Technology's Invisible Women:
Black Geek Girls in Silicon Valley and the Failure of Diversity Initiatives

France Winddance Twine
University of California, Santa Barbara, USA

France Winddance Twine is a professor of sociology and a documentary filmmaker at the University of California, Santa Barbara. She is a Black and Native American ethnographer and critical race theorist, who has conducted research on both sides of the Atlantic. Her research focuses upon the intersections of multiple forms of social inequality (race/class/gender/sexuality). She is the author and editor of more than 80 publications including 10 books. Her work has been published in *Race & Class*, *Ethnic and Racial Studies*, *Feminist Studies*, and *Gender & Society* and other journals. Her recent publications include *Geographies of Privilege* (2013) and *A White Side of Black Britain: Interracial Intimacy and Racial Literacy* (2010).

ABSTRACT

Black women comprise 1% of the Silicon Valley workforce. Between 2015 and 2018, several major technology firms made "diversity pledges" yet these diversity initiatives have failed to produce any significant increases in the number of Black women in the technology industry. This article draws upon a qualitative study of 68 male and female technology workers employed in the San Francisco Bay area. This qualitative study contributes to gender studies, racial studies, organization studies and network theory by providing an empirical case study of Black female technology workers in Silicon Valley. It finds that although Black women bring a diverse range of social and educational resources to the interview table in this industry, the use of social referrals by technology firms operates against the stated goals of diversity initiatives, and that the social referrals reproduce, rather than subvert the racial and gender disparities that characterize the San Francisco industry.

People like to mentor people who look like them, and there's nobody in tech who looks like me . . .

—Erica Joy Baker, former Google employee and
co-founder of Project Include

I didn't have many students who looked like me. I didn't have a support system and I didn't know how to create one.

—Kimberly Bryant, CEO, Black Girls Code

There's so much resistance to women and minorities in tech. For me to get the same recognition as my peers . . . [b]eing good isn't enough; you have to be exceptional.

—Shola Oyedele, a Nigerian-American engineer[1]

Diversity ideology has enabled many organizations to curtail deeper investigations into the gender and racial ideologies that persist in the workplace.

—David Embrick

In February of 2015, Angelica Coleman, a 25-year-old Black woman, left her position at Dropbox. She had been hired in 2013 as an administrative assistant. During her time at Dropbox, she had taught herself to code Python and several languages through a "learn to code" club that she launched. She understood that she would be able to move into another role on the team that her administration job supported. This did not happen. Negotiating a hostile work environment, Ms. Coleman found it increasingly difficult to relate to her co-workers with whom she shared neither an ethnic, racial or class background. Describing her year at Dropbox, Coleman summarized it as "death by a thousand cuts" (Chernikoff, 2015). In a Facebook posting, Ms. Coleman detailed the hostility that she endured during her final months as one of only 11 Black employees in Dropbox's global workforce:

> After spending months apologizing for being me, and after a White manager sat me down, looked me in the eye and told me, "If you ever want to be anything other than an admin, you need to go somewhere else" . . . Nobody can ever tell me what I can and can't do. I decide my own life, and if I want to code, then I'll fucking do it. I left Dropbox because, as a black woman, working on bettering myself, the tech industry doesn't give a shit. Even with the skills to do more, if I had stayed at Dropbox, I would have always had the submissive role of serving others and never calling the shots. Why? Because a White manager didn't want to see me do it.

I begin with the case of Angelica Coleman because she represents a small cohort of "invisible" women who barely register in the demographic data released by technology firms. Although her case represents an example of blatant racism, and may not reflect the technology industry as a whole, the statistics suggest that the technology culture has not welcomed Black women. Dropbox denied that Angelica Coleman's experience reflected a pattern of blatant racism at their firm. And her case may be exceptional. However, blogs, memoirs, essays by women in tech and journalistic reports based upon interviews with Asian and White women in the San Francisco technology industry have

identified a pervasive pattern of sexist, racist and misogynistic behavior, as well as the rejection of qualified Black candidates as a normative part of the "bro" occupational culture (Benner, 2017; Chang, 2018; Fowler, 2017; Isaac, 2017; Pao, 2017; Reed, 2016; Shevinsky, 2015).

Ms. Coleman had been hired in a non-technical role and had learned to code, yet there appeared to be no meaningful attempt to retain her or to promote her to a technically skilled position. Ms. Coleman's departure from Dropbox reflects a contradiction between the stated diversity initiatives of major technology firms and the treatment of some Black employees. Angelica Coleman's experience echoes that of Black and female employees at Wall Street financial firms, where they are concentrated and segregated by function in a position with less prestige, a lower status and lower paying jobs. The segregation of women and Black workers into non-technical, lower status jobs is supported by the demographic data released by some technology firms (Evans & Rangarajan, 2017; Funk & Parker, 2018; Ho, 2009).

A number of elite studies have focused on Wall Street and the financial industry, which was the dominant occupational niche for graduates of elite universities in the United States in the mid- to late twentieth century (Fisher, 2012; Ho, 2009). The experiences of Black women in the technology industry have been neglected in sociological analyses of gendered organizations, elite labor markets and the "new economy" (Williams, Muller, & Kilanski, 2012). Compared with the financial industry, the representation of women in the technology industry is worse than that of Wall Street (Varathan, 2017). However, a wave of gender discrimination law suits, tech industry surveys and sociological research has lifted what I call the "Silicon Curtain," revealing a culture that tolerates sexual harassment, gender wage disparities and the dominance of men (Alfrey & Twine, 2017; Benner, 2017; Chang, 2018; Fowler, 2017; Pao, 2017).

Seven women in Silicon Valley with backgrounds in academia, entrepreneurship, marketing, research and venture capital collaborated to survey 200 women working in Silicon Valley.[2] A summary of the results was distributed to the media and published on-line by *Elephant in the Valley*. This study has revealed and confirmed that 87% of the women interviewed had witnessed demeaning comments from their colleagues and another 40% said that they were harassed. None of these women reported the situation, fearing it would damage their careers. As part of the survey, women are able to post their stories anonymously on the site. The limits of the published results of the study are that the issues of race and racism are not presented as one of the categories surveyed on the website.

