

# Viewing The Patent System Through The Lens Of Feminists

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## ABSTRACT

The feminine inventions in patent litigation had showed biases caused by gender factors. In particular, *Bowers*, *Names*, and *Maynard* had revealed certain biases existed in litigations because they seemly undertook corset as witness. However, they are not patent cases even though they involved with gender factors.

Feminists argued that, in *Cohn*, the Justices had unselfconsciously utilized their masculinity by construing the words of a patent specification to describe an invention related to femininity. This article agrees that the U.S. patent litigation system may not be a gender-free zone in this regards, but this contention is not necessary true as applying to the U.S. patent prosecution system. And, the article suggests that the *Egbert* case was more of a case illuminating the discretion to the justices of the US Supreme Court upon determining the establishment of public use and did not essentially contain a gender issue to the patent system. Further, this article suggests that the PHOSITA is merely a neutral legal-fiction established to determine the existence of non-obviousness, there is no ground to connect it with a gender issue.

Feminists argued that the *Myriad* case had showed the patent law hindered genetic testing for breast cancer susceptibility. And, feminists asserted that feminine inventions to female are more fallen into public domain.

For example, more traditional forms of gendered labor such as cooking and making clothing do not count as new, novel, and industrial. But, if the public domain issues are managed to cover traditional forms of gendered labor, then feminists would essentially argue to expand the eligible patent matter.

Statistics may conflict with “dualism doctrine” suggested by feminists because the percentage of female inventors who have design patent, which fallen within the scope of feminine technologies, has the lowest figure. Additionally, the small percentage of female engineering graduates indicates the “difference claim” should be taken into consideration, and in return challenge the arguments provided by

feminists about their critique to science and technology because education system is a neutral one which provides equal opportunity to both male and female students. And, since the science and technology are factors significantly correlated to patent system in this regards, therefore, feminists should have no ground to argue any failure to the patent system based on the claiming of gender problem.

Keywords: feminist, public use, eligible patent matter, public domain.

## I. Introduction

Feminist literatures have been piled voluminously for decades claiming the discriminatory treatment to female. They had rooted into Western philosophy, utilizing varies theories such as the “dualism doctrine” to divide and create two opposite groups, e.g., mind versus body, nature versus culture, and spirit versus matter, wherein the former are considered as masculine and domination with the later as feminine and inferior. This paradigm provides a permanent forum for endless arguing of the gender inequality.<sup>1</sup>

Although much less feminist literatures are discussing gender issues in intellectual property, still the dualism doctrine has been applied to this arena. Some epistemological arguments allow us to understand their assertions to intellectual property law. For example, a feminist epistemology can be grounded in an examination of craft labor done by women such as “caring”, versus one done by men utilizing technology such as electronics. Further, feminists argue that when knowledge is constructed as abstract and rational, it is associated with the masculine. And, a masculine social construction of knowledge means that women primarily participate in a determined system framed by masculinity. Feminists want to deconstruct the asserted inequality.<sup>2</sup>

Facts show the absence of women in scientific field and deficit of female inventors. Opponents to feminism suggested that it is because of the inborn biological difference between men and women, and provides a “difference claim” upon the scientific and mathematics abilities. Incorporated into the suggestion is the assumption that even if legal structures facilitated or encouraged women to own patents,

women would remain the minority patent-holders because of their innate differences. Adoption of this explanation precludes any reason

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<sup>1</sup> Dan L. Burk, *Feminism And Dualism In Intellectual Property*, 15 Am. U.J. Gender Soc. Pol'y & L. 183, 191 (2007).

