

AIPLA

American Intellectual Property Law Association

June 28, 2019

The Honorable Andre Iancu
Under Secretary of Commerce for Intellectual Property and Director of U.S. Patent and Trademark Office
U.S. Patent and Trademark Office
600 Dulany Street
Alexandria, VA 22314

Attention:
Ms. Laura Pope
Office of the Chief Economist

Via email: successact@uspto.gov

Re: AIPLA Comments on the Report Required by the Study of Underrepresented Classes Chasing Engineering and Science (SUCCESS) Act of 2018 [Docket No.: PTO-C-2019-0010]

Dear Under Secretary Iancu:

The American Intellectual Property Law Association (AIPLA) is pleased to have this opportunity to present its views on the Report Required by the Study of Underrepresented Classes Chasing Engineering and Science (SUCCESS) Act of 2018, published in the Federal Register Notice dated April 26, 2019, 84 FR 17809 (hereinafter “the Notice”).

AIPLA is a national bar association of approximately 13,500 members engaged in private or corporate practice, in government service, and in the academic community. AIPLA members represent a wide and diverse spectrum of individuals, companies, and institutions involved directly or indirectly in the practice of patent, trademark, copyright, trade secret, and unfair competition law, as well as other fields of law affecting intellectual property. Our members represent both owners and users of intellectual property. Our mission includes helping establish and maintain fair and effective laws and policies that stimulate and reward invention while balancing the public’s interest in healthy competition, reasonable costs, and basic fairness.

The purpose of the SUCCESS Act is to examine how to “increase the number of women, socially disadvantaged individuals, and economically disadvantaged individuals who apply for and obtain patents.”¹ The Notice requests written comments by June 30, 2019, to allow the Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office (USPTO) sufficient time to provide Congress with a report on publicly available patent data on women, minorities, and veterans by October 31, 2019. Further, the Notice solicits recommendations on how to promote participation of the identified underrepresented communities in the patent system.

AIPLA provides the following feedback in response to the Notice.

First, this paper highlights the value and power of unrepresented and underrepresented groups; outlines the potential underlying problem behind low inventorship rates among underrepresented classes; examines the need for increased data required to implement a robust solution; and offers potential solutions, such as: 1) increased awareness of intellectual property and its importance; 2) increased education of the patent, trademark and copyright processes; and 3) increased access to information for minority and underrepresented innovation groups.

AIPLA believes that implementation of the above offered solutions will positively impact the number of women, socially or economically disadvantaged individuals, and underrepresented minorities involved in the patent process and further advance innovation in the United States at large.

THE VALUE AND POWER OF DIVERSITY

Scientific and technological productivity has involved collaboration among diversely specialized inventors.² Diverse teams drive innovation and overall performance.³ The right

¹ See <https://www.congress.gov/115/bills/hr6390/BILLS-115hr6390ih.pdf>.

² See Jones, B.F., 2010. “Age and Great Invention.” *Review of Economics and Statistics*, 92(1): 1–14. <https://www.mitpressjournals.org/doi/10.1162/rest.2009.11724>; Jones, B.F., S. Wuchty, and B. Uzzi, 2008. “Multi-University Research Teams: Shifting Impact, Geography, and Stratification.” *Science* 322(5905): 1259–1262. <https://science.sciencemag.org/content/322/5905/1259>; See also Martínez, G.L., J. Raffo, and K. Saito, 2016. “Identifying the Gender of PCT inventors.” WIPO Economic Research Working Papers No. 33. <https://www.wipo.int/publications/en/details.jsp?id=4125>.

balance of ideas, backgrounds and perspectives can make a research and development team thrive and can better leverage businesses to weather market volatility. AIPLA believes diversity leads to better business outcomes, increased innovation, and identification of new opportunities for business growth and diversification.

LACK OF PURSUED INVENTIONS IN UNDERREPRESENTED CLASSES

Even though diverse teams lead to better solutions, women, socially or economically disadvantaged individuals, and underrepresented minorities who apply for and obtain patents comprise a small fraction of innovators. This suggests that their innovative potential is underutilized or not acknowledged.