Silicon Valley's One Percent: The Declining Numbers of Black Women

A 2016 report published by the Ascend Foundation, a pan-Asian organization, analyzed EEOC (Equal Employment Occupation Commission) data for the period 2007–2015 and found no progress for racial minorities in reaching management and executive positions. The report found "an 18 percent decline in the number of Black managers and a 13 percent decline in Black professional women in the Silicon Valley workforce" (Gee & Peck, 2016). Furthermore, using an intersectional lens that addressed race and gender, the report notes,

> *The representation of White women as Executives had significantly improved. Yet similar improvements were not seen for any racial minority group, and race remained a more significant factor than gender in impacting the glass ceiling. (Gee & Peck, 2016, p. 3)*

In a detailed analysis that focused upon technology professionals at the managerial and executive level, those in a position of leadership with the power to implement changes, there had been no meaningful change for Black, Asian or Hispanic women. The report concluded as follows:

> *In general although minority women faced both racial and gender gaps . . . race, not gender, was increasingly the more important factor in limiting minority women in the pipeline. The data shows that for Black women, the racial gap was 5.35x the gender gap in 2014; for Asian women, the racial gap was 2.91x the gender gap. (Gee & Peck, 2016, p. 17)*

Efforts at diversity have produced measurable results for White women, while Asian women face a "bamboo ceiling" and Black women are losing significant ground in an industry where they are barely visible. At every level of the tech ladder, Black women are doing poorly, *as a group*. At the executive level, Black women are almost entirely absent. In an analysis of the diversity data of San Francisco Bay Area technology firms, Reveal's Center for Investigative Reporting found that Black employees comprised no more than 2% of the companies that released their figures.[3] Eight of the 23 companies surveyed, including Google, Twitter, Square and 23andMe, did not report a single Black woman in an executive role (Evans & Rangarajan, 2017).

   In the United States, the representation of Black employees in the technology industry varies significantly by region. A 2014 report published by the EEOC found that qualified Black people are not being hired by technology firms in Silicon Valley. According to this report,

> *Blacks and Hispanics, for example, comprise 16.9 percent of the American citizens in California with at least a bachelors' degree but represent only 6.9 percent of Silicon Valley's tech workforce. More importantly, the 70,111 foreign nationals in Silicon Valley comprise 29.1 percent of the tech workforce, which is roughly four times that of the 16,744 Black and Hispanic tech workers employed in the area.*

In Atlanta and Houston respectively, Black people represent 20.6% and 11.9% of the technology workforce. The American Community Survey[4] found that the technology hubs in Atlanta, Houston, Miami, New York, New Jersey and Washington, D.C., employ 1.5 to 3.3 times the number of Black and Hispanic tech workers that Silicon Valley does.

   One of the arguments that Silicon Valley technology firms present to explain the underrepresentation of Black people in their local workforce is the educational pipeline. They point to a lack of supply in the educational "pipeline"—claiming that Black people do not possess the educational credentials or skills needed to excel at positions in their firms. Recent empirical data from multiple sources has begun to directly challenge this myth.

The Center for American Progress released a report in 2017, in which they challenged three myths perpetuated by the Silicon Valley technology industry to explain the severe underrepresentation of Black, Hispanic and other non-Asian workers:

> *Three explanations are commonly used to explain away or minimize the lack of diversity in Silicon Valley, including that diversity is an issue everywhere; there is a lack of qualified workers of color; and that the tech sector is investing in diversity initiatives that will yield results in the near future.*

The report corrects these three myths using empirical data while highlighting some of the most promising, tested solutions (Beasley, 2017).

In this article, I draw upon the career trajectories of Black women employed in the San Francisco technology industry to argue that Black female professionals strategically employ their social capital and social networks to secure jobs in an industry that continues to marginalize North American Black people. Sociologists have demonstrated the significance of social networks in the pre-digital age (Granovetter, 1974; Royster, 2003), but their data do not address securing jobs in what has been called the "digital economy" or the "new economy." An intersectional analysis of the career trajectories of Black women illuminates the role of social networks in the digital economy as Black women cultivate the skills and networks needed to secure a position in the technology sector. Their experiences reveal how class backgrounds, family resources, social capital and corporate practices reproduce patterned inequalities in an industry dominated by White and Asian men. The current racial and gender structure in the technology industry has produced a culture and set of hiring practices that operates against the hiring, recruitment and retention of qualified Black women.

I draw upon interviews with Black, White and Asian technology workers to make two arguments: First, I argue that diversity initiatives have failed within Silicon Valley technology firms because they continue to rely on social referrals and cultural perceptions of "fitness," which not only prioritize non-meritocratic qualities such as tastes, leisure interests and personality but also require racial minorities to assimilate into a monocultural environment in exchange for employment. In this environment, cultural fitness is measured by employers through embedding Black candidates in non-Black social networks or by having non-Black people validate the competence of these same candidates. Second, I argue that the quantity and quality of these candidates' social capital, combined with their economic status, intersects with wider cultural belief systems to uniquely disadvantage educated Black women. When compared with non-Black women, the quality and quantity of Black women's social networks are not as resource-rich in information about jobs, access to mentors and coaching through the interview process.

Diversity Ideology, Black Professionals and White Solidarity

Sociologists have contributed a number of studies that have continued to illuminate the ways that Black professionals negotiate their status as racial and gender tokens in predominantly White workplaces (Collins, 1997, 2011; Wingfield, 2012). Furthermore, they have analyzed corporate diversity efforts and have demonstrated a complex picture

of the ways in which race and gender shape experiences of marginalization, discrimination and tokenism. In addition, there is the culture of "white male solidarity" that sustains the status quo of White racial dominance in the post-Civil Rights Era (Collins, 2011; Embrick, 2011).

In a study of upper level managers, David Embrick analyzed the gap between corporate managers' diversity rhetoric and the realities of White male solidarity and ongoing racial and gender discrimination. He argues,

> *[A] diversity ideology emerged in the late 1960s that has helped many corporations become increasingly sophisticated in their ability to portray themselves as supportive of racial and gender equality, while simultaneously they make no real substantial changes in their policies, practices to change the racial and gender composition of their workforce. (Embrick, 2011, p. 544)*

Major technology firms in San Francisco claim that "diversity" is a value, while the numbers of non-Asian minorities employed remain stagnant. On March 1, 2017, Apple shareholders rejected a diversity proposal for the second consecutive year. This proposal would have required the company to adopt an "accelerated recruitment policy" intended to increase diversity in its top ranks.[5] The outward commitment to diversity is not matched by actions that would link shareholder revenues to a real increase in diversity numbers, as measured by the increase in Asian, Black and Latino people and women in leadership roles. The racial and gender structure of the leadership, and thus decision-makers, remains predominantly White and male, which in turn reflects the race and gender demographics of the technical (non-retail) employees at Apple.

The unwillingness of Apple shareholders to support proposals by investors to "accelerate diversity" can be viewed as a form of White male solidarity. Antonio Avian Maldonado, a Hispanic shareholder, who had introduced a proposal for an "accelerated recruitment policy" to address the absence of diversity in the senior leadership positions, framed the failure to get even 6% of the shareholders to support it as an issue of "education." Sociologists who have studied corporate culture have generated several theories to explain the failure of diversity programs, initiatives and mentoring programs. Frank Dobbin, Daniel Schrage and Alexandra Kalev (2015) found that, 5 years after establishing mandatory diversity training for managers, instead of increasing, the proportion of Black women and Asian Americans decreased.

