

TOPIC 4

GENDER DIVERSITY AND BIAS IN THE WORKPLACE

Biological determinism and social constructivism

There has been a flood of stories in the news this past summer about the lack of gender diversity in the tech industry at companies such as Facebook, Uber, and Amazon. Google was dragged into the heart of that debate recently from two separate directions. First, Google is dealing with a prolonged Department of Labor investigation into unfair compensation practices and a



possible gender wage gap at the firm; and, secondly, the company is dealing with fallout from an internal memo written by ex-Google software engineer, **James Damore**. In his memo, Damore suggested, citing well-known research, that *biological factors may be contributing to the lack of women in the tech industry*. Damore's memo re-opened an old and often acrimonious moral debate about human nature, embodiment, social justice and gender.



Damore claimed that the huge amounts of money being spent by Google to recruit women into the tech industry through affirmative-action-type gender diversity programs may be counterproductive and demoralizing. For promulgating such progressive heresies, which somehow violated Google's code of ethics according to Google's CEO Sundar Pichai, Damore was summarily fired. In his [memo](#) to Google's 72,000 employees the day

after Damore's firing, Pichai acknowledged "the right of Googlers to express themselves," and, he said, "much of what was in that memo is fair to debate..."

"However," he added, "portions of the memo violate our Code of Conduct and cross the line by advancing harmful gender stereotypes in our workplace. Our job is to build great products for users that make a difference in their lives. To suggest a group of our colleagues have traits that make them less biologically suited to that work is offensive and not okay. It is contrary to our basic values and our Code of Conduct."

You should read Damore's memo below and see if you think he says that women at Google are "less biologically suited to that work" or if [David Brooks](#) is right when he says that Pichai's assessment "is a blatantly dishonest characterization of the memo" because "Damore wrote nothing like that about his Google colleagues." Fallout from the sore spot Damore uncovered continues today, as you can see [here](#), and [here](#), and [here](#).



Apparently, the question of how **biological determinism** and **social constructivism** contribute to the lack of women in STEM jobs is too hot to debate, despite the fact that Pichai himself confirmed that "The author had a right to express their (sic) views on those topics—we encourage an environment in which people can do this and it remains our policy to not take action against anyone for promoting these discussions." But somehow, Damore crossed a moral red line in Pichai's view, and his memo was deemed immoral or "not OK" in the language of Google's political correctness. And that caused an uproar like other moral uproars being heard these days. David Brooks of the New York Times put it [this way](#):

The mob that hounded Damore was like the mobs we've seen on a lot of college campuses. We all have our theories about why these moral crazes are suddenly so common. I'd say that radical uncertainty about morality, meaning and life in general is producing intense anxiety. Some people embrace moral absolutism in a desperate

effort to find solid ground. They feel a rare and comforting sense of moral certainty when they are purging an evil person who has violated one of their sacred taboos.¹

At what point does asking critical questions about moral and social issues such as gender diversity become the “advancing of harmful gender stereotypes” and the creation of a “hostile workplace.” Is Pichai’s assessment of Damore’s memo itself stereotypical, biased, or derogatory? Do you think that Damore should have been fired? Is Pichai’s decision consistent with the principles of fairness promulgated by Google’s code of ethics? There are [calls](#) for Pichai to resign. Does *that* seem reasonable?

The fact that there are less women working in the tech industry, particularly in software engineering, is not in dispute. This differential is occurring world-wide at a ratio of about 3 to 1. The big tech companies have been spending a lot of money and exerting a lot of effort to change this, but, so far, these efforts have made only a minor dent in the stubborn ratio.

So, the question remains. If biological traits determine to some extent the kind of work men and women prefer and are good at (in addition to social and cultural influences), then this would account to some degree for the lack of women in tech. But, if the kind of work men and women prefer is solely the result of socially constructed attitudes, beliefs, and values, then something can be done to change the gender disparity in tech.

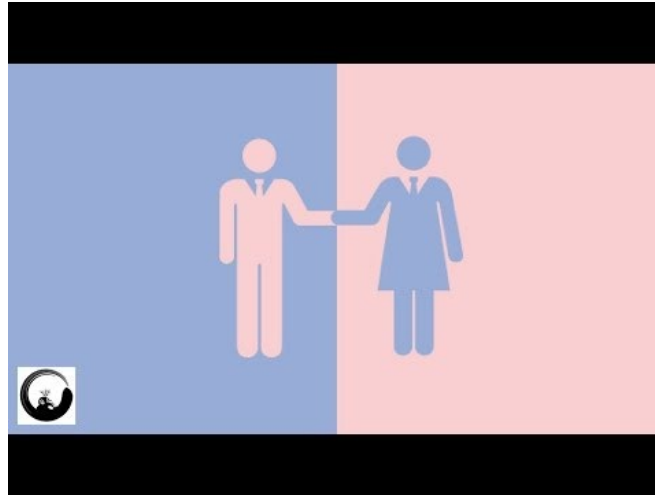
The question of gender diversity in the workplace is often couched in such black and white terms, reflecting an abject lack of moral pluralism. How would it look through a perspectival, pluralist lens?

There is a third alternative that is often not considered in the popular media due, perhaps, to the conventional way of reducing complex moral situations to binary, black and white terms. This mediating approach to understanding the question of women in tech is proposed by **Alice Eagly** in her article below “Does biology explain why men outnumber women in tech?” As she asserts, could it not be a matter of *both/and* rather than *either/or*? Biological determinants *and* social conditioning combine to produce adult personality traits, according to Eagly, although how

¹Brooks, David. “Sundar Pichai Should Resign as Google’s C.E.O.” New York Times, August 11, 2017. <https://www.nytimes.com/2017/08/11/opinion/sundar-pichai-google-memo-diversity.html>

this happens is not entirely clear. Research on the development of temperament in children shows the influence of biology, but, Eagly says, “scientists don’t fully understand the pathways from these aspects of child temperament to adult personality and abilities.”