AIPLA is aware of reported differences in comparing the private and public sector as to the number of inventors in these underrepresented communities. For example, women are more likely to be listed as inventors on patents granted to public or not-for-profit organizations.⁴ However, private firms, in which the percentages of the underrepresented communities are lower, account for the majority of patenting in the United States. Therefore, supporting and expanding participation in innovative activity specifically targeting private firms for such communities may offer a solution to improve women and minority inventorship rates.⁵

Recent research from Opportunity Insights, a research team from Harvard University, confirms disparities in opportunity across gender, race, and income. The researchers found that women, in particular, may be considered “lost Einsteins” — people who would have contributed valuable inventions had they received early exposure to innovation and inventor

³ “Women Matter: Ten Years Of Insights On Gender Diversity” McKinsey & Company, October 2017, <https://www.mckinsey.com/featured-insights/gender-equality/women-matter-ten-years-of-insights-on-gender-diversity>.

⁴ See Sugimoto, C.R., C. Ni, J.D. West, and V. Larivière, 2015. “The Academic Advantage: Gender Disparities in Patenting.” PLOS ONE 10, e0128000. <https://doi.org/10.1371/journal.pone.0128000>; and Martínez, G.L., J. Raffo, and K. Saito, 2016. “Identifying the Gender of PCT inventors.” WIPO Economic Research Working Papers No. 33. <http://www.wipo.int/publications/en/details.jsp?id=4125>.

⁵ We note and are aware that the data and comments described in this letter concern more frequently gender and inventorship. We have not been able to review or locate similar data or analyses concerning underrepresented minorities and inventorship, suggesting more work should be done on these groups.

role models.⁶ The research suggests that harnessing such underexploited talent could spur innovation and drive growth.⁷

Unfortunately, even though the concept that diverse teams drive additional business value is well recognized, many businesses fail to capitalize on their underutilized human assets to drive higher returns.⁸ Women and underrepresented communities form a significant area of underutilized value. Engaging them will have a greater impact for all.

IS THE PROBLEM A FAILURE TO INVENT, A FAILURE TO PATENT, OR SOMETHING ELSE?

In 2012, the National Bureau of Economic Research (NBER) published a paper entitled “Why Don’t Women Patent?”, which highlights a significant gender gap in patent inventorship, showing that women inventors comprised just over 10% of inventors listed on U.S. origin patents issued in 1998 (where at least one inventor is a woman).⁹ The paper additionally proposed that closing this gender gap among female science and engineering degree holders would increase commercialized patents by 24% and GDP per capita by 2.7%.¹⁰ The NBER’s model showed notably that “only 7% of the gender gap is accounted for by the lower share of women with any science or engineering degree, while 78% of the gap is explained by lower female patenting among holders of a science or engineering degree.”¹¹ While the percentage of women listed as inventors on patents (where at least one inventor is a woman) has

⁶ Bell, A.M., R. Chetty, X. Jaravel, N. Petkova, and J.V. Reenen, 2017. “Who Becomes an Inventor in America? The Importance of Exposure to Innovation”. National Bureau of Economic Research Working Paper No. 24062. <https://doi.org/10.3386/w24062>.

⁷ According to Bell et al. (2017), if women, minorities, and low-income children were to invent patented technology at the same rate as white men from high-income (top 20%) households, the rate of innovation in America would quadruple. See http://www.equality-of-opportunity.org/assets/documents/inventors_summary.pdf. (accessed March 1, 2018).

⁸ See, e.g., A. Vaccaro, “Why Diverse Teams Create Better Work,” *Inc.*, Mar. 25, 2014, available at <http://www.inc.com/adam-vaccaro/diversity-and-performance.html> (last accessed Nov. 23, 2016).

⁹ J. Hunt, et al., “Why Don’t Women Patent?” National Bureau of Economic Research (NBER) Working Paper No. 17888, March 2012 at 1, available at <http://www.nber.org/papers/w17888> (last accessed Nov. 23, 2016).

¹⁰ *Id.* at 2.

¹¹ *Id.*

increased in recent years, reaching 18.8% in 2010, at the current rate, it will be 2072 and beyond before women are awarded as many STEM patents as men.¹²

Therefore, addressing how the PTO, government, and businesses can partner together to improve this gap remains critical. This requires an investigation of whether the inventorship gap originates in failing to invent, in failing to patent, or something unforeseen.