<sup>2</sup> Debora Halbert, *Feminist Interpretations Of Intellectual Property*, 14 Am. U.J. Gender Soc. Pol'y & L. 431, 438-440 (2006).

or incentive to change the social and legal structures for acquiring patents in a way that would grant women more rights because, under the difference claim, the result would essentially remain the same.<sup>3</sup>

However, feminists counter argued that, the cause should be the social failings, such as discrimination, rather than reasons upon a difference claim.<sup>4</sup> In particular, a feminist emphasizes that the relevant question is not about the differences between the sexes, but rather the distribution of power in accordance to those alleged differences.<sup>5</sup> For example, laws of coverture, preventing married women from owning property, hindered their commercial activity as inventors. Once the laws were abolished, however, there was an increase in the number of United States patents issued to female inventors.<sup>6</sup> And, feminists had further expressed that either the culture or epistemology of science and engineering are hostile to women.<sup>7</sup>

Given these different school of thoughts, this article plans to discuss whether there is any inequalities to women in the patent system by reviewing literatures and related cases. Therefore, after this Part I, the Part II will examine the feminine inventions in patent litigation to see if there is any bias created by gender factors in light of sufficiency of description, and public use. Part III will examine feminine invention in patent prosecution in light of the eligible patent matter, the non-obviousness standard, and public domain, along with empirical data and analysis. Part IV is the conclusion.

## **II. Feminine Inventions In Patent Litigation**

### **A. Feminine Inventions and Litigation Biases**

For assessing whether there are biases in litigations from a gender perspectives, certain cases involving the feminine item “corset”<sup>8</sup> were reviewed as follows. The case *Comm. v. Bowers* held in 1876 contained the fact that a man and woman for convicting adultery when they were

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<sup>3</sup> Shlomit Yanisky-Ravi, *Eligible Patent Matter-Gender Analysis Of Patent Law: International And Comparative Perspectives*, 852 Journal Of Gender, Social Policy & The Law, Vol. 19:3, 852 (2011).

<sup>4</sup> *Id.*, at 880.

<sup>5</sup> *Id.*, at 852, 854.

<sup>6</sup> Laura A. Foster, *Situating Feminism, Patent Law, And The Public Domain*, 20 Colum. J. Gender & L. 262, 314 (2011).

<sup>7</sup> Dan L. Burk, *Do Patents Have Gender?* 19 Am. U.J. Gender Soc. Pol'y & L. 881 (2011).

<sup>8</sup> The hourglass-shape corset used by women is a typical feminine item wherein masculine technologies are also applied, and therefore suitable for this article for purpose of discussing related gender and patent issues.

found in a hotel room at midnight. The man was in the bed although the woman was not and was fully clothed, except for her corset and shoes. The court held that her presence without a corset was considered a probative evidence of an adulterous purpose in their staying at the hotel.<sup>9</sup>

The court *Names v. Names* held in 1885 contained the fact that a woman found in a bedroom with a man not her husband, wore a “loose” wrapper, with her hair hanging “loosely”, and her corset lying on the bed. The court held that her general state of physical looseness and her removal of her corset were evidence of loose morals sufficient to prove adultery.<sup>10</sup>

In *Maynard v. People*,<sup>11</sup> the court concluded that evidence that a man gave a corset to a woman was evidence that there had been a sexual relationship between the two. Despite of his denial of any sexual relationship at initial trial, he then was tried and convicted of perjury for his denial in the face of the evidence of the corset. The appellate court agreed that the evidence that “the purchase of the corset, and giving it to the woman, was a circumstance which, unexplained, was likely to prejudice the case of the defendant in the minds of the jury”.<sup>12</sup>

These cases had nonetheless revealed certain biases in litigations caused by gender factors because they seemly undertook corset as witness. However, they are not patent cases. Therefore, feminists would be able to argue these biases only on grounds other than patent issues. Yet the courts did decide certain patent cases relating to gender issues including sufficiency and clarity in description and public use, and will be discussed as follows.

## **B. Sufficiency of Description**

In *Cohn v. United States Corset Company*,<sup>13</sup> plaintiff patentee, a corset manufacturer, sued former employees who conducted corset business against him for patent infringement. The defendant successfully defended against the suit at trial by arguing that the patent at issue was invalid because his invention was already known. In

particular, they claimed that it had been fully disclosed in a printed publication in 1854, a year before the invention date at issue. In considering this argument on appeal, the Justices conducted the patent interpretation in order to determine whether his invention had been disclosed in the prior art. The Court determined that the prior art was fatal to the patent because it sufficiently described the corset claimed by

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<sup>9</sup> *Comm. v. Bowers*, 121 Mass. 45, 45-46 (1876).