In the case of the technology industry, diversity programs have made a significant difference in improving the representation of white women at the managerial and executive levels. However, an analysis of corporate demographic data shows no improvement for Black or Asian women. Analyses of aggregated data reveal that the hiring of White women, compared with women and men from racial minorities, has increased in a statistically meaningful way (Gee & Peck, 2016). A recent study found that

> *Since 2014, tech giants including Apple, Facebook and Google have invested millions of dollars into diversity initiatives, which have failed to produce any statistically measurable results in the hiring of Blacks and other non-Asian minorities. Technology giants*

in the Bay Area have created and hired Diversity and Inclusion consultants, directors, and contributed to scholarship funds at Historically Black Colleges and Universities.[6]

These investments in "diversity" have failed to produce any results, when viewed from the perspective of Black people and other non-Asians at all levels of the technology career ladder. Although Asian women encounter what has been called a "bamboo ceiling" in the technology industry, they are overrepresented at the professional level and comprise, alongside White people, the dominant groups in the Silicon Valley technology industry.

Race, Networks and Social Capital

The intersection of social and economic resources restricts the ability of Black women to secure permanent full-time jobs in the technology sector. The sociological literature on the "new economy" has not examined the role of social capital in the career trajectories of Black women employed in elite labor markets (Williams & Phillips, 2017; Williams et al., 2012). Nan Lin (2000) defines social capital as follows:

> [A]n investment and use of embedded resources for expected returns . . . Social capital is conceptualized as (1) quantity and/or quality of resources that an actor (be it an individual or group or community) can access or use through (2) its location in a social network. The second conceptualization emphasizes locations in a network and network characteristics. (p. 786)

Social capital flows from one's social networks. The data on the formation of social networks in workplaces and voluntary organizations have demonstrated the importance of homophily.

Sociologists use the term "homophily" to describe the tendency of individuals to form associations, friendships and relationships with those who share common characteristics (age, race, religion, class background, leisure interests, etc.). In other words, social networks tend to be composed of people who are similar to each other on one or more dimension. Miller McPherson, Lynn Smith-Lovin and James Cook (2001) found that race and ethnicity is one of the strongest areas of similarity and according to them, "distance in terms of social characteristics translate into network distance, the number of relationships through which a piece of information must travel to connect two individuals" (p. 416).

Network distance is problematic for Black women who must establish social relations in an industry where they typically lack friends, family or spouses employed in the industry. Once employed, they also do not typically share the racial, ethnic, gender, class or national origins of many of their co-workers. What forms of social capital are available to Black women who seek positions in the technology industry, a sector in which White and Asian people represent the racially dominant groups, an industry in which they do not share the racial, ethnic or other social characteristics of the technical workers, the leadership and those who make hiring decisions? How do Black women, as racial and ethnic tokens, accumulate sufficient educational, cultural and social resources to prove that they have the requisite skills and are "culturally fit" for these positions? How does the quality of their social capital differ from that of White and Asian women employed in the industry?

Demographic Data of Participants and Research Methods

The U.S. Census Bureau defines Silicon Valley as an area that includes San Francisco, Oakland, Freemont and Santa Clara County on the peninsula. With a population of 852,000 people, San Francisco ranks 13th in population size among U.S. cities, yet it ranks first in the nation for the number of technology workers. San Francisco has the greatest high tech-related job growth of any city in the United States. The tech workers who occupy these positions are predominantly White or Asian, male, and typically earn between US$100,000 and US$300,000 annually, placing them in the top 10% of the labor force.[7]

This article draws upon data from a qualitative study based upon interviews with 68 women and men employed in the San Francisco Bay Area technology firms and start-ups. This article draws upon interviews with the 45 women in the sample. They include the following: 23 White women, 10 Black women, four Latinas and eight Asian women.[8] The technology workers interviewed were employed in a wide range of technical and non-technical positions at large, publicly traded established firms and smaller start-ups in San Francisco. The companies that women currently or formerly worked for are well-known technology giants and smaller firms that include Apple, Dropbox, Facebook, Google, Lyft, Twitter, Square, Sales Force, SurveyMonkey, Indiegogo and Zendesk, as well as smaller start-ups that are not yet publicly traded.

The women interviewed included customer advocates, data analysts, diversity consultants, interface graphic designers, facilities managers, human resources, sales, marketing, software engineers, software developers, graphic designers, program managers, technical writers and technical trainers. Participants included women who ranged in age from 23 to 51 years old. They earned annual salaries between US$50,000 and US$250,000. Two thirds of the participants had earned a college degree or graduate degree. Fourteen of the 45 women had earned degrees in Computer Science (CS) or Engineering. The remaining 31 had earned degrees in a wide range of fields including Art, Anthropology, Communications, Drama, Education, English, Geology, Journalism, Physics, Political Science, Psychology, South Asian Studies, Theater and Urban Planning.

In the next section I will introduce six Black female technology workers whose career maps represent a pattern found among Black and White technology workers. They were employed in a range of technically skilled and non-technical positions. These women vary in the economic, familial and social resources they possess. Black women varied in the quantity and quality of the economic, social, cultural and symbolic capital that they possessed (Bourdieu, 1984). Black women from upper middle-class families who were integrated into White elite networks as children accumulated a network of friends who could provide them with information about jobs and social referrals, regardless of whether their parents were employed in the technology industry. In striking contrast to the Asian and White women in this study, none of the Black women in the study had husbands or siblings employed in the industry. None of the Black women reported attending an accelerated software engineering academy, which costs roughly US$17,000 for a 12-week immersion course. On average, the Black women's salaries were below that of the non-Black women. On

average they earned below US$100,000 although one woman reported her earnings as much as US$250,000. The White and Asian women in the sample earned an average of between US$100,000 and US$150,000. Furthermore, the Black women interviewed described being racially isolated, without a supportive community of other Black women while they learned to code. Instead, they described learning to code while working full-time and without the support of an engineer in their family.

