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## Memo 2

As the technology industry becomes increasingly advanced, it is also progressively more important to address the newfound societal issues that arise. Within the reading materials for Week 8, the articles highlight and explain the history of gender issues' involvement with technological development, as well as modern attempts at solutions with their own caveats. It can be concluded that gender and technology have always had a relationship leading to an unfair disparity between men and women in favor of men, which also put non-binary people in even worse circumstances. In the future, this relationship will likely not change without significant adjustments to writing protective legislation for women and non-binary individuals in the workforce, or increased representation for those demographics.

Though we can easily see the negative effects that the technology industry's gender problem causes today, women's position in the computer development industry was not always so lackluster. Marie Hicks explains how historically, prior to the rise in technological advancement of computer technologies, jobs in the field predominantly involved women in her article "Why Tech's Gender Problem Is Nothing New." Some women, like Stephanie "Steve" Shirley, had such extensive prior experience in programming and computing that they were able to create powerhouse companies that performed highly advanced programming projects. These women worked both federal and private tasks, and as a result of many regions pushing them out of mainstream jobs, the industry suffered delays in improvements. Today, women worldwide are

less likely than men to even have internet access, as James Fitzgerald mentions in his article “The Women Fighting For Digital Equality.” Fitzgerald also notes that this “digital gender gap” is most notable in Africa, with a 17% difference between men and women that has widened since 2013. I believe that this gap is likely rooted in the systemic and broader gender divide, where women in regions that do not provide them with equal rights tend to lose out on more resources, namely tech and internet access. However, the COVID-19 pandemic caused women to actually gain more access to mobile phones during lockdowns, at the consequence of increased online harassment (Fitzgerald). Although this increase in access is a positive change, it makes it even more important to enable more women to have mobile devices and internet access, as well as give them a tailored platform to learn and communicate with each other. This way, they can be better protected and be educated on how to protect themselves.

While online harassment such as bullying, impersonation, and blackmail has risen for women, issues such as gender bias have also become progressively more common on advanced platforms. For example, Amazon’s AI recruiting technology developed negative bias towards women due to being trained on men’s resumes, and Facebook’s job ad targeting favors men for tech postings (Hicks). It is evident that even though in the past, women were relegated to computing careers until the advent of computing technology, new technologies help to perpetuate the advantage that men hold in entering and performing in the industry. This disparity highlights the importance of creating protective legislation to guarantee equality in hiring opportunities. In order to do this, however, we must remember the failures of job opportunity equality in history so that it is mitigated and hopefully eradicated in the future. Without considering how easily women were pushed out of an entire industry, we cannot write policies that apply to its current

state as well as to future businesses where the same phenomenon may occur. For the time being, stronger representation and new airtight protective legislation should be prioritized so jobs in high technology can become less unequal.

Computing technology has improved significantly over the last several decades, and has culminated in notable products such as smartphones and artificial intelligence. However, some applications of these, such as AI voice assistants, have a tendency to reflect improperly vetted biases from development teams. Caitlin Chin and Mishaela Robison analyze this issue in their article “How AI Bots and Voice Assistants Reinforce Gender Bias,” referencing women’s treatment in the field as well as concerns over voice assistant design’s trajectory. Currently, AI bots and voice assistants such as Siri, Alexa, and Cortana total an estimated 92.4% of U.S. market share for phone assistants, and as such are solid representations of products like them everywhere (Chin, Robison). They utilize a female voice, and since they were given a personifiable identity, they have a tendency to reflect the biases of the developers; thus, it is crucial to scrutinize any ethical and social standards during the engineering process. Women already face unfair hardships in the workplace, including what Chin and Robison noted as the “tightrope effect”, where women are expected to conform to traditionally feminine traits but must perform tasks requiring traditionally masculine traits, all while under the risk of penalization and little chance at promotion. Furthermore, a 2015 survey on sexual harassment indicated that 60% of female senior level employees in Silicon Valley had encountered some degree of unwanted harassment (Chin, Robison). It certainly makes matters worse when certain voice assistant voice lines tended to encourage this behavior by often responding in a compliant or submissive manner (Chin, Robison). While it is inevitable that humanizing technology in

order to improve user-assistant relations will cause gender stereotypes to arise, voice assistants' self portrayal is conflicting at best. All assistants seem programmed to identify as not having a gender or existing outside of the concept, yet they often have female-sounding defaults for voicelines. Consequently, this reminds us of stereotypes for women and can still occur even without a physical, human-like appearance.

In addition, AI recognition algorithms are becoming increasingly advanced, allowing them to respond to harassment and hate speech and execute other automoderator functions (Chin, Robison). This concept is also built into voice assistants, but it is even more essential to reflect appropriate behavior to actual people instead of responding in a way that can enable or encourage harassing behavior. To minimize this, Project Q attempted developing a gender-neutral voice assistant known as "Q". Dalia Mortada's article, "Meet Q, the Gender-Neutral Voice Assistant," describes how it was created by compiling multiple voices that identified as cis, transgender, or nonbinary, but was ultimately a modified version of one chosen voice to sound gender neutral. I think that this baseline can serve as an example for other voice assistants to draw upon in order to avoid perpetuating gender stereotypes. With products such as this, engineers should prioritize equal portrayal of any gender for technology involving functions like voice assistants, as well as appropriate responses for all demographics.

Technology industry's rise has been crucial in improving many qualities of life, but it has also deepened existing disparities and created new ones. Without considering all groups of people in the field, more and more problems will crop up. Historically, women were the first to have an edge in computing technologies; it would be a massive oversight to not allow everyone to participate in the industry equally as setbacks in history have shown. We should also

encourage and implement increased diversity in development teams with real steps taken for those that are at a disadvantage in high technology. By improving representation, not only will financial incentives be satisfied, we can maintain an ethical and socially thorough approach to developing technology such as AI. This can hopefully also spread into other high-level career fields, setting an example for a more equal workforce.