The short video below summarizes the biological determinism versus the social constructivist understanding of gender.



Perhaps, as Eagly suggests, it is *given* biological differences between women and men that are cultivated and constructively configured through ‘social engineering’ or social reinforcement and conditioning. Social constructivism doesn’t start from scratch; *something* is given. Without a contribution from nature, there would be nothing to nurture. Determining exactly how much of any person is influenced by what is ‘given’ and how much of any person’s moral response is ‘constructed’ would be impossible to determine in real time, given the complexity and dynamism of the ‘factors’ involved.

Like trying to determine exactly what is under our control, on the one hand, and what is not even within the realm of possibility for us to control, on the other. This is a very important distinction, as we learned from Epictetus, but one that often is not made easily, as can be seen in the present case of gender discrimination in the workplace. Both Nature and Nurture contribute to our being the person we are, what we like and what we don’t like, and what kind of work we want to do.



James Damore

Google diversity memo - “The document that got me fired from Google”

James Damore

POSTED ON [AUGUST 8, 2017](#)

[The document that got me fired from Google](#)

This is the full document, with internal Google links and preamble removed, and edited purely for formatting purposes. A broader document can be found [here](#).

- Google’s political bias has equated the freedom from offense with psychological safety, but shaming into silence is the antithesis of psychological safety.
- This silencing has created an ideological echo chamber where some ideas are too sacred to be honestly discussed.
- The lack of discussion fosters the most extreme and authoritarian elements of this ideology.
 - Extreme: all disparities in representation are due to oppression
 - Authoritarian: we should discriminate to correct for this oppression
- Differences in distributions of traits between men and women (and not “socially constructed oppression”) may in part explain why we don’t have 50% representation of women in tech and leadership.
- Discrimination to reach equal representation is unfair, divisive, and bad for business.

Background

People generally have good intentions, but we all have biases which are invisible to us. Thankfully, open and honest discussion with those who disagree can highlight our blind spots and help us grow, which is why I wrote this document. Google has several biases and honest discussion about these biases is being silenced by the dominant ideology. What follows is by no means the complete story, but it's a perspective that desperately needs to be told at Google.

Google's biases

At Google, we talk so much about unconscious bias as it applies to race and gender, but we rarely discuss our moral biases. Political orientation is actually a result of deep moral preferences and thus biases. Considering that the overwhelming majority of the social sciences, media, and Google lean left, we should critically examine these prejudices:

Left Biases	Right Biases
Compassion for the weak	Respect for the strong/authority
Disparities are due to injustices	Disparities are natural and just
Humans are inherently cooperative	Humans are inherently competitive
Change is good (unstable)	Change is dangerous (stable)
Open	Closed
Idealist	Pragmatic

Neither side is 100% correct and both viewpoints are necessary for a functioning society or, in this case, company. A company too far to the right may be slow to react, overly hierarchical, and untrusting of others. In contrast, a company too far to the left will constantly be changing (deprecating much loved services), over diversify its interests (ignoring or being ashamed of its core business), and overly trust its employees and competitors.

Only facts and reason can shed light on these biases, but when it comes to diversity and inclusion, Google's left bias has created a politically correct monoculture that maintains its hold by shaming dissenters into silence. This silence removes any checks against encroaching extremist and authoritarian policies. For the rest of this document, I'll concentrate on the extreme stance that all differences in outcome are due to differential treatment and the authoritarian element that's required to actually discriminate to create equal representation.

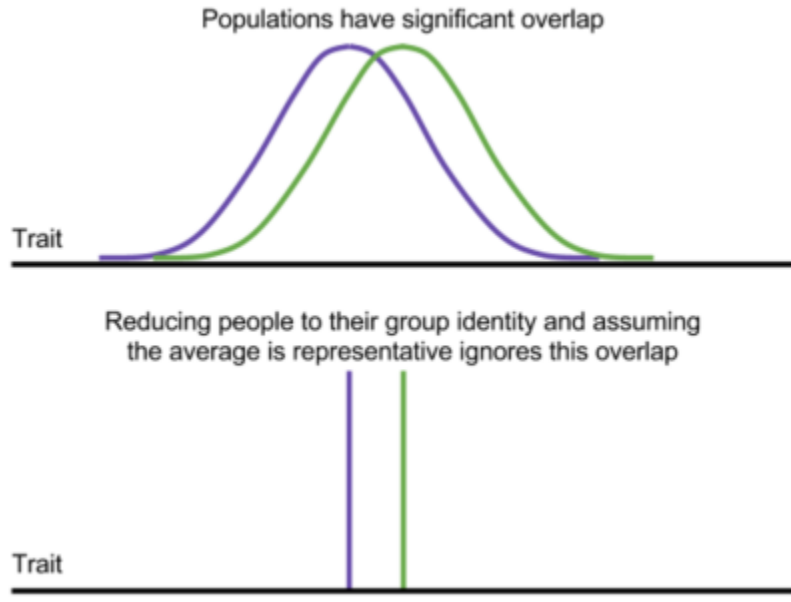
Possible non-bias causes of the gender gap in tech

At Google, we're regularly told that implicit (unconscious) and explicit biases are holding women back in tech and leadership. Of course, men and women experience bias, tech, and the workplace differently and we should be cognizant of this, but it's far from the whole story.

On average, men and women biologically differ in many ways. These differences aren't just socially constructed because:

- They're universal across human cultures
- They often have clear biological causes and links to prenatal testosterone
- Biological males that were castrated at birth and raised as females often still identify and act like males
- The underlying traits are highly heritable
- They're exactly what we would predict from an evolutionary psychology perspective

Note, I'm not saying that all men differ from all women in the following ways or that these differences are "just." I'm simply stating that the distribution of preferences and abilities of men and women differ in part due to biological causes and that these differences may explain why we don't see equal representation of women in tech and leadership. Many of these differences are small and there's significant overlap between men and women, so you can't say anything about an individual given these population level distributions.