Vanessa: Graphic Designer

The 26-year-old daughter of a Puerto Rican father and a Haitian mother, Vanessa has been employed as a User Interface Designer for 2 years. She earns between US$50,000 and US$60,000 annually. She is the daughter of an accountant for a Wall Street firm and grew up in a two-parent family who had high expectations for her. She attended a large public high school in a neighborhood in upstate New York that she described as "crime-ridden." Yet she took advantage of the educational opportunities that were available to her. In high school, she developed a passion for visual communication and graphic design, which she majored in when she attended college. She described the public school that she attended:

> So my high school was pretty large, around 3,000 kids. I graduated with around 800. So the way it was broken up into different academies. I entered the communications academy. So my sophomore year, every quarter, they would take a different type of communications. One quarter was more writing focused, one was video production focused. And then the visual communications one, happened to be the last quarter of my sophomore year. That's where I had a really awesome teacher, Mr. Gabeheart, and that's where I learned Photoshop and Illustrator and all that. The next year, I kind of decided to continue [visual communication] as an elective . . . I worked for the NFA Word; it was our school magazine. My title was photo editor.

After earning a degree in graphic design from the Rochester Institute of Technology, Vanessa needed to gain experience before entering the U.S. job market. She did not have mentors in the industry so she searched on-line and applied for her first internship so that she could get work experience. She reflected on her transition after graduation:

> After that, I went to Costa Rica for six months . . . an internship for a non-profit org. I did that for about three months . . . And then I moved [to New York City] and I started working for this start-up company in financial technology. My title there—I started as an intern for a month or two and then I was a junior graphic designer. That was when I first, kind of started doing what I'm do now, like user interface design. When they first hired me, I was doing a lot of different things. I would do user interface design, but then also marketing stuff, branding stuff, and kind of that. So I was there for two years. My last year there, there was the creative director, and then it was myself, and one other graphic designer. And then as the company started growing, they start separating. So he was more on the marketing side, and I was more on the product side. I was in charge of doing all the interface for the application. I was the liaison between our team and our tech team—we had an outsource development team in India. So I was the liaison between

> *that. I ended up not being as happy there so I left and came to the job that I have now . . . Which had been great and I absolutely love so far. Now I'm officially a user interface designer. So when I started at [name of company] I was definitely more strong in user interface design. But over this past year, I learned a ton about UX and a lot more—because with UX, you know, we need to know a lot about psychology and sociology. So I learned that on my own since that's something I'm already interested in.*

As an interface designer, Vanessa is responsible for how an app looks, which includes the visual architecture of the app. Her job is to design the menu that is used to navigate an app. This entails design of all of the visuals used to navigate the app, including the buttons, typeface, colors and location of icons. Vanessa is thus responsible for the functionality of the app and the user's interaction with the navigation tools.

The underrepresentation of Black women in the technology industry has been blamed on the educational "pipeline." The argument presented by CEOs and others in the industry is that Black people don't acquire the educational credentials needed to enter the industry. Vanessa's experiences call attention to one of the flaws in this theory. In this study I found that, empirically, neither Black nor White women followed one route into technology jobs. Acquiring a degree in Engineering or STEM is just one of many routes into the industry. There is a diverse range of jobs and with the speed of technological innovations each year, leading to fields of expertise and jobs that did not exist 10 years ago. Vanessa's job does not require her to code. A second flaw with the pipeline theory is that many of the skills, including coding, can be learned on the job or in a short amount of time. This is why accelerated software engineering schools have become so popular in the San Francisco Bay Area. Women learn to code in 10 weeks and then spend 2 weeks learning how to communicate and present their ideas on a whiteboard.

Vanessa did not major in a traditional STEM field; rather she combined her interests in art and technology into a career as an interface designer. She then left the United States to get her first job experience and then returned to New York City where she was hired at a start-up. Vanessa's experience suggests that an exclusive focus on science and math is not the only route into a technology career. What is more important is having the opportunities to gain the experience to develop new transferable skills that enable one to move both horizontally and vertically into jobs in a more supportive environment and with higher wages and more autonomy.

Serena: Operations Manager in a Tech Start-Up

A 51-year-old Black ceramic artist, Serena grew up in Washington, D.C., and is employed as an on-site facilities manager for a San Francisco start-up. She earns close to US$60,000 per year and is an outlier in the technology industry in terms of her age, race and prior work history. Serena switched careers 5 years ago after working in community-built, low-income housing for 25 years. She enrolled in an art school in San Francisco and earned a master's in Fine Arts in 2015. She quickly established herself as a distinguished artist in the local community.

Serena is embedded in a social network of friends employed in the local and national technology industry: "I had one friend in New York who was always in the tech industry . . . and four friends here [in San Francisco] who were in the tech industry." Her technology friends are a crucial form of social capital that enabled her to learn about her current position, prepare for the interview and navigate the long interview process. Her White female friends taught her how to present herself (dress and style) so that she would conform culturally. She learned about her current position from a friend's Facebook post. Another friend coached her on how to dress for the interviews and what to expect. Her friends guided her through the long interview process, explained the culture and the structure of these month-long interviews.

When asked how she secured her current position, she explains as follows: "[I]t was really clear that I was over-qualified for the job. And because they're a start-up, they were really excited to have somebody that could grow into the job they needed." At tech start-ups, job descriptions are loose and as a company grows, the demands of the job could change so Serena was hired at the very beginning of the life cycle of this company. This is also unusual for Black women. They are typically not socially integrated into networks of friends who start their own tech companies. As an on-site building manager, Serena's position does not require technical skills such as coding. She works for a start-up where women comprise half of the 70 staff members. Her status as a locally known artist fit with the values and belief systems of the company founders and was an ideal fit for a company that provides technical services to artists.

As an artist hired to manage the building facility, Serena's entry into a specifically non-tech position differed from technically trained women who had secured positions as engineers. Yet, like all of the Asian women in the study and two thirds of the White women, she had access to information about jobs and had mentors and friends employed in the technology industry. What she shares with the majority of tech workers interviewed in her age cohort is that she was socially embedded in a tech friendship network.

Geneva: Tenured Professor Goes to Google

A 47-year-old Black woman, with degrees from Harvard and Stanford, Geneva is a generation older than other technology workers interviewed at the same company. Her sister is employed as an account executive in sales for a technology firm. Geneva is the highest paid Black woman in the study, with reported earnings of US$250,000 per year. With her background as a tenured professor, her career trajectory represents one pattern found among women who had switched careers. After earning a BA from Harvard, followed by a PhD in Drama from Stanford, Geneva accepted a teaching position at a university in the Midwest. She taught in the English and the Theater departments for several years before moving to the East Coast to teach at a different university. After teaching in the Drama and English departments at three different universities, including a decade at a well-funded public university in the Midwest, Geneva decided to leave academia because she was "desperately unhappy." And so she moved back to California and changed careers.

As a Harvard and Stanford alumnus, Geneva was able to rely on those networks to secure a position at a consulting firm. With a business partner, she launched her own consulting business. Geneva had transferable skills and more than a decade of experience

in academia and then a career in consulting before securing her current position. She spent many years developing networks before applying for positions at Facebook and Google. A social referral did not secure her the job at Facebook, but she ultimately found a position at Google, which led to her current position at another major technology firm.