Efforts to increase awareness and understanding of intellectual property and its business value, increase education of the patent, trademark and copyright processes, improve access to information for minority and underrepresented innovation groups, and implement a robust solution may help close the patent inventorship gap.

THE NEED FOR FURTHER DATA

Over 53% of PhDs are awarded to women.¹³ However, while the number of patents with at least one female inventor rose from 7% in the 1980s to 21% in 2016, the percentage of all patent inventors that are women still only reached 12% in 2016.¹⁴ Determining whether the absolute numbers or percentages of female and minority inventors are increasing requires obtaining baseline data. Some already available data identifies the number of patents applied for and obtained by women, but there is a need for further data.¹⁵ Businesses may be best positioned to provide data regarding gender, race, and veteran status of their employees involved in the patenting process. However, this would not account for solo inventors, small businesses, or other parties – key stakeholders in the innovation community. Accordingly, a centralized data collection mechanism is recommended.

¹² L. Santhanam, “Why are most inventors men?” *PBS NEWSHOUR*, Sept. 27, 2016, available at <http://www.pbs.org/newshour/updates/why-are-most-inventors-men/> (last accessed Nov. 23, 2016). To learn more about the progress and potential of women in patenting, see PatentsView (www.patentsview.org), a web-based data resource supported by the U.S. Patent and Trademark Office (USPTO) Office of the Chief Economist.

¹³ 2017 statistic, Council of Graduate Schools, *Graduate Enrollment and Degrees: 2007 to 2017*, https://cgsnet.org/ckfinder/userfiles/files/CGS_GED17_Report.pdf.

¹⁴ *Progress and Potential – A profile of women inventors on U.S. patents*, <https://www.uspto.gov/sites/default/files/documents/Progress-and-Potential.pdf> (February 2019).

¹⁵ However, similar data (or awareness of efforts to collect data) regarding patenting by minorities or veterans were not found.

1. Data Is Needed to Develop a Better Baseline

The USPTO collects limited information on the inventors of patented technology, which include the inventor's full name, city and state or country of residency. The USPTO does not collect information on the gender or ethnicity of patent inventors. Nor does the USPTO collect data that allows differentiation between US-based filings and non-US-based filings. This would allow the USPTO to track improvements to US-based filings as a result of those efforts. As a result of this lack of data, researchers have had to develop algorithms for classifying inventors as men or women based on their names to study unrepresented group's participation in patenting.¹⁶

Some non-U.S. data sources are, however, readily available. The World Intellectual Property Organization (WIPO) recently conducted a study about female inventors and has announced a project proposal from select delegations on increasing the role of women in innovation and entrepreneurship, encouraging women in developing countries to use the intellectual property system.¹⁷ The WIPO study analyzed 6.2 million names in 182 countries to generate a worldwide gender-name dictionary and determined that in 2015, less than one-third of all international patent applications included women inventors and that women make up only one out of seven inventors.¹⁸ Other countries have also identified the need for data and conducted studies.¹⁹ For example, a report issued by the Presidential Committee on the Fourth Industrial Revolution of the Republic of Korea notes that 16.1% of patent applications were “patents by

¹⁶The following appendix describes the method applied in this report to attribute gender to inventors listed on the front of patents: <http://data.patentsview.org/documents/On-line+Appendix+-+Gender+Attribution+of+USPTO+Inventors.pdf>.

¹⁷ See https://www.wipo.int/meetings/en/doc_details.jsp?doc_id=406377; See also “Innovation, Creativity and the Gender Gap” available at https://www.wipo.int/ip-outreach/en/ipday/2018/innovation_creativity_gender_gap.html; Martinez et. a., “Economic Research Working Paper No. 33- Identifying the gender of PCT inventors” (November 2016) published by WIPO, available at https://www.wipo.int/edocs/pubdocs/en/wipo_pub_econstat_wp_33.pdf.

¹⁸ This figure poses the question: Are women are more likely to collaborate with other inventors rather than patent alone and more likely to participate on teams of four or more inventors? Women are increasingly likely to patent on large, gender-mixed inventor teams, highlighting the growing importance of understanding the relationship between gender and innovative collaboration.