Personality Differences:

Women, on average, have more:

- **Openness directed towards feelings and aesthetics rather than ideas.** Women generally also have a stronger interest in people rather than things, relative to men (also interpreted as empathizing vs. systemizing).
 - These two differences in part explain why women relatively prefer jobs in social or artistic areas. More men may like coding because it requires systemizing and even within SWEs, comparatively more women work on front end, which deals with both people and aesthetics.
- **Extraversion expressed as gregariousness rather than assertiveness.** Also, higher agreeableness.
 - This leads to women generally having a harder time negotiating salary, asking for raises, speaking up, and leading. Note that these are just average differences and there's overlap between men and women, but this is seen solely as a women's issue. This leads to exclusory programs like Stretch and swaths of men without support.
- **Neuroticism** (higher anxiety, lower stress tolerance).
 - This may contribute to the higher levels of anxiety women report on Googlegeist and to the lower number of women in high stress jobs.

Note that contrary to what a social constructionist would argue, research suggests that “greater nation-level gender equality leads to psychological dissimilarity in men’s and women’s personality traits.” Because as “society becomes more prosperous and more egalitarian, innate dispositional differences between men and women have more space to develop and the gap that

exists between men and women in their personality traits becomes wider.” We need to [stop assuming that gender gaps imply sexism](#).

Men’s higher drive for status

We always ask why we don’t see women in top leadership positions, but we never ask why we see so many men in these jobs. These positions often require long, stressful hours that may not be worth it if you want a balanced and fulfilling life.

Status is the primary metric that men are judged on, pushing many men into these higher paying, less satisfying jobs for the status that they entail. Note, the same forces that lead men into high pay/high stress jobs in tech and leadership cause men to take undesirable and dangerous jobs like coal mining, garbage collection, and firefighting, and [suffer 93% of work-related deaths](#).

Higher variance among men

Among most psychological characteristics, including IQ, populations of [men have higher variance than women](#) even when the average is the same: there are more men on both the top and the bottom of the curve.

This may lead to more male CEOs and geniuses, but also more homeless males and school dropouts. This has likely evolved because individual males can have many children and are biologically disposable: populations are reproductively constrained by the number of its women, not men. The historically higher variance of outcome can also be seen in our genetics; we have [twice as many female ancestors as male ancestors](#). As a corollary, if Googlers are only from the top of the curve, then this may cause us to have more men than other, less selective, tech companies.

Non-discriminatory ways to reduce the gender gap

Below I’ll go over some of the differences in distribution of traits between men and women that I outlined in the previous section and how we can address them to increase women’s representation in tech without resorting to discrimination. Google is already making strides in many of these areas, but I think it’s still instructive to list them:

- Women show a higher interest in people and men in things
 - We can make software engineering more people-oriented with pair programming and more collaboration. Unfortunately, there may be limits to how people-oriented certain roles at Google can be and we shouldn’t deceive ourselves or students into thinking otherwise (some of our programs to get female students into coding might be doing this).
- Women are more cooperative
 - Allow those exhibiting cooperative behavior to thrive. Recent updates to Perf may be doing this to an extent, but maybe there’s more we can do.

- This doesn't mean that we should remove all competitiveness from Google. Competitiveness and self reliance can be valuable traits and we shouldn't necessarily disadvantage those that have them, like [what's been done in education](#).
- Women are more prone to anxiety
 - Make tech and leadership less stressful. Google already partly does this with its many stress reduction courses and benefits.
- Women look for more work-life balance while men have a higher drive for status
 - Unfortunately, as long as tech and leadership remain high status, lucrative careers, men will be disproportionately want to be in them. Allowing and truly endorsing part time work though can keep more women in tech.
- The male gender role is currently inflexible
 - Feminism has made great progress in freeing women from the female gender role, but men are still very much tied to the male gender role. If we, as a society, allow men to be more "feminine," then the gender gap will shrink, although probably because men will leave tech and leadership for traditionally "feminine" roles.

Philosophically, I don't think we should do arbitrary social engineering of tech *just* to make it appealing to equal portions of both men and women. For each of these changes, we need principled reasons for why it helps Google; that is, we should be optimizing for Google—with Google's diversity being a component of that. For example, currently those willing to work extra hours or take extra stress will inevitably get ahead and if we try to change that too much, it may have disastrous consequences. Also, when considering the costs and benefits, we should keep in mind that Google's funding is finite so its allocation is more zero-sum than is generally acknowledged.

The harm of Google's biases

To achieve a more equal gender and race representation, Google has created several discriminatory practices:

- Programs, mentoring, and classes only for people with a certain gender or race
- A high priority queue and special treatment for "diversity" candidates
- Hiring practices which can effectively lower the bar for "diversity" candidates by decreasing the false negative rate
- Reconsidering any set of people if it's not "diverse" enough, but not showing that same scrutiny in the reverse direction (clear confirmation bias)
- Setting org level OKRs for increased representation which can incentivize illegal discrimination

These practices are based on false assumptions generated by our biases and can actually [increase race and gender tensions](#). We're told by [senior leadership](#) that what we're doing is both the morally and economically correct thing to do, but without evidence this is just [veiled neo-Marxist ideology](#) that can irreparably harm Google.

Why we're blind

We all have biases and use motivated reasoning to dismiss ideas that run counter to our internal values. Just as some on the Right deny science that runs counter to the "God > humans > environment" hierarchy (e.g., evolution and climate change), the Left tends to deny science concerning biological differences between people (e.g., IQ and sex differences). Thankfully, climate scientists and evolutionary biologists generally aren't on the right. Unfortunately, the overwhelming majority of humanities and social sciences lean left ([about 95%](#)), which creates [enormous confirmation bias](#), changes what's being studied, and maintains myths like social constructionism and the gender wage gap. Google's left leaning makes us blind to this bias and uncritical of its results, which we're using to justify highly politicized programs.