Describing what motivated her to leave a secure job to work for a consulting firm, she recalled her emotional state:

> . . . I'd never been happy as an academic. It was always a series of compromises, and when I got to the University of Massachusetts I realized that I wasn't willing to compromise anymore. And so I didn't want to go back on the academic job market, you know exactly how that is. And so, I just decided that I was really unhappy, and . . . whatever I did next, like, even if I hated my job, if I got paid more it would be better than hating my job and being paid very little.

Geneva wanted to move back to California. A native of San Francisco, she applied for a position at a consulting and research company in 2007. The research and consulting corporation that hired Geneva worked with a lot of clients and they produced large-scale studies. Geneva learned a lot about Human Resources, networked and she started her own consulting firm with a partner. Geneva was able to transfer her academic skills to the corporate consulting world:

> And if you've been an academic, you know how to teach, you know how to talk to audiences both large and small, you know how to build curriculums. So it was a way that I could use some of the skills that I'd gained as an academic in the corporate world. So that was my first role.

From there she applied for a job at Facebook and Google.

> I got a job at Google and I actually applied on the website, which was interesting because I [received a social referral at Facebook]. And they didn't hire me but then I basically applied for the same job at Google and they did hire me.

Summarizing her transition from academia to securing her previous job at Google, she recalls as follows:

> [T]hat's how I got an expertise in HR and ended up working on diversity issues so that when I applied for the role at Google I had the experience to do it . . . I had started a consulting practice with a partner. And then she left after 19 months and decided she wanted to be an executive coach and I didn't, and so that's how I got the role at Google . . . And I was at Google for almost five years and then a headhunter called me, well a number of head hunters and that's how I got the job at [name of company].

Geneva is an outlier in terms of age. Her career path into the technology industry calls attention to the invisible women who belong to a "leaky pipeline" out of academia. Black women like Geneva with degrees from two of the most highly ranked universities in the United States did not have to invest the energy to cultivate a social network, unlike Vanessa, the graphic artist, who had earned degrees from less prestigious universities.

Geneva's experiences are important because they show how a highly educated Black female professional can transition to a career in the technology industry if she has the educational credentials and social networks. And in Geneva's case, she also possessed what I call "regional capital"; she had earned a degree at Stanford University, one of the region's most distinguished academic institutions in the heart of Silicon Valley. Stanford has produced alumnus like Peter Thiel, who co-founded PayPal and after selling it, was an early investor in a number of start-ups including Facebook and Tesla.

The technology industry has been a rewarding experience and place of refuge for Geneva. She may represent a tiny fraction of the women employed in technology but her experiences further undermine the argument that there is a narrow pipeline into technology that requires a degree in CS or Engineering. She represents the "Black One Percent" employed in technology who have been neglected by economists and sociologists. Geneva's transition from a job as an academic to a job as a technology consultant calls attention to the absence of data on women whom I call "white collar refugees." The career transitions of Black women in elite labor markets deserve more analysis from sociologists interested in gender and the new economy.

Carmen: Software Engineer

Carmen is a 28-year-old Black software engineer and native of Virginia. As a child, Carmen grew up in a foster home and benefited from a state program in career technology for high school students. She earned her BA degree at Rochester Institute of Technology. She earns between US$50,000 and US$75,000 per year. Like half of the White women in our study, Carmen had not majored in CS. She began her academic career as an international business student because she did not meet the math requirements to major in Engineering. After graduating she became more committed to a career in technology:

> When I looked at my transcript at the end of it all, I had As and Bs in all of my tech courses . . . I quickly realized these project-based courses that were oriented around tech were points where my GPA rose and points, where I was most excited and most invested. I probably should have been in . . . the computing college at RIT. That's probably where I should have been all along . . . I can't go back and change time. What I did do is to continue teaching myself code in grad school as I was taking this change management course. I integrated my tech world with change management, because I felt like those went hand in hand because technology changes all the time. I sort of just focused on management in grad school.

After earning her graduate degree, she began working as a data analyst for a non-profit. She describes her first year after graduate school:

> I had to set up a data website for our data specialists. It was a network of 70-something schools in New York City. Each school had a data specialist, so we had to cater to them in many ways. Not only did I have to do that, I also had to do other things that were highly related to coding and a lot of it database work mainly. It restarted the fire under me to remain in tech.

How do Black women gain experience? They have several options: internships, paid employment and social networks. Carmen identified gaps in her experience and knowledge and created a plan to learn specific skills:

> I taught myself web development along the way. I created my own websites, my own portfolio, and I realized the base knowledge that I really need in order to fulfill the greater need of mine. I needed software engineering experience. So . . . my first job out of college . . . was actually a technology consultant or project manager . . . for this organization that served people who used to be in jail, prison, juvenile detention, or ex-cons and things like that . . . The founders had a huge falling out and the organization imploded at the end. My job ended after one month.

Carmen met a South Asian software engineer who was recruiting for Google at a job fair. He placed her on the interview list, and she was called for a series of video interviews with Google. However, she ended up accepting a position at a CBS local affiliate while waiting for a decision from Google. She lacked the cash reserves or family financial support to remain unemployed and risk not getting a job during a process that could take months. In her words, "I had to turn Google down in the process because they were just taking too long." She informed Google that she was accepting another job offer.

> At CBS local I learned a lot. My first two years there I was definitely thrown into a test of fire, because there were websites with 150 million people would use them every day. I was under so much pressure all the time, so I had to learn how to work through that.

After gaining some experience, Carmen eventually secured a position as a junior software engineer. How did Carmen gain access to a network that helped her to secure her first position as an engineer? Carmen's husband had a close friend who was a Black software engineer. This male friend, a Haitian-American, told her about an available position and provided her with a social referral and also coached her through her first interview. This interview was her first big break. Her husband's social network gave her access to a very small network of Black techies.

> I tried to avoid a lot of people who were looking at technology as the savior of our racist situation, because I definitely ran into those. They were like just "Teach yourself code. It's all good." I was like "No. It's going to take a lot more than that" . . . He was one of the few people in my network, in my very small tech network at that time, who actually reached back and helped me . . . He was like . . . "It's going to be a hard interview process, but I'm going to give you this chance." So, I got that door and I just ran with it.