<sup>10</sup> *Names v. Names*, 25 N.W. 671, 671-72 (Iowa 1885).

<sup>11</sup> *Maynard v. People*, 25 N.E. 740, 744 (Ill. 1890).

<sup>12</sup> *Id.*, at 744.

<sup>13</sup> *Cohn v. United States Corset Company*, 93 U.S. 366 (1876).

the plaintiff. Thus they considered that the plaintiff was trying to assert a monopoly over something known to the public.<sup>14</sup>

In addition to the anticipation by the prior art, there is, for purpose of feminism discussion, another issue, i.e., whether gender terms can be used to determine the sufficiency of description. It is understood that the function of a corset in this period was to emphasize the breasts and hips relative to the waist, and the resulting hourglass shape would be lost if all stays were the same length. However, in its analysis of the sufficiency of description to these terms of art in the specification, the Court repeated the words “elegance” and “grace” multiple times, obviously considering them as terms of art.<sup>15</sup>

It is stipulated in 35 U.S.C. 112 that “the specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention”.<sup>16</sup> There should be no room for words such as “elegance” and “grace” to fulfill the sufficiency requirement to description of a specification.

The *Cohn* opinion revealed the result of male judges applying patent doctrine to a technology of gender. Feminists argued that corsets may have been feminine technology, made for use by women, but their purpose was to satisfy the male concern for “functioning and signifying for the beholder.” They further argued that the Justices had unselfconsciously utilized their own masculinity by construing the words of a patent specification to describe an invention related to femininity,<sup>17</sup> and therefore, this article agrees that the U.S. patent litigation system may not be a gender-free zone in this regards, but this contention is not necessary true as applying to the U.S. patent prosecution system.

### C. Public Use

There is another case, involving a corset again, which may also show the U.S. litigation system may not be a gender-free zone of technology. That is, the decision in *Egbert v. Lippmann*<sup>18</sup> which related to the public use doctrine arose out of judicial understanding of the

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<sup>14</sup> *Id.*, at 376.

<sup>15</sup> Kara W. Swanson, *Getting a Grip on the Corset: Gender, Sexuality, and Patent Law*, 23 Yale J.L. & Feminism 57, 87 (2011).

<sup>16</sup> 35 U.S.C. §§112 (a).

<sup>17</sup> Swanson, *supra* note 15, at 88.

<sup>18</sup> *Egbert v. Lippmann*, 104 U.S. 333 (1881).

gendered nature of the public and private divide in life.<sup>19</sup>

Specifically, the invention at issue, a corset, was used by a woman Frances Lee, for more than two years before applying for patent. The woman was an intimate friend of the inventor, Samuel Barnes, who later on became her husband. The majority justices stated that, according to the patent act, there were two things to be considered. First, to constitute the public use of an invention, it is not necessary having more than one patented articles to be publicly used. And, such use may be only capable of being used where it cannot be seen nor observed by the public eye. Second, whether the use of an invention is public or private does not necessarily depend upon the number of persons to whom its use is known.<sup>20</sup> Therefore, the Court found that one woman's use of an improved steel stiffener within her corset was a public use of the improvement.<sup>21</sup>

However, justices Miller dissented that the line drawn by majorities between public use and private use was not clear and thus the opinion was not persuasive. He pointed out that the novelty requirement in previous patent act provided, *inter alia*, "not known or used by others" before the discovery or invention made by the applicant, where the word "public" was not used. But, the amended patent act applicable to this case stipulated that said corset have been in "public" use or on sale with the consent or allowance of the inventor or discoverer. Therefore, the word "public" mandated in the amended patent act is an important member of the sentence of said section of the act and shall be considered.<sup>22</sup> He concluded that the spring inserted in a single pair of corsets, and used by only one woman, covered by her outer-clothing, and in a position always withheld from public observation, should not be

interpreted as being a public use of that piece of steel.<sup>23</sup>

The *Egbert* case is one of the few humorous cases in patent litigation, and feminists had used it to contend a gender problem. Nonetheless, this case mainly dealt with the issue of how public must a "public use" be, and the majority justices had adopted a "minimal

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<sup>19</sup> Swanson, *supra* note 15, at 115.