In addition to the Left's affinity for those it sees as weak, humans are generally biased towards protecting females. As mentioned before, this likely evolved because males are biologically disposable and because women are generally more cooperative and agreeable than men. We have extensive government and Google programs, fields of study, and legal and social norms to protect women, but when a man complains about a gender issue affecting men, he's labelled as a [misogynist and a whiner](#). Nearly every difference between men and women is interpreted as a form of women's oppression. As with many things in life, gender differences are often a case of "grass being greener on the other side"; unfortunately, taxpayer and Google money is being spent to water only one side of the lawn.

This same compassion for those seen as weak creates political correctness, which constrains discourse and is complacent to the extremely sensitive [PC-authoritarians](#) that use violence and shaming to advance their cause. While Google hasn't harbored the violent leftist protests that we're seeing at universities, the frequent shaming in TGIF and in our culture has created the same silent, psychologically unsafe environment.



Suggestions

I hope it's clear that I'm not saying that diversity is bad, that Google or society is 100% fair, that we shouldn't try to correct for existing biases, or that minorities have the same experience of those in the majority. My larger point is that we have an intolerance for ideas and evidence that don't fit a certain ideology. I'm also not saying that we should restrict people to certain gender roles; I'm advocating for quite the opposite: treat people as individuals, not as just another member of their group (tribalism).

My concrete suggestions are to:

- De-moralize diversity.
 - As soon as we start to [moralize an issue](#), we stop thinking about it in terms of costs and benefits, dismiss anyone that disagrees as immoral, and harshly punish those we see as villains to protect the "victims."
- Stop [alienating conservatives](#).
 - Viewpoint diversity is arguably the most important type of diversity and political orientation is one of the most fundamental and significant ways in which people view things differently.
 - In highly progressive environments, conservatives are a minority that feel like they need to [stay in the closet to avoid open hostility](#). We should empower those with different ideologies to be able to express themselves.
 - Alienating conservatives is both non-inclusive and generally bad business because conservatives tend to be higher in conscientiousness, which is required for much of the drudgery and maintenance work characteristic of a mature company.
- Confront Google's biases.
 - I've mostly concentrated on how our biases cloud our thinking about diversity and inclusion, but our moral biases are farther reaching than that.
 - I would start by breaking down Googlegeist scores by political orientation to give a fuller picture into how our biases are affecting our culture.
- Stop restricting programs and classes to certain genders or races.
 - These discriminatory practices are both unfair and divisive. Instead focus on some of the non-discriminatory practices I outlined.
- Have an open and honest discussion about the costs and benefits of our diversity programs.
 - Discriminating just to increase the representation of women in tech is as misguided and biased as mandating increases for women's representation in the homeless, work-related and violent deaths, prisons, and school dropouts.

- There's currently very little transparency into the extent of our diversity programs which keeps it immune to criticism from those outside its ideological echo chamber.
- These programs are highly politicized which further alienates non-progressives.
- I realize that some of our programs may be precautions against government accusations of discrimination, but that can easily backfire since they incentivize illegal discrimination.
- Focus on psychological safety, not just race/gender diversity.
 - We should focus on psychological safety, which has shown positive effects and should (hopefully) not lead to unfair discrimination.
 - We need psychological safety and shared values to gain the benefits of diversity.
 - Having representative viewpoints is important for those designing and testing our products, but the benefits are less clear for those more removed from UX.

- De-emphasize empathy.

I've heard several calls for increased empathy on diversity issues. While I strongly support trying to understand how and why people think the way they do, relying on affective empathy—feeling another's pain—causes us to focus on individual anecdotes, favor individuals similar to us, and harbor other [irrational and dangerous biases](#). Being emotionally unengaged helps us better reason about the facts.

- Prioritize intention.
 - Our focus on micro-aggressions and other unintentional transgressions increases our sensitivity, which is not universally positive: sensitivity increases both our tendency to take offence and our self censorship, leading to authoritarian policies. Speaking up without the fear of being harshly judged is central to psychological safety, but these practices can remove that safety by judging unintentional transgressions. (Cf. Giving Voice to Values approach)
 - Micro-aggression training [incorrectly and dangerously equates speech with violence](#) and [isn't backed by evidence](#).
- Be open about the science of human nature.
 - Once we acknowledge that not all differences are socially constructed or due to discrimination, we open our eyes to a more accurate view of the human condition which is necessary if we actually want to solve problems.
- Reconsider making Unconscious Bias training mandatory for promo committees.
 - We haven't been able to measure any effect of our Unconscious Bias training and it has the potential for overcorrecting or backlash, especially if made mandatory.

- Some of the suggested methods of the current training (v2.3) are likely useful, but the political bias of the presentation is clear from the factual inaccuracies and the examples shown.
- Spend more time on the many other types of biases besides stereotypes. Stereotypes are much more [accurate and responsive to new information](#) than the training suggests.

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1. This document is mostly written from the perspective of Google's Mountain View campus, I can't speak about other offices or countries.
 2. Of course, I may be biased and only see evidence that supports my viewpoint. In terms of political biases, I consider myself a [classical liberal](#) and strongly value [individualism and reason](#). I'd be very happy to discuss any of the document further and provide more citations.
 3. Throughout the document, by "tech", I mostly mean software engineering.
 4. For heterosexual romantic relationships, [men are more strongly judged by status and women by beauty](#). Again, this has [biological](#) origins and is culturally universal.
 5. Stretch, BOLD, CSSI, and countless other Google funded internal and external programs are for people with a certain gender or race.
 6. Instead set Googlegeist OKRs, potentially for certain demographics. We can increase representation at an org level by either making it a better environment for certain groups (which would be seen in survey scores) or discriminating based on a protected status (which is illegal). Increased representation OKRs can incentivize the latter and create zero-sum struggles between orgs.
 7. [Communism promised to be both morally and economically superior to capitalism, but every attempt became morally corrupt and an economic failure. As it became clear that the working class of the liberal democracies wasn't going to overthrow their "capitalist oppressors," the Marxist intellectuals transitioned from class warfare to gender and race politics. The core oppressor-oppressed dynamics remained, but now the oppressor is the "white, straight, cis-gendered patriarchy."](#)
 8. Ironically, IQ tests were initially championed by the Left when meritocracy meant helping the victims of aristocracy.
 9. Yes, in a national aggregate, women have lower salaries than men for [a variety of reasons](#). For the same work though, women get paid just as much as men. Considering women spend more money than men and that salary represents how much the employee sacrifices (e.g. more hours, stress, and danger), we really need to rethink our stereotypes around power.
 10. ["The traditionalist system of gender does not deal well with the idea of men needing support. Men are expected to be strong, to not complain, and to deal with problems on their own. Men's problems are more often seen as personal failings rather than victimhood, due to our gendered idea of agency. This discourages men from bringing attention to their issues \(whether individual or group-wide issues\), for fear of being seen as whiners, complainers, or weak."](#)
 11. Political correctness is defined as "the avoidance of forms of expression or action that are perceived to exclude, marginalize, or insult groups of people who are socially disadvantaged or discriminated against," which makes it clear why it's a phenomenon of the Left and a tool of authoritarians.