¹⁹ See https://www.wipo.int/women-and-ip/en/news/2018/news_0005.html.

women” or “women inventors.” This data assisted Korea in developing a public policy goal to increase this number to 30% by 2022.²⁰

In 2016, the Institute for Women’s Policy Research also reviewed and analyzed data and literature on women and patenting.²¹ Among other findings, this study found that only 18.8% of all patents had at least one known woman inventor in 2010.²² Although this was an improvement from 1977, when only 3.4 percent of all patents had at least one known woman inventor, the need for improvement clearly remains.²³

2. Data to Monitor Progress

There is an overwhelming consensus for increasing efforts to gather data related to diversity in inventing, as suggested by former Director of the USPTO Michelle Lee during Senate and Congressional hearings earlier this year.²⁴ In addition to collecting baseline data, ongoing data should be collected to detect and monitor progress. The patent application filing process likely presents the most effective opportunity to obtain demographic data. However, careful consideration should be given as to whether such data collection should be mandatory, considering the administrative burden, expense, and potential privacy issues that could arise. If data collection is mandated, policymakers should identify who is best situated to collect, monitor, and report on the data.²⁵

²⁰ See “[3rd Meeting Agenda-5] Proliferation of Invention Education to Support Creative and Fusion Talent Growth,” December 28, 2017 Presidential Committee on the 4th Industrial Revolution, Attachment 1 “To support creative and convergent talent growth Expansion of Invention Education” p.6, <https://www.4th-ir.go.kr/article/detail/18?boardName=internalData&category=>. NOTE: There is no distinction whether the 16% value refers to the percentage of inventors who are women, or the percentage of patents that include at least one female inventor. See also 2017 Annual Statistics Report issued by the Korean Intellectual Property Office (KIPO), pp 58, 171. 2017 Report of Korea Institute of Science & Technology Evaluation and Planning (KISTEP), page 5, <https://www.kistep.re.kr/c3/sub6.jsp>; Another informative article, “The global patent market in 10 charts,” January 11, 2019, can be found at: <https://www.iam-media.com/law-policy/global-patent-market-10-charts>.

²¹ See Milli, J. et al., “The Gender Patenting Gap,” Institute for Women’s Policy Research, July 21, 2016, <https://iwpr.org/publications/the-gender-patenting-gap/>.

²² The study does not show what the percentage of women inventors was out of total number of inventors.

²³ See also Branigan, D., “Women On The Rise In Patent Filings, But Still Underutilised Potential, USPTO Says,” <https://www.ip-watch.org/2019/02/12/women-rise-patent-filings-still-underutilised-potential-uspto-says/>.

²⁴ See <https://judiciary.house.gov/legislation/hearings/lost-einsteins-lack-diversity-patent-inventorship-and-impact-america-s>.

²⁵ One option includes collecting data at the time of applying for a patent by adding inputs to the Application Data Sheet. Alternative sources of data could be provided by other governmental bureaus such as the Census

Once gathered, the data could be publicized to help spur innovative solutions to involve women and minorities in the patenting process. This can be particularly effective in the case of public corporations, where women and minorities are not typically involved in the patenting process. Collecting data will drive the types of solutions which can be proposed to address the issue.

POTENTIAL SOLUTIONS

The underrepresentation of women and minorities in patenting is a complex problem. The USPTO's report seems to use patenting as a proxy for inventing and assumes that because women and minorities are not patenting, they are also not inventing. However, as the testimony from the "Lost Einstein" hearings this spring before the IP Subcommittees of both the US House of Representatives and Senate demonstrated, although there certainly could be better representation in STEM fields from women and minorities, they are present and are inventing. We cannot simply characterize this as a pipeline problem. Women and minorities are engaging in innovation. However, many do not take the next step to patent. Even if they are interested in patenting, they may face other barriers.

Any solution has at least four multi-faceted layers, each of which needs to be addressed: (1) increasing the number of and supporting the pipeline for women and minorities in STEM fields; (2) increasing awareness and understanding around patenting and creating incentives for women and minorities to seek patents; (3) increasing education for women and minorities about patenting and especially the patent process; and (4) increasing women and minority access to resources to invent and patent. The solution should comprise all the above components.

1. Increased Pipeline and Support

Although some strides have been made over the last decades in increasing the numbers of women and minorities in STEM fields, more can and should be done to continue to ensure a robust pipeline of women and minorities in STEM, starting with children and continuing with adults. As seen in other fields, we must ensure that not only are colleges and universities graduating women and minorities with STEM degrees, but also that these individuals remain in and advance within their fields. Further, inventors and entrepreneurs do not always come from STEM backgrounds but may come to innovation later in life. We must take steps to support these individuals as well and ensure that the pool of innovative talent in this country reflects its full diversity.