<sup>20</sup> *Egbert v. Lippmann*, *supra* note 18, at 336.

<sup>21</sup> *Id.*

<sup>22</sup> 35 U.S.C. §102 (a) A person shall be entitled to a patent unless (1) the claimed invention was patented, described in a printed publication, or in *public* use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.

<sup>23</sup> *Egbert v. Lippmann*, *supra* note 18, at 339.

approach” for determining whether the public use was established.<sup>24</sup> This article suggests that it was at most a case illuminating the discretion of the justices of the US Supreme Court upon determining the establishment of public use and did not essentially relate to a gender issue to the patent system.

### **III. Feminine Invention In Patent Prosecution**

The above-mentioned cases reflected gender issues during the litigation stage, feminists had further argued that there are same issues existed during prosecution stage as well. Notable cases can be found relating to eligible patent matter and non-obviousness standard.

#### **A. The Eligible Patent Matter**

The eligible patent matters stipulated in the U.S. patent law play a role of filter to determine whether an invention would be able to apply for a patent. The 35 U.S.C. 101 provides that whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title. It is noted that the eligible patent matter should not be confused with ones in the article 24 of our Patent Act where it restrictively and negatively lists four items to be excluded while the rest may be patentable subject matters.<sup>25</sup> And, the eligible patent matter, for purpose of discussing gender issues in patent law in this article, is focusing on discussing of the purpose of the patent system, the definition of invention, and the fields of technologies.

The purpose of patent system had been challenged by feminists as not being gender free to female inventors. They argued, for example, the WTO’s TRIPS relating to patents had adopted the narrow definition of what is a patentable invention, i.e., patents shall be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application, although it prohibits discrimination, the prohibition focuses on the place of invention, not the gender of the

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<sup>24</sup> Donald Chisum, Craig Nard, Herbert Schwartz, Pauline Newman, and F. Scott Kieff, *Principles of Patent Law, Cases and Materials*, 3<sup>rd</sup> Edition, Foundation Press, 348 (2004).

<sup>25</sup> Article 24 of R.O.C. Patent Act: An invention patent shall not be granted in respect of any of the following: 1. animals, plants, and essential biological processes for the production of animals or plants, except for processes for producing microorganisms; 2. diagnostic, therapeutic and surgical methods for the treatment of humans or animals; or 3. inventions contrary to public order or morality.

inventor.<sup>26</sup> And, they contended that industrial application or industrial development is a masculine requirement where it would restrict female invention.<sup>27</sup>

It is understood that the U.S. Patent law in particular, is justified on the foundation of a utilitarian rationale that is expressed in the U.S. Constitution. Intellectual property laws are intended to act as an incentive factor for inventors to continue to enrich society with new intellectual products.<sup>28</sup> But, the feminists contended that the existing definition had been served to create and uphold a male elite with economic power while preventing growth and development of other non-technological fields that are important to promoting welfare in society today.<sup>29</sup>

They further pointed out that there are two principal legal approaches to defining an invention – the narrow one and the broad one. The narrowing trend can be seen, for example, the *In re Bilski* case,<sup>30</sup> which deals with the question of whether or not a business method can be recognized as a patentable invention.<sup>31</sup> They claimed that, from the perspective of gender, this narrowed definition of a patentable invention reflects a masculine model, promotes and perpetuates characteristics that are attributed primarily to male products, but neither considering nor legitimatizing the female voice. Nonetheless, feminists considered that the 35 U.S.C. 101 had adopted a more expansive or broad approach, i.e., the new and useful process, rather than the otherwise machine test.<sup>32</sup>

It is noted that our Patent Act contains similar languages wherein in article 1 of the Patent Act stipulates that this Act is formulated to

encourage, protect and utilize the creations of invention, utility model and design in order to promote “industrial development”. It is further noted that the article 21 of our previous Patent Act (2003) defines an invention as a highly creative technical innovation and the grant of the patent for an invention depends whether it advances technology significantly beyond the state of art at the time of filing. The current article 21 of our Patent Act defines that “invention” means the creation of technical ideas, utilizing the laws of nature.<sup>33</sup>

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<sup>26</sup> Article 27 (1) of TRIPS.