Alice Eagly

Gulag

“Does biology explain why men outnumber women in tech?”

James Damore interviewed by Jordan Peterson (21:37)

[Psychologist response]

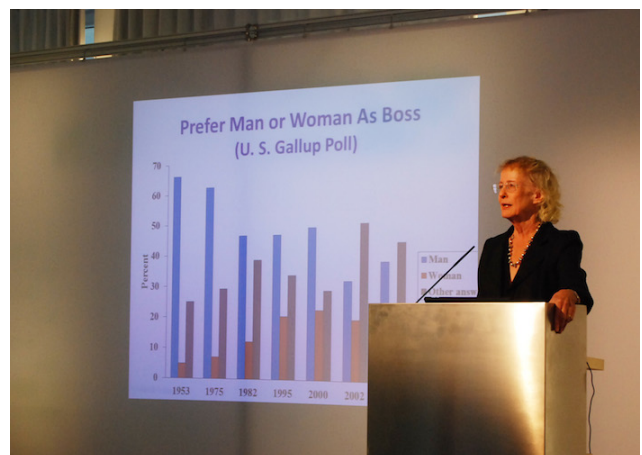
August 15, 2017

Alice H. Eagly

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It’s no secret that Silicon Valley employs many more men than women in tech jobs. What’s much harder to agree on is why.

The recent anti-diversity memo by a now former Google engineer [James Damore, see aboveA] has pushed this topic into the spotlight. The writer argued there are ways to explain the gender gap in tech that don’t rely on bias and discrimination – specifically, biological sex differences. Setting aside how this assertion would affect questions about how to move toward greater equity



in tech fields, how well does his wrap-up represent what researchers know about the science of sex and gender?

As a social scientist who's been conducting psychological research about sex and gender for almost 50 years, I agree that biological differences between the sexes likely are part of the reason we see fewer women than men in the ranks of Silicon Valley's tech workers. But the road between biology and employment is long and bumpy, and any causal connection does not rule out the relevance of non-biological causes. Here's what the research actually says.

Are girls just born less suited for tech?

There is no direct causal evidence that biology causes the lack of women in tech jobs. But many, if not most, psychologists do give credence to the general idea that prenatal and early postnatal exposure to hormones such as testosterone and other androgens affect human psychology. In humans, testosterone is ordinarily elevated in males from about weeks eight to 24 of gestation and also during early postnatal development.

Ethical restraints obviously preclude experimenting on human fetuses and babies to understand the effects of this greater exposure of males to testosterone. Instead, researchers have studied individuals exposed to hormonal environments that are abnormal because of unusual genetic conditions or hormonally active drugs prescribed to pregnant women. Such studies have suggested that early androgen exposure does have masculinizing effects on girls' juvenile play preferences and behavior, aggression, sexual orientation and gender identity and possibly on spatial ability and responsiveness to cues that certain behaviors are culturally female-appropriate.

Early hormonal exposure is only one part of a complex of biological processes that contribute to sexual differentiation. Driven by both direct and roundabout messages from the X and Y chromosomes, the effects of these processes on human psychology are largely unknown, given the early stage of the relevant science.

Other studies inform the nature-nurture question by comparing the behaviors of boys and girls who are so young that socialization has not exerted its full influence.

Early sex differences emerge mainly on broad dimensions of temperament. One such dimension is what psychologists call "surgency"; it's greater in boys and manifests in motor activity, impulsivity and experiencing pleasure from high-intensity activities. The other dimension is in what we term "effortful control"; it's greater in girls and emerges in the self-regulatory skills of greater attention span, ability to focus and shift attention and inhibitory control. This aspect of temperament also includes greater perceptual sensitivity and experience of pleasure from low-intensity activities.

This research on temperament does suggest that nature instills some psychological sex differences. But scientists don't fully understand the pathways from these aspects of child temperament to adult personality and abilities.

Is there a gender divide on tech-relevant traits?

Another approach to the women-in-tech question involves comparing the sexes on traits thought most relevant to participation in tech. In this case, it doesn't matter whether these traits follow from nature or nurture. The usual suspects include mathematical and spatial abilities.

The sex difference in average mathematical ability that once favored males has disappeared in the general U.S. population. There is also a decline in the preponderance of males among the very top scorers on demanding math tests. Yet, males tend to score higher on most tests of spatial abilities, especially tests of mentally rotating three-dimensional objects, and these skills appear to be helpful in STEM fields.

Of course people choose occupations based on their interests as well as their abilities. So the robust and large sex difference on measures of people-oriented versus thing-oriented interests deserves consideration.

Research shows that, in general, women are more interested in people compared with men, who are more interested in things. To the extent that tech occupations are concerned more with things than people, men would on average be more attracted to them. For example, positions such as computer systems engineer and network and database architect require extensive knowledge of electronics, mathematics, engineering principles and telecommunication systems. Success in such work is not as dependent on qualities such as social sensitivity and emotional intelligence as are positions in, for instance, early childhood education and retail sales.