Carmen was coached on what to expect. Her husband's friend warned her about a specific White man and how to prepare for him. In her words,

> So he said, "Just brush up on your computer science principles real quick and try to do your best with him. He's typically a hard ass" . . . He said everybody else is just more personality questions . . . "[White male interviewer] is going to ask you trick

> *questions and stuff like that and try to trip you up and make you nervous because he's one of the many programmers I have come across that has a god-complex almost."*

Carmen expressed frustration that trick questions were consistently employed, without any relevance to the job skills. She explains,

> *I interviewed a bunch of times since then with different companies, different people and they were very much asking things that they would consider a nice trip-up question for you, but it's not something they actually use at their own job or had probably thought of in a while . . . it's very annoying when they do that because it doesn't actually test my knowledge in terms of what I actually know.*

Carmen is an outlier among the Black women interviewed. She had a co-ethnic, another Black person, who mentored her and guided her through the interview process. Her experience demonstrates the social value of a mentor who can provide specific information about how the interview process could unfold in ways that could prevent her from performing her best.

Tina: Software Engineer With Class Privilege

Tina, a 46-year-old Black Caribbean software engineer grew up on the East Coast. She is employed as a technical trainer for a San Francisco firm. The daughter of a college professor and teacher, she grew up in a solidly upper middle-class household. Her parents sent her to an elite private boarding school in preparation for college. She earned a degree in CS from the University of Massachusetts at Amherst and later earned an MA in Technology.

She described her early exposure to computing: "I had been coding since I was in high school. My dad bought me a Commodore Pet . . . I was the one who was the computer geek in the computer lab [at my boarding school]." In contrast to the other Black women in our study, she had a childhood of relative privilege, which enabled her to try out a number of other fields before deciding on CS.

Tina's class privilege gave her the confidence to experiment with different jobs before changing course and switching to the tech industry. She knew that her parents could provide her with the temporary financial support to survive. Like some of the White tech workers interviewed, Tina first majored in several other subjects before committing to a CS course of study. She began as a dance major and describes the realization that led her to change her career goals:

> *Every summer I would go to New York City in between breaks between College . . . I would live the life of a starving actor or actress. I rented a room, would do auditions. I'll never forget. I was working at a restaurant called Honeysuckle as a waitress. And there was another waitress . . . She was 30. And I thought "Oh, my God, she's so super old and she's a waitress still trying to make it." That's when I came back and I was like "I need to find a different degree."*

She then switched to oceanography before settling on CS. After securing a position in the technology industry as a consultant, she switched her job:

> *I decided I wanted to do less consulting and I kind of wanted a more stable, "9 to 5."*
> *So I became a software developer . . . And I wanted to actually code and create some-*
> *thing, a system . . . So I went to [company name] and became a software developer. I*
> *did that for three years . . . but it was very isolating. While at [company name] I saw*
> *this job opportunity as a technical trainer, where you teach developers how to code*
> *using our tools . . . Within six months, I excelled and became the top trainer. They said*
> *I had a gift for being able to take very technical information and break it down in a way*
> *that was consumable by the masses.*

When her company was bought in a hostile takeover by Oracle, she found herself unem-
ployed. Tina then took what she describes as

> *. . . some really mundane job, which paid me a lot of money but I did nothing. After a*
> *year, I quit. I went to grad school full time while having my own company full time*
> *because I did consulting . . . I was back in the whole development realm. So we did*
> *data mapping, data management, converting systems over. I did that full time while I*
> *was in grad school for two years.*

Tina's diverse work experiences provided her with a tech professional network that paved
the way to her current position as a technical trainer. Her East Coast professional network
shielded her from some of the overt forms of racial discrimination routinely reported by
Black tech workers who grew up in lower income and poorer communities in regions on the
West Coast, without a critical mass of Black professionals.

Maya: Program Manager—Breaking Through the Glass Wall

Maya is a 28-year-old Black Program Manager for a major technology firm in San Francisco.
After attending a Historically Black Colleges and Universities (HBCU) institution for a year,
she left without completing her degree to marry her husband, who was on active military
duty. She moved with him to California, where she enrolled in university courses. While
living on a military base, Maya took a series of exams that allowed her to test out of several
courses, and earn her bachelor's degree in 1 year instead of two. Maya paid for her education
without taking out any student loans. Being debt free laid the foundation for her to be able
to launch her own consulting business. While working full-time, she launched her own
consulting business at the age of 20 and taught herself to build websites.

Her transition from an unemployed military wife to a full-time technology worker was
a dynamic and non-linear path that involved full-time jobs in marketing, building websites,
social media and systems analysis. After leaving college, she went to work full-time for a
marketing company. She started out in marketing because the marketing classes she had
taken in high school enabled her to secure a job in this field. By the time she was 23 years
old, Maya had refined a skill set that prepared her for a position in the technology industry.
She had taught herself several coding languages, to build websites and to develop social
media strategies: "I didn't have any web development experience so I had to go and learn. So
that's the self-taught web development. Because work wasn't consistent, I also had a day job
as well."

White women respondents typically acquired skills through formal courses in school, boot camps or were coached by their boyfriends or significant others. Without a partner or family member employed in the industry, Maya did not possess an organic alumni network of support like her peers who had earned degrees at institutions like Carnegie Mellon, Harvard, Stanford, Massachusetts Institute of Technology (MIT), UC-Berkeley, and other Ivy League-equivalent public universities; she had to generate one by networking constantly. Her co-workers at her firm had earned their degrees at prestigious universities and typically secured their internships and jobs through recruiters whom they met via alumni networks, paid internships, job fairs or siblings employed in the industry. These connections provided them with a "revolving door" into the industry, regardless of their specific educational credentials.

Maya's friendship with an Asian colleague of Filipino origins, whom she helped to secure a position at Google, marked a turning point in her career and led to her introduction to a recruiter, who then helped her secure a temporary job in the industry. Describing how she began to envision a career at a technology giant in San Francisco, Maya recalls as follows:

> I just took [my friend's resumé] from her and just rewrote it . . . Two weeks later, [her friend] comes back to the office and says, "You have to listen to this." And I go "Okay." And it's a voice mail from a recruiter that says, "Hey [name of friend], we saw your resumé. We think that you would be perfect for this position. By the way, the company is Google." And I freak out . . . She is actually really bad at her job. And I was really good at my job. And I had all of these other qualifications. I had an internet consulting business online . . . And she got a phone call to work at Google.

After Google hired her friend, Maya realized that she also had experience and skills to secure a job at a top technology firm. So, she devised a plan. She asked her friend for the recruiter's contact information so that she could contact him directly. She phoned him every day and eventually landed a part-time position on a temporary contract. Describing how much work she invested in preparing for her interviews, which gave her a foot in the door at her current firm, she recalls as follows:

> But I studied. And I studied. And I studied. And I studied. And I literally searched for everything. And there was one question that [interviewer] asked me. She said, "How would you rework our community website?" And I'm sitting in my car in a parking lot not looking at a computer. And I just made some stuff up. Just regular website user experience things. And I guess I sounded like I knew what I was doing . . . [T]hey put me to the next step where I had to do an on-site interview. I Googled 150 interview questions in every possible category: Behavioral, Analytical, Conflict-Management. Every question I had answers to . . . I was scared out of mind.

