to discover the myriad locations where women have formed, shaped, and made valuable contributions to creative production receiving intellectual property protection.

We are also challenged in these readings to consider rethinking our patent and other intellectual property systems and doctrine to be conscious of built-in biases and disparate impacts on gender in an effort to be more conducive to and welcoming of female participation. Looking at the realities of gendered invention from a global perspective and through a feminist lens, Dr. Sholomit Yanisky-Ravid argues that the very framework underlying the discourse about intellectual property is lacking a focus on the imbalance between genders and the promotion of gender equality.<sup>10</sup> In “Eligible Patent Matter—Gender Analysis of Patent Law: International and Comparative Perspectives,” Yanisky-Ravid recognizes the near absence of women in scientific fields, but focuses her analysis on why this is so. She uses feminist and critical legal theory to argue that patent laws themselves are neither neutral nor objective. She hones in on the definitions of “patentable inventions” and “inventor” as tending to exclude women. She explores several different definitional frameworks, including the narrow international definition provided by the TRIPS agreement adopted by many countries including Israel, and the broader and more flexible approach utilized by United States courts. She argues that the globally prevalent rationale of promoting welfare only to narrow technological inventions discriminates against a majority of women who are responsible for the welfare achieved through inventions in other nontechnical and “non-

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10. Sholomit Yanisky-Ravid, *Eligible Patent Matter—Gender Analysis of Patent Law: International and Comparative Perspectives*, 19 AM. U. J. GENDER SOC. POL’Y & L. 851 (2011).

machine” fields. Yanisky-Ravid calls for a global rethinking of the definitional approach used and an expansion of the definition of patentable inventions, noting that recognition of patent protection for female innovation will encourage progress and development. She posits that the law as it stands creates and perpetuates social gaps, but can be corrected if the criteria are rewritten to include women’s experiences and grant them equal value through international treaties. Gender should be central to international intellectual property discourse, not discussed at the margins.

In “Do Patents Have Gender?” Dan Burk explores the statutory requirements for patentability in the United States through the lens of feminist theory.<sup>11</sup> Since it is clear that fewer women receive patents, fewer women work as patent examiners or even as patent attorneys, Burk queries whether these indicators of reduced female participation signal that the patent system retains some residue of more overt discrimination. He argues that while the criteria for patent eligibility are purportedly objective, this objectivity is likely not gender-neutral, but rather oriented toward a rational, masculine default. As an example of this, he notes that an invention is assessed for compliance with the statutory requirements of obviousness, enablement, and written description from the perspective of the fictional “person having ordinary skill in the art” of PHOSITA. Burk illustrates with patent case law and feminist scholarship from other areas that this PHOSITA may well always be assumed to be masculine. The standard fosters a view of the inventor as isolated and detached from the community. He recommends a thorough interrogation of the current system to unearth such unrecognized assumptions relating to patents and gender. Burk advocates for a shift away from objective standards and the creation of a patent system that is less hierarchical, less patriarchal, and more socially transparent. Given the underlying goals of our patent system, to promote progress and foster innovation, a system more welcoming to participation by all regardless of gender might better fulfill that goal.

The contributors to this year’s “Gender and Invention” symposium made possible an inspiring day of pioneering presentations and discussion on this theme. We hope that the selections included for publication in this volume provide a provocative starting point for more fully engaged scholarship on the gendered dimensions of patent law.

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11. Dan Burk, *Do Patents Have Gender?*, 19 AM. U. J. GENDER SOC. POL’Y & L. 881 (2011).