Women and men also differ in their life goals, with women placing a higher priority than men on working with and helping people. Jobs in STEM are in general not viewed as providing much opportunity to satisfy these life goals. But technology does offer specializations that prioritize social and community goals (such as designing healthcare systems) or reward social skills (for instance, optimizing the interaction of people with machines and information). Such positions may, on average, be relatively appealing to women. More generally, women's overall superiority on reading and writing as well as social skills would advantage them in many occupations.

Virtually all sex differences consist of overlapping distributions of women and men. For example, despite the quite large sex difference in average height, some women are taller than most men and some men are shorter than most women. Although psychological sex differences are statistically smaller than this height difference, some of

the differences most relevant to tech are substantial, particularly interest in people versus things and spatial ability in mental rotations.

If not biology, then what are the causes?

Given the absence of clear-cut evidence that tech-relevant abilities and interests flow mainly from biology, there's plenty of room to consider socialization and gender stereotyping.

Because humans are born undeveloped, parents and others provide extensive socialization, generally intended to promote personality traits and skills they think will help offspring in their future adult roles. To the extent that women and men have different adult lives, caregivers tend to promote sex-typical activities and interests in children – dolls for girls, toy trucks for boys. Conventional socialization can set children on the route to conventional career choices.

Even very young children form gender stereotypes as they observe women and men enacting their society's division of labor. They automatically learn about gender from what they see adults doing in the home and at work. Eventually, to explain the differences they see in what men and women do and how they do it, children draw the conclusion that the sexes to some extent have different underlying traits. Divided labor thus conveys the message that males and females have different attributes.

These gender stereotypes usually include beliefs that women excel in qualities such as warmth and concern for others, which psychologists label as communal. Stereotypes also suggest men have higher levels of qualities such as assertiveness and dominance, which psychologists label as agentic. These stereotypes are shared in cultures and shape individuals' gender identities as well as societal norms about appropriate female and male behaviors.

Gender stereotypes set the stage for prejudice and discrimination directed toward those who deviate from gender norms. If, for example, people accept the stereotype that women are warm and emotional but not tough and rational, gatekeepers may close out women from many engineering and tech jobs, even those women who are atypical of their sex. In addition, women talented in tech may falter if they themselves internalize societal stereotypes about women's inferiority in tech-relevant attributes. Also, women's anxiety that they may confirm these negative stereotypes can lower their actual performance.

It's therefore not surprising that research provides evidence that women generally have to meet a higher standard to attain jobs and recognition in fields that are culturally masculine and dominated by men. However, there is some recent evidence of preferential hiring of women in STEM at U.S. research-intensive institutions. Qualified women who apply for such positions have a better chance of being interviewed and

receiving offers than do male job candidates. [Experimental simulation of hiring](#) of STEM faculty yielded similar findings.

Why not both nature and nurture?

Many pundits make the mistake of assuming that scientific evidence favoring sociocultural causes for the dearth of women in tech invalidates biological causes, or vice versa. These assumptions are far too simplistic because most **complex human behaviors** reflect some mix of nature and nurture.

And the discourse is further compromised as the [debate becomes more politicized](#). **Arguing for sociocultural causes seems the more progressive and politically correct stance today.** **Arguing for biological causes seems the more conservative and reactionary position.** Fighting ideological wars distracts from figuring out what [changes in organizational practices and cultures](#) would [foster the inclusion of women in tech](#) and in the scientific workforce in general.

Politicizing such debates threatens scientific progress and doesn't help unravel what a fair and diverse organization is and how to create one. Unfortunately, well-meaning efforts of organizations to [promote diversity and inclusion](#) can be ineffective, often because they are too **coercive and restrictive of managers' autonomy**. **The outrage in James Damore's manifesto suggests that Google might want to take a close look at its diversity initiatives.**

At any rate, neither nature-oriented nor nurture-oriented science can fully account for the underrepresentation of women in tech jobs. **A coherent and open-minded stance acknowledges the possibility of both biological and social influences on career interests and competencies.**

Regardless of whether nature or nurture is more powerful for explaining the lack of women in tech careers, people should guard against acting on the assumption of a gender binary. It makes more sense to treat individuals of both sexes as located somewhere on a continuum of masculine and feminine interests and abilities. Treating people as individuals rather than merely stereotyping them as male or female is difficult, given how quickly our automatic stereotypes kick in. But working toward this goal would foster equity and diversity in tech and other sectors of the economy.



Marie Hicks

“What the Google gender ‘manifesto’ really says about Silicon Valley” [progressive response]

August 10, 2017 www.TheConversation.com [Republish this article](#)

[Marie Hicks](#)

Assistant Professor of History, University of Wisconsin-Madison

Five years ago, Silicon Valley was rocked by a wave of “[programmer](#)” bad behavior, when overfunded, highly entitled, mostly white and male startup founders did things that were juvenile, out of line and just plain stupid. Most of these activities – such as putting pornography into PowerPoint slides – revolved around the [explicit or implied devaluation and harassment](#) of women and the assumption that heterosexual men’s privilege could or should define the workplace. The recent “[memo](#)” scandal out of Google shows how far we have yet to go.

It may be that more established and successful companies don’t make job applicants deal with “[bikini shots](#)” and “[gangbang interviews.](#)” But even the tech giants foster an environment where [heteronormativity and male privilege](#) is so rampant that an engineer could feel comfortable [writing and distributing a screed](#) that effectively harassed all of his women co-workers en masse.

This is a pity, because tech companies say they want to change this culture. This summer, I gave a talk at Google UK about my work as a [historian of technology and gender](#). I thought my talk might help change people’s minds about women in computing, and might even help women and [nonbinary](#) folks working at Google now. Still, the irony was strong: I was visiting a multibillion-dollar tech company to talk about how women are undervalued in tech, for free.