Maya practiced her answers to 150 questions every day. She was over-prepared for her interview. She realized that

> All they really want is to see your train of thought. They don't care about the right answer . . . I practiced out-loud my answers every waking moment that I had. I had a

> *week before my on-site interview. Every moment that I wasn't working I practiced all*
> *150 questions . . . I had interview and [interviewer] asked me: "So come up with a*
> *Social Media strategy right now."*

After she impressed the interviewer and secured a temporary contract job, she began to campaign for a permanent job. She hit a "glass wall," the corporate policies that segregate full-time workers from those on temporary contracts. She described the challenges that she faced as a contractor:

> *When you're a contractor, it's incredibly hard to get converted into a full time per-*
> *son . . . I kept asking questions about getting converted every week. I kept like trying*
> *to network my way around [the barriers to full-time employment]. About a month in,*
> *they had told me that there was no head count[9] for me. And I wouldn't be. If I wanted*
> *to stay at [company] I had to find a job on another team . . . I basically networked and*
> *went to every possible event that I could. I volunteered at everything . . . I asked full-*
> *time [tech workers at the company] to help me with jobs. If you're a contractor, you*
> *can't see the internal jobs board . . . You have to . . . ask a full time [employee] look at*
> *the internal board, which is breaking all the rules and help you reach out to the hiring*
> *manager. I also went to outside networking events. I think that I went to a networking*
> *event at least three times every week. And I then was going to internal events and*
> *meeting people all the time. I had lunch appointments everyday with someone . . . And*
> *then I finally started getting traction. I interviewed for four different teams, internally.*
> *I had performance reviews. I had all of those things. And I still had 15 interviews.*

She worked the equivalent of two full-time jobs because she had to do so much extra work to network and secure good performance reviews. Maya networked non-stop for 4 months. This networking included setting lunch appointments every day with people at her company, attending every hacking event and every event for women at the company. She spent every waking moment setting up meetings, volunteering and taking on extra work so that she could generate multiple performance reviews.

Maya's career trajectory illuminates the structural obstacles created by corporate policies that establish a glass wall between individuals working on temporary contracts and permanent employees. These glass walls restrict the flow of information between people working on the same teams. Information about job openings is not available to contract workers so they are segregated in an occupational ghetto. Maya broke explicit rules that denied access to the internal job board to contract workers. She benefited from the fact that her teammates were not aware that by sharing information about job openings with her, they were violating company policies.

Conclusion

In September of 2010, Kimberly Bryant, a Black woman, was a technical project manager at Genentech. Bryant left her job and began to strategize on how to develop programs to mentor Black girls interested in developing their technical skills. Two of her former colleagues accepted her invitation to help her launch a pilot program that developed into Black Girls Code (BGC). In April of 2011, Bryant and her team revised an MIT curriculum to create

lesson plans for a 6-week course. Six months later, on a Saturday in October, she taught basic coding to eight girls on six computers. Five years later, about 1,200 girls had attended BGC workshops. A national organization had been born.

In 7 years, Bryant had created an organization that now runs regular hackathons for girls in the San Francisco Bay Area and New York, summer camps in eight cities and 1-day workshops all over the United States. In September of 2017, Bryant launched the 13th U.S. chapter of BGC in Detroit. In 2017 BGC's operating budget was US$2.3 million. Bryant plans to double that budget in 2018. BGC also helps set up Code Club, an afterschool class program at local schools that runs from 3 to 12 weeks, funded by the schools.

BGC responds to the "pipeline" argument employed by technology firms, by providing another path for Black girls and adolescents to learn to code and develop skills in a supportive environment. More importantly, this organization has created a pool of Black techies who are preparing themselves for a career in an elite labor market that is predicted to create 2.4 million jobs in the next decade.

This article contributes to the scholarship on the new economy and "elite labor markets" by examining the social networks and routes employed by Black female technology workers. Technology companies have argued that the educational pipeline has not provided a sufficient number of qualified Black women for them to hire. However, an analysis of the career maps of Black women currently employed in the industry demonstrates that there are multiple routes into technology jobs. I found that Black women, like their non-Black peers, brought a wide range of transferable skills to their jobs. In addition to their work experiences and educational credentials, the quantity and quality of their social capital varied and played a role in their ability to secure a position.

When compared with White and Asian women, Black women had less access to information about jobs, mentors and promotion opportunities. The role of siblings, spouses, boyfriends, former classmates, friends and neighbors who provided social referrals cannot be overstated. Black women in the San Francisco-based tech industry were less likely to be embedded in a network of Black tech workers or co-ethnics in the industry. They had to work harder to compensate for their lack of social contacts in the industry. They typically entered the technology industry with fewer social resources. It is unclear whether this has long-term or lasting effects because there is no hard data on this and many of the women interviewed were in the early phases of their careers.

Technology firms have not been easy workplaces for researchers to access. More qualitative and observational research is needed that illuminates the ways that race, gender, class and national origin intersect to disadvantage U.S.-born Black women in Silicon Valley labor markets. It would be useful for sociologists to be able to directly observe the hiring and recruitment practices as Lauren Rivera (2012) did in her study of elite law firms. More qualitative studies are needed that focus on the career maps of Black professionals who have earned CS degrees but are employed in other industries or have left the technology sector. Ethnographic data are needed about the cultural practices and climate for Black people and brown-skinned Latinas employed in the industry.

A commitment to change must involve radically altering some aspects of the pervasive corporate culture and not requiring conformity to the geek monoculture that prevails. A

better understanding of how networks function in technology and how they benefit certain people while excluding others would be useful. Finally, minimizing the use of social referrals and linking cash bonuses and executive compensation to the achievement of measurable diversity goals would be another step toward racial justice, not merely diversity, in hiring.