<sup>27</sup> Dan L. Burk & Mark A. Lemley, *Is Patent Law Technology-Specific?*, 17 Berkeley Tech. L.J. 1155, 1156, (2002)

<sup>28</sup> Yanisky-Ravi, *supra* note 3, at 861.

<sup>29</sup> *Id.*, at 874.

<sup>30</sup> *Id.*, at 859.

<sup>31</sup> *Id.*, at 867.

<sup>32</sup> 35 U.S.C. §101 (2006); Yanisky-Ravi, *supra* note 3, at 859.

<sup>33</sup> *Cf.* Article 21 of R.O.C. Patent Act (2003) and current Article 1 and 21 of R.O.C. Patent Act.



According to the above-mentioned categorization set forth by feminists, except the current article 21 containing no gender sensitive language, others appear to adopt a somewhat narrow approach, although there has no feminist argument in this regards been found in country yet. However, it should be noted that most countries have the definition of invention emphasizing the elements relating to machines, industry, and technology. Feminists therefor argue these definitions favor men and fail to reflect the contribution of women to human welfare.<sup>34</sup>

Further, feminists argued that patent law is technology-neutral in theory, but when taking a deeper view, it is technology-specific in application. And, they contended that patent law does not provide protection for all products and processes equally, but only for those products or processes that the law itself defines as worthy of protection, resulting in the exclusion of women.<sup>35</sup>

It is noted that, before feminists pointed out gender problems in science and technology arena, science and technology themselves were pervasive and abiding perceived as fact-based and thus gender-neutral. About three decades ago, feminists started emerging an argument about science and technology is gendered.<sup>36</sup> They suggested that social, educational, psychological, and familial invention are more suitable to female while the familiar categories of electronics, mechanics, and computers to male.<sup>37</sup>

However, it is also found that commentators had suggested that the more we expand the definition of eligible patent matter—to further women’s cause—the more we might limit the development of the field we want to advance.<sup>38</sup>

## **B. The Non-Obviousness Standard**

The abbreviated PHOSITA (person having ordinary skill in the art) in the patent system is a legal fiction created for determining the existence of non-obviousness to the invention at issue. The inventor is measured to against the PHOSITA who know all the pertinent arts regarding said invention, and said inventor is thereby entitled to have a patent when said invention is not obvious to said person.<sup>39</sup>

This legal fiction was derived from tort law's objective personification of a legal standard, called “a reasonably prudent person” who represents the behavior of due care that should be exercised by a person for purpose of tort law. Failure to behave at least as cautiously

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<sup>34</sup> Yanisky-Ravi, *supra* note 3, at 869.

<sup>35</sup> *Id.*, at 872.

<sup>36</sup> Swanson, *supra* note 15, at 64-65.

<sup>37</sup> Yanisky-Ravi, *supra* note 3, at 876.

<sup>38</sup> *Id.*, at 874.

<sup>39</sup> Standard Oil Co. v. Am. Cyanamid Co., 774 F.2d 448, 454 (Fed. Cir. 1995).

as a reasonably prudent person results in tort liability. It is widely understood that a reasonably prudent “person” was originally called a reasonably prudent “man” instead. The amendment, not surprisingly, was due to the critique from feminists. However, it is seemly not necessary to discuss it because using term of “man” rather than the gender-neutral term “person” can only be dating back to aging male-dominated era which is no long existing any more, and patent system’s PHOSITA wherein the “P” stands for the word “person” rather than “man” indicates no such an issue existed either.