Facing common fears

I went to Google UK with significant trepidation. I was going to talk about the subject of my upcoming book, “[Programmed Inequality](#),” about how [women got pushed out of computing](#) in the U.K. In the 1940s through the early 1960s, most British [computer workers were women](#), but over the course of the ’60’s and ’70’s their numbers dropped as women were subjected to [intentional structural discrimination](#) designed to push them out of the field. That didn’t just hurt the women, either – it [torpedoed](#) the [once-promising British computing industry](#).

In the worst-case scenario, I imagined my talk would end with a question-and-answer period in which I would be asked to face exactly the points the Google manifesto made. It’s happened before – [and not just to me](#) – so I have years of practice dealing with harsh critics and tough audiences, both [in the classroom and outside of it](#).

As a result of that experience, I know how to handle situations like that. But it’s more than just disheartening to have my work misunderstood. I have felt firsthand the damage the phenomenon called “[stereotype threat](#)” can wreak on women: Being assumed to be inferior can make a person not only feel inferior, but actually [subconsciously do things](#) that confirm their own supposed lesser worth. For instance, women students [do measurably worse on math exams](#) after reading articles that suggest women are ill-suited to study math. (A related phenomenon, [impostor syndrome](#), [runs rampant through academia](#).)

A surprising reaction

As it happened, the audience was familiar with, and interested in, my work. I was impressed and delighted with the caliber and thoughtfulness of the questions I got. But one question stood out. It seemed like the perfect example of how the culture of the tech industry is so badly broken today that it destroys or significantly hinders much of its talent pool, inflicting stereotype threat on them in large numbers.

A Google engineer asked if I thought that [women’s biological differences](#) made them innately less likely to be good engineers. I replied in the negative, firmly stating that this kind of [pseudoscientific evolutionary psychology](#) has been [proven incorrect at every turn](#) by history, and that biological determinism was a dangerous cudgel that had been used to deprive [black people](#), [women](#) and [many others](#) of their civil rights – and even their lives – for centuries.

The engineer posing this question was a woman. She said she felt she was unusual because she thought she had less [emotional intelligence](#) and more intellectual intelligence than most other women, and those abilities let her do her job better. She wondered if most women were doomed to fail. She spoke with the uncertainty of someone who has been [told repeatedly](#) that “normal” women aren’t supposed to do what she does, or be who she is.

I tried to empathize with her, and to make my answer firm but not dismissive. This is how [structural discrimination](#) works: It seeps into all of us, and we are barely conscious of it. If we do not constantly guard ourselves against its insidious effects – if we do not have the tools to do so, the courage to speak out, and the ability to understand when it is explained to us – it can

turn us into ever worse versions of ourselves. We can become the versions that the negative stereotypes expect. But the bigger problem is that it doesn't end at the level of the individual.

A problem of structure

These misapprehensions bleed into every aspect of our institutions, which then in turn nurture and (often unwittingly) propagate them further. That was what happened when [the Google manifesto emerged](#), and in the media frenzy that followed.

That the manifesto was taken as a potentially interesting or illustrative opinion says something not just about Silicon Valley, but about the political moment in which we find ourselves. The media is complicit too: Some media treated it as noteworthy [only for its shock value](#). And others, rather than identifying the screed as an example of the writer's misogyny, lack of historical understanding, and indeed – as [some computer professionals have pointed out](#) – lack of understanding of the field of engineering, handled the document as a [think piece deserving consideration and discussion](#).

The [many people](#) who said openly and loudly that it was [nothing of the sort](#) are to be commended. But the fact that they had to waste time even addressing it shows how much [damage casual, unreflective sexism and misogyny](#) do to every aspect of our society and our economy.

The corporate response

Google, for its part, has now [fired the writer](#), an expected move after the [bad publicity he has helped rain down on the company](#). But Google has also – and in the very same week that I gave my talk there – [refused to comply](#) with a U.S. Department of Justice order to [provide statistics on how it paid its women workers](#) in comparison to men. The company claims that it might cost an estimated US\$100,000 to compile that data, and [complains](#) that it's too high a cost for their multibillion dollar corporation to bear.

The company will not expend a pittance – especially in relation to [its earnings](#) – to work to correct allegedly egregious gender-biased salary disparities. Is it any surprise that some of its employees – both men and women – view women's contributions, and their very identities, as being [somehow less inherently valuable](#) or well suited to tech? Or that [many more silently believe it](#), almost in spite of themselves?

People take cues from our institutions. Our governments, corporations, universities and news media [shape our understandings and expectations of ourselves](#) in ways we can only partially understand without intense and sustained self-reflection. For the U.K. in the 20th century, that collective, institutional self-awareness [came far too late to save its tech sector](#). Let's hope the U.S. in the 21st century learns something from that history. At a time when technology and governance are increasingly converging to define who we are as a nation, we are living through a perfect – if terrifying – teachable moment.

Richard Epstein

“Gender @ Google” (conservative response)

[Gender@Google](#)

August 14, 2017

A taboo topic

“[Google’s Ideological Echo Chamber](#),” the memo written by Google’s now-fired software engineer James Damore, addresses a taboo topic in modern American life — namely, sex differences that relate to the abilities and occupational choices of men and women.

Damore’s critique of diversity and inclusion, which he supports in the abstract, hit the tech industry hard for this very simple reason: firms like Google and Facebook have tech workforces dominated by white and Asian men. As Damore observes, Google has spent millions on programs to recruit and hire more women and non-Asian minorities, with little to show for its efforts. He urges Google: “Stop restricting programs and classes to certain genders and races,” and to “de-moralize diversity.” In his view, this reverse discrimination drives Google’s rigid, ideological conformity, lowers overall production, and undercuts professional morale.