ACKNOWLEDGMENTS

NOTES

1. Shola Oyedele is the daughter of Nigerian immigrants, grew up in Maryland and earned her degree at Stanford University. She was interviewed by Emily Chang.
2. Available at https://www.elephantinthevalley.com
3. Reveal sought reports from 211 of San Francisco's biggest Bay Area tech companies as part of an ongoing diversity data project. Of the 211 companies surveyed only 23 released their reports. See the report "Hidden Figures: How Silicon Valley Keeps Diversity Data Secret" by Will Evans and Sinduja Rangarajan (2017).
4. See U.S. Census Bureau (2016).
5. See Kastrenakes (2017).
6. https://www.fastcompany.com/3061457/how-silicon-valleys-diversity-problem-created-a-new-industry
7. In May 2014, Google released the demographics of its employees. Among technical workers, 83% were men, 60% were White and 34% were Asian (Jacobson, 2014). Demographic representation of technical workers was similar at other top tech companies that released their diversity numbers during the same period, including Facebook, Twitter, Apple, LinkedIn and Pandora, although there were cases of technical teams with greater proportions of Asian workers (see Rodriguez, 2015).
8. We use the term *Black* to refer to individuals who are the direct descendants of enslaved individuals who have deep roots in the United States and are not the grandchildren, or children of voluntary immigrants. We use the term *Black Latina* to refer to women who self-identify as Black and Latina (Puerto Rican, Jamaican origin) and we use the term *Black Native* to refer to individuals who self-identify as Black and Native American, that is, the descendant of enslaved persons and people indigenous to what is now the United States.
9. This is a phrase that means that "there's no money in the budget for you to be full-time."

REFERENCES

Alfrey, L., & Twine, F. W. (2017). Gender-fluid geek girls: Negotiating inequality regimes in the tech industry. *Gender & Society*, *31*, 28–50.

Beasley, M. (2017). *There is a supply of diverse workers in tech, so why is Silicon Valley so lacking in diversity?* Center for American Progress. Retrieved from https://cdn.americanprogress.org/content/uploads/2017/03/28141805/TechDiversity-report3.pdf

Benner, K. (2017, June 30). Women in tech speak frankly on culture of harassment. *The New York Times*. Retrieved from https://www.nytimes.com/2017/06/30/technology/women-entrepreneurs-speak-out-sexual-harassment.html

Bourdieu, P. (1984). *Distinction: A social critique on the judgment of taste.* Cambridge, MA: Harvard University Press.

Chang, E. (2018). *Brotopia: Breaking up the boy's club of Silicon Valley*. New York, NY: Penguin.

Chernikoff, L. (2015, July 14). This one story illustrates tech's diversity problem. *Elle*. Retrieved from https://www.elle.com/life-love/news/a29307/diversity-in-tech/

Collins, S. (1997). *Black corporate executives: The making and breaking of a Black middle-class*. Philadelphia, PA: Temple University Press.

Collins, S. (2011). Diversity in the post affirmative action labor market: A proxy for racial progress. *Critical Sociology*, *37*, 521–540.

Dobbin, F., Schrage, D., & Kalev, A. (2015). Rage against the iron cage: The varied effects of bureaucratic personnel reforms on diversity. *American Sociological Review*, *80*, 1014–1044.

Embrick, D. (2011). The diversity ideology in the business world: A new oppression for a new age. *Critical Sociology*, *37*, 541–556.

Evans, W., & Rangarajan, S. (2017, October 19). Hidden figures: How Silicon Valley keeps diversity data secret. *Reveal: Center for Investigative Reporting*. Retrieved from https://www.revealnews.org/article/hidden-figures-how-silicon-valley-keeps-diversity-data-secret/

Fisher, M. S. (2012). *Wall Street women*. Durham, NC: Duke University Press.

Fowler, S. (2017). *Reflecting on one very, very strange year at Uber*. Retrieved from https://www.susanjfowler.com/blog/2017/2/19/reflecting-on-one-very-strange-year-at-uber

Funk, C., & Parker, K. (2018). *Diversity in the STEM workforce varies widely across jobs*. Pew Research Center, Social Trends. Retrieved from http://www.pewsocialtrends.org/2018/01/09/diversity-in-the-stem-workforce-varies-widely-across-jobs/

Gee, B., & Peck, D. (2016). *The illusion of Asian success: Scant progress for minorities in cracking the glass ceiling from 2007–2015*. Ascend Foundation. Retrieved from https://www.ascendleadership.org/page/research

Granovetter, M. (1974). *Getting a job: A study of contacts and careers*. Cambridge, MA: Harvard University Press.

Ho, K. (2009). *Liquidated: An ethnography of Wall Street*. Durham, NC: Duke University Press.

Isaac, M. (2017, March 28). Uber releases diversity report and repudiates its hard-changing attitude. *The New York Times*. Retrieved from https://www.nytimes.com/2017/03/28/technology/uber-scandal-diversity-report.html

Jacobson, M. (2014, May 28). Google finally discloses its diversity date record, and it's not good. *PBS News Hour*. Retrieved from https://www.pbs.org/newshour/nation/google-discloses-workforce-diversity-data-good

Kastrenakes, J. (2017, March 1). Apple shareholders overwhelmingly reject diversity proposal. *The Verge*. Retrieved from https://www.theverge.com/2017/3/1/14781854/apple-shareholders-reject-diversity-proposal-for-second-year

Lin, N. (2000). Inequality in social capital. *Contemporary Sociology*, *29*, 785–795.

McPherson, M., Smith-Lovin, L., & Cook, J. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, *27*, 415–444.

Pao, E. (2017). *Reset: My fight for inclusion and lasting change*. New York, NY: Spiegel & Grau.

Reed, D. S. (2016). Diversity in tech remains elusive due to racism, lack of representation and cultural differences. *Model View Culture*. Retrieved from https://modelviewculture.com/pieces/diversity-in-tech-remains-elusive-due-to-racism-lack-of-representation-and-cultural-differences

Rivera, L. (2012). Hiring as cultural matching: The case of elite professional service firms. *American Sociological Review*, *77*, 999–1022.

Rodriguez, S. (2015, June 30). Why Silicon Valley is failing miserably at diversity, and what should be done about it. *International Business Times*. Retrieved from https://www.ibtimes.com/why-silicon-valley-failing-miserably-diversity-what-should-be-done-about-it-1998144

Royster, D. (2003). *Race and the invisible hand: How Black networks exclude Black men from blue-collar jobs*. Berkeley: University of California Press.

Shevinsky, E. (2015). *Lean out: The struggle for gender equality in tech and start-up culture*. New York, NY: OR Books.

U.S. Census Bureau. (2016). *The American Community Survey*. Washington, DC: Author.

Varathan, P. (2017, August 14). Silicon Valley's gender inequality is even worse than Wall Street. *Quartz.* Retrieved from https://qz.com/1051467/silicon-valleys-genderinequality-is-even-worse-than-wall-streets/

Williams, C., Muller, C., & Kilanski, K. (2012). Gendered organizations in the new economy. *Gender and Society*, *26*, 549–573.

Williams, J. C. & Phillips, K. (2017). *Double jeopardy: Gender bias against women in science.* San Francisco: UC Hasting College of Law.

Wingfield, A. H. (2012). *No more invisible man: Race and gender in men's work.* Philadelphia, PA: Temple University Press.