Feminists picked “duty of rescue” to from the tort law arena to describe the legal fiction as a masculine figure,<sup>40</sup> and even further describe the standard as being detached, isolated, and divorced from the community. That insight had been pursued further to query whether the ostensible objectivity or neutrality of the PHOSITA standard is masking social biases and power relationships.<sup>41</sup>

As depicted in the *In re Winslow*<sup>42</sup>, the claimed invention, a paper bag filling device, was examined with regard to prior arts to see whether it met the non-obviousness standard from the perspective of the PHOSITA. The examiner at *Winslow* case brought at least two prior arts and tried to combine to see if the combination is obvious. An obvious combination would render the invention unpatentable.

Feminists consider the *Winslow* tableau as the PHOSITA being surrounding by devices utilizing masculine category of technology, and argued it would generate a non-gender-free zone for female inventors. However, this article would like to point out that the PHOSITA is an objective test in that it entails connotations of neutrality and

impartiality,<sup>43</sup> and suggest that PHOSITA is merely a neutral instrument established to determine the non-obviousness, so feminists shall have no ground to tie it to gender issue. And, the inquiry into the gendering of PHOSITA in patent system is consonant with the one discussed in the Part III.A. (The Eligible Patent Matter), i.e., the feminists’ contention to the gendering problem in the patent system seems to hold most promise in the field of technologies.

### **C. Public Domain**

Another inequality asserted by feminists is that feminine inventions to female are more fallen into public domain. The public domain has been theorized as “outside” of property law or “property’s opposite.”

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<sup>40</sup> Burk, *supra* note 7, at 893.

<sup>41</sup> *Id.*, at 903.

<sup>42</sup> *In re Winslow*, 365 F.2d 1017, 1017 (C.C.P.A. 1966).

<sup>43</sup> See generally Catherine MacKinnon, *Feminism Unmodified: Discourses on Life and Law* 50 (1987).

This is distinguishable from a “commons”. Creative works in a “commons” are controlled by intellectual property rights, but still remain accessible to all because owners freely license their inventions. A dichotomy thus exists between the public domain and the private domain of IP rights.<sup>44</sup>

A subject matter within the public domain would not be able to acquire a patent for protection, no matter whether there exists a gender issue. For example, In *Moore v. Regents of the University of California*,<sup>45</sup> the plaintiff brought a legal claim arguing that physicians at UCLA hospital unlawfully obtained an ownership interest in his cells, without his permission, when they removed them from his body after surgery. The court found against the plaintiff, stating he did not have rights to his bodily tissue because of the logic behind the products of nature doctrine. Feminists believed that the doctrine treated his tissue sample (“nature” in terms of dualism doctrine) separately from the invention of the unique cell lines in the lab by UCLA scientists (“culture” in terms of dualism doctrine) in order to award rights to the scientists.<sup>46</sup>

In fact, the *Moore* case is neither a patent case nor a one containing gender issue, that article hereby presents other cases revealing that patent law does cause negative impact to female. For example, *Association for Molecular Pathology v. Myriad Genetics*<sup>47</sup>

showed that the patent law hindered genetic testing for breast cancer susceptibility. That is, the patenting of the BRCA 1 and BRCA 2 genes by Myriad Corporation restricts breast cancer research and affordable access to breast cancer screening for women.<sup>48</sup>

In fact, intellectual property rights are just one of the many concerns of indigenous women, but nevertheless it can be a source of disappointment or even harm. Therefore, indigenous women claim

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<sup>44</sup> Foster, *supra* note 6, at 274.

<sup>45</sup> *John Moore v. The Regents of the Univ. of Cal.*, 51 Cal. 3d. 120 (1990).

<sup>46</sup> Foster, *supra* note 6, at 287.

<sup>47</sup> *Association for Molecular Pathology v. Myriad Genetics*, 569 U.S. \_\_\_\_ (2013). (The federal district court ruled that all the challenged claims were not patent eligible. The circuit court overturned in part, ruling that isolated DNA which does not exist alone in nature can be patented and that the drug screening claims were valid, and confirmed in part, finding the diagnostic claims unpatentable. The Supreme Court invalidated Myriad's claims to isolated genes and held that merely isolating genes that are found in nature does not make them patentable. Proponents of the validity of these patents argued that they encourage investment in biotechnology and promote innovation in genetic research by not keeping technology shrouded in secrecy. Opponents argued that these patents stifle innovation by preventing others from conducting cancer research, limit options for cancer patients in seeking genetic testing, and are not valid because they claim genetic information that is not inventive, but is rather produced by nature.)