Support could also be provided through enhanced pro bono programs, which may benefit more female and minority inventors. The USPTO already facilitates the Patent Pro Bono Program, a network of programs that match volunteer patent attorneys with under-resourced inventors and small businesses in order to secure patent protection. The USPTO might consider providing incentives for practitioners to provide pro bono representation under this program, and also automatically provide information to *pro se* inventors on how to get free representation when *pro se* inventors apply for a patent.

2. Increased Awareness and Understanding

Witness testimony at the “Lost Einstein” hearings provided examples of how women and minorities, even those in STEM fields, do not always see the value in patenting or, more specifically, in protecting their inventions. This arises for various reasons, such as a lack of women inventor role models (both because of lower numbers of women inventors and lack of recognition for women’s and minorities’ contributions), women not being educated on the value of patents and/or seeing patenting as an “extracurricular” activity, and women being less likely to voluntarily submit their inventions for the patenting process. Thus, further efforts should be made especially among diverse audiences, to increase the awareness and understanding of the value of patents and other IP protection, and to showcase women and minority inventors as patent holders.

3. Increased Education in Diverse Groups

Witness testimony at the “Lost Einstein” hearings provided examples of where further education on the patenting process would be helpful. For example, Dr. Ayanna Howard testified that, when her first patent application was rejected, she and her co-inventor dropped the application (which they had filed without an attorney and did not realize that a rejection did not mean that the matter was closed). Thus, more can and should be done to educate women and minority inventors about the patenting process, in addition to processes for protecting other forms of IP.

4. Access to Capital and Resources

The small amount of capital invested in businesses owned by women and certain minorities is well documented. The fact that many women and minority owned businesses are bootstrapped, combined with overall lower income rates for these populations as compared to white males, means that it is even more important for women and minorities to have access to low cost or pro bono resources to help enable patenting and other IP protection processes. And while some pro bono resources exist, it is unclear whether women and minorities are aware of or taking full advantage of them. Thus, it is not only that more resources are needed, but increased awareness and education about accessing them.

Within this framework, everyone in the public and private sector has a role to play. Many governmental bodies, including Congress, the USPTO, and even the Small Business Administration to Veterans Affairs, can be part of the process. Not only can these entities provide awareness and education, but, Congress, for example, can consider alternative incentives such as economic incentives in the form of tax breaks or rebates to patents issued to women, minorities, and veterans. In the private sector, both companies and organizations like trade groups, bar associations and others such as non-profits can work on all components of this solution. They may provide education and highlight opportunities, in addition to taking steps to ensure that the patenting process is open to all, that women and minorities are invited to participate, and perhaps even providing private incentives for them or their employers to do so.

Importantly, increasing awareness and education should start with children of all ages so that a robust pipeline inventors and innovators can be maintained. The USPTO already has several programs in this area that should be reviewed and considered for possible expansion in both the public and private sector. Indeed, there are a number of private and non-profit initiatives that provide opportunities for addressing these concerns, such as existing STEM programs that target economically disadvantaged youth and women. The USPTO may also consider partnering with such existing programs that already have boots on the ground as a likely shortest path to success. One example is Comp-U-Dopt Inc., a non-profit that provides free computers and free, engaging, project-based after-school STEM programming to disadvantaged communities.²⁶

In conclusion, the impact of the above factors on the professional performance and career trajectories of women, socially disadvantaged individuals, economically disadvantaged individuals and others in the underrepresented communities who apply for and obtain patents, is increasingly significant.

We thank you for the opportunity to present AIPLA's comments and recommendations.

Very truly yours,



Sheldon H. Klein
President
American Intellectual Property Law Association

²⁶ See e.g., www.compudopt.org. According to Founder and President Jonathan Osha (currently also serving as a Member of the Board of Directors of AIPLA), the organization has to date, in the greater Houston area, distributed 15,000 free computers, served 16,000 students, and provided 71,000 free hours of technology training. The organization is planning to add an IP awareness module to its programming, and plans to expand the program nationally in the next two years.