<sup>48</sup> Foster, *supra* note 6, at 332.

authority to speak against intellectual property law not just as members of indigenous communities, but also as indigenous women.<sup>49</sup>

Further, even women invention will be hard to acquire the ownership, studies show how the presence of gendered inequalities in the public sphere means that women's creative work is considered public domain material, thus excluding women from obtaining patent law ownership. Certain studies demonstrate that female life scientists' inventive work also remains relegated to the public domain as they are less likely to patent their inventions than their male colleagues.<sup>50</sup>

This may explain the fact that 30% of males patented their work as opposed to 14% of female scientists and that this disparity held true over time, even though the quality and impact of patented inventions by female scientists is similar to or substantially better than male scientists who patented their research.<sup>51</sup>

Indeed, more traditional forms of gendered labor such as cooking and making clothing do not count as new, novel, and industrial. And, clothing and cooking have historically been considered a craft and function of homemaking, and design patents for clothing are unlikely to be granted. Proving novelty or non-obviousness in regards to a clothing invention is difficult because it is considered more functional rather than innovative. Patents on recipes are also theoretically possible, but hard to obtain and defend because the innovation can often be

anticipated by an ordinary person skilled in the art.<sup>52</sup>

Although the patenting of the BRCA 1 and BRCA 2 genes, to certain extent, may restricts breast cancer research and affordable access to breast cancer screening for women mostly, but the fact is that breast cancer had been found in men as well.<sup>53</sup> And, if the public domain issues are managed to cover traditional forms of gendered labor, then feminists would essentially argue to expand the eligible patent matter. However, as mentioned in Part III.A. (The Eligible Patent Matter), commentators had also suggested that the more we expand the definition of eligible patent matter, the more we might limit the development of the field we want to advance.

## **D. Empirical Data And Analysis**

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<sup>49</sup> *Id.*, at 328.

<sup>50</sup> *Id.*, at 333-334.

<sup>51</sup> *Id.*, at 318.

<sup>52</sup> *Id.*, at 312.

<sup>53</sup> *See e.g.*, American Cancer Society, available at:

<http://www.cancer.org/cancer/breastcancerinmen/detailedguide/breast-cancer-in-men-what-is-breast-cancer-in-men> (last visited: May 4, 2015).

The R.O.C Intellectual Property Office (TIPO) had provided statistics showing that female inventors in country who had been granted patent in 2013 is 9.79%, slightly increasing from the one in 2012.<sup>54</sup> Although it is definitely not a significant figure comparing to the percentage of male inventors, however, referring to the statistics in Japan from 1995 to 2001, the percentage of female inventors is 1.7%, Europe from 1993 to 1997 is 2.8%, and US from 2000 to 2003 is 5.2%,<sup>55</sup> our female inventors had rather achieved a relatively higher percentage among these countries and area. Nonetheless, these empirical data confirmed that low percentage of female inventors, resulting in low percentage of female patentee, is universally true.

These data may be interpreted either one of two ways, either by utilizing the “dualism doctrine” provided by feminists to construing the outcomes were caused by inequality of genders in patent system, or by suggesting the “difference claim” provided by the opponents of feminism to construing the outcomes were caused by differences embedded in genders. This article would accept the point of view of the latter and further supplement empirical data as follows.

The TIPO statistics show that female graduates from engineering fields in country from 2012 to 2013 merely represent 13.63% of all graduates.<sup>56</sup> Again, our small group of female graduates is not alone when we find that female graduates from engineering fields in Sweden from 2005 to 2007 is only 8.6%.

It would be widely acceptable that the education system itself is neutral and provides equal opportunity to both male and female students, and since the science and technology are factors significantly correlated to patent system in this regards, it is reasonable to conclude the resulting small percentage of female inventors is due to the furnishing of a small percentage of female engineering graduates. And, only if we accept the “difference claim” then we would be able to reasonably explain existence of the small percentage of female engineering graduates and resulting female inventors. This also indicates that feminists’ argument, based on “dualism doctrine”, about inequality to patent system and education system has no ground to make above-mentioned assertions.

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<sup>54</sup> Taiwan Intellectual Property Office official, available at: <http://www.tipo.gov.tw/ct.asp?xItem=548568&ctNode=6723&mp=1> (last visited: May 4, 2015).

<sup>55</sup> Taehyun Jung and Olof Ejermeo, *Demographic patterns and trends in patenting: Gender, age, and education of inventors*, Technological Forecasting & Social Change 86, 112, 118 (2014).

<sup>56</sup> [http://www.moea.gov.tw/Mns/dos/content/wHandMenuFile.ashx?menu\\_id=11373](http://www.moea.gov.tw/Mns/dos/content/wHandMenuFile.ashx?menu_id=11373) (last visited: May 4, 2015).

TIPO also provided that female inventors in country are mostly found in utility model patent area with the highest percentage of 5.47%, comparing to 2.76% and 1.57% to invention patent and design patent areas respectively.<sup>57</sup> These statistics further provide a fact which conflicts with above-mentioned “dualism doctrine” because design patents are fallen within the scope of feminine technologies suggested by feminists. Although female inventors with utility model acquiring the highest percentage may indicate they are more interested in patents by applying for subject matters with less complicated technologies, rather than the invention patents containing subject matters with more advanced and masculine technologies, but it still does not suffice to provide a persuasive reason to explain the fact that the lowest figure exists in the feminine design patent.

Given that gender disparities in science and engineering professions have long been a topic of both policy and scholarly debates, this article has no intention to suggest to maintaining the status quo of female performance in innovation. Rather, this article encourages more involvement of female inventors in the science and technology fields. A recent study pointed out that closing the gender gap in science and engineering degree holders in the US would increase US GDP per

capita by 2.7%.<sup>58</sup> From an economics and management point of view, this article expects to see gender aspects of invention provide clues on more efficient human resource utilization.

#### **IV. Conclusion**

This article discusses whether there is any inequalities to women in the patent system by examining patent litigation and prosecution. The feminine inventions in patent litigation had showed biases caused by gender factors. In particular, *Bowers*, *Names*, and *Maynard* had revealed certain biases existed in litigations because they seemly undertook corset as witness. However, they are not patent cases even though they involved with gender factors.

Feminists argued that, in *Cohn*, the Justices had unselfconsciously utilized their masculinity by construing the words of a patent specification to describe an invention related to femininity. This article agrees that the U.S. patent litigation system may not be a gender-free zone in this regards, but this contention is not necessary true as applying to the U.S. patent prosecution system. And, the article suggests that the

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<sup>57</sup> *Id.*

<sup>58</sup> Taehyun Jung and Olof Ejermo, *supra* note 55, at 111.

*Egbert* case was more of a case illuminating the discretion to the justices of the US Supreme Court upon determining the establishment of public use and did not essentially contain a gender issue to the patent system. Further, this article suggests that the PHOSITA is merely a neutral legal-fiction established to determine the existence of non-obviousness, there is no ground to connect it with a gender issue.

Feminists argued that the *Myriad* case had showed the patent law hindered genetic testing for breast cancer susceptibility. And, feminists asserted that feminine inventions to female are more fallen into public domain. For example, more traditional forms of gendered labor such as cooking and making clothing do not count as new, novel, and industrial. But, if the public domain issues are managed to cover traditional forms of gendered labor, then feminists would essentially argue to expand the eligible patent matter.

Statistics may conflict with “dualism doctrine” suggested by feminists because the percentage of female inventors who have design patent, which fallen within the scope of feminine technologies, has the lowest figure. Additionally, the small percentage of female engineering graduates indicates the “difference claim” should be taken into consideration, and in return challenge the arguments provided by

feminists about their critique to science and technology because education system is a neutral one which provides equal opportunity to both male and female students. And, since the science and technology are factors significantly correlated to patent system in this regards, therefore, feminists should have no ground to argue any failure to the patent system based on the claiming of gender problem.