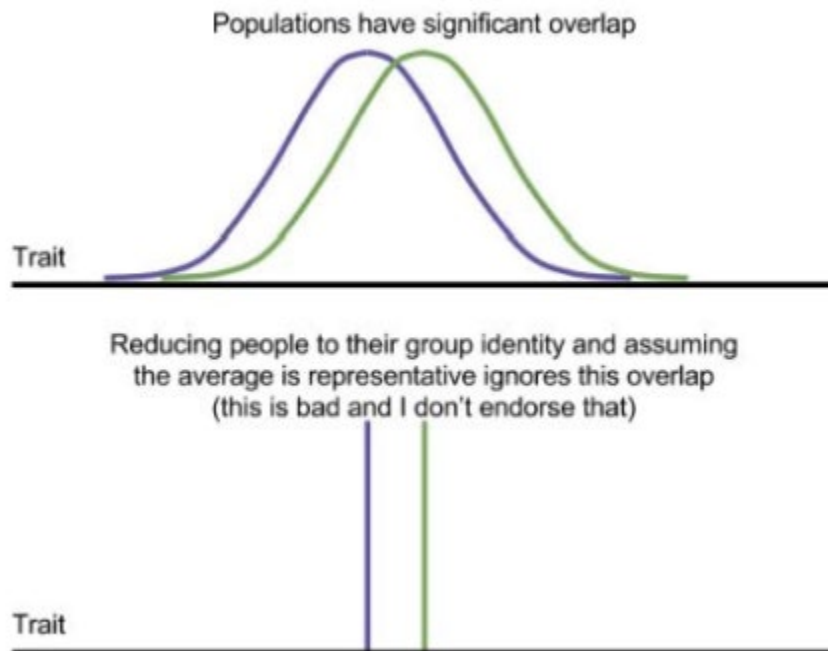
Damore’s memo did not sit well with the Google CEO Sundar Pichai, who quickly fired Damore for “advancing harmful gender stereotypes in our workplace.” According to Pichai, “To suggest a group of our colleagues have traits that make them less biologically suited to that work is offensive and not OK.”

Damore’s memo should come as no surprise. Just three months ago, a smaller flap, reported [here in](#) the Wall Street Journal, resulted from accusations of gender bias at Facebook. My article, [Gender@Facebook](#), took a view broadly consistent with Damore’s by pointing to a wealth of evidence that suggested that biological differences could account for the differences in employment patterns. According to a detailed [study](#) by psychologists Richard Lynn and Satoshi Kanazawa, “at the ages of 7 and 11 years girls have an IQ advantage of approximately 1 IQ point, but at the age of 16 years this changes in the same boys and girls to an IQ advantage of 1.8 IQ points for boys.” More specifically, they present numbers that for general IQ show a mean of 101.461 for boys with a standard deviation of 15.235, and a mean of 99.681 for girls with a standard deviation 14.085.

Two views of the evidence

There are two different ways to view this kind of evidence. Pichai dismissed the idea of group-wide differences in ability as an improper gender stereotype. But on this point, Damore surely has the better of the argument. As he noted at the outset of his memo, “When addressing the gap in representation in the population, we need to look at population level differences in distributions.” Hence it is necessary to draw, as he did, two bell-shaped curves that correspond to

population-level data. The result for mathematical and spatial abilities among men and women will show two overlapping curves with different medians and (a point that Damore does not discuss) different variances as well. For the high-stress demands of tech engineers, the relevant portion of both distributions is the upper (or right) tail. Properly assembled, the data shows how any given person stands against the pool. That upper tail for tech work will be, on the available data, dominated by men. These findings lend support to a biological explanation for some of the observed differences in success rates. It should not be assumed, of course, that only these differences matter, as other factors influence productivity and success.



Indeed, [recent data](#) show that in all graduate programs women outnumber men by more than a 4-3 ratio, but that field differences matter. Thus men get about 75 percent of the advanced degrees in Engineering, Mathematics and Computer Sciences, while women get slightly more than half the degrees in biological and agricultural sciences. No simple theory of discrimination can begin to account for this data. It is largely *student* selection that tends to drive the outcomes. But these raw numbers in quantitative areas matter far more for the tech jobs in Google than for work in management and sales. The observed distributions thus help explain the gender imbalance in tech jobs.

At this juncture, it is critical to stress that no accurate statistical distribution should ever be dismissed or deprecated as a stereotype. But the label stereotype would properly attach to a proposition that said that every man is better than every woman at tech jobs. As Damore neatly illustrates in the bottom of his two graphs, the graphical representation of that false proposition collapses the underlying distribution of tech skills into two vertical lines, one at the median for male workers and the other for females. Huge amounts of information are necessarily lost when a two-dimensional space (mean and variance) is reduced to a single dimension (mean).

The difference between these two graphical representations highlights a deep ambiguity in the claim, “men are better at tech than women.” If it were taken to mean that all men are better than all women, it is an absurd and unforgivable stereotype. But, correctly construed in relation to the full distribution, that proposition means that it is possible to put together a one-to-one correspondence by which, perhaps with rare exceptions, the top male will have higher scores than the top female, and so on down the line. So understood, there is an enormous overlap between the two distributions, with the result that the women in the upper tail on the female distribution are superior to the many men who lie to their left.

This statistical formulation shows that the observed gender *ratios* at Google and Facebook need not be a matter of discrimination, although that lopsided ratio, standing alone, cannot exclude the possibility that some such discrimination takes place. By the same token, if the number of female workers holding these tech jobs were to far exceed the number predicted by accurate statistical information, it would likely indicate some institutional discrimination in favor of women candidates (barring alternative explanations). That is surely the case at both Google and Facebook with their strenuous and explicit efforts to increase female representation in the tech ranks. Indeed, if management at both companies thought that there were no differences in tech abilities in the male and female applicant pools, they would not bother with extensive—and, apparently, still unsuccessful—efforts to increase the fraction of women in their tech workforce.

At this point, it becomes possible to explain the cultural breakdown inside Google. If Google used the same rough hiring standards for its male and female applicants, the differences in performance should be of less importance. But once it is known to all that a diversity program draws its workers from two different pools, the social dynamic changes. Now, the male employees (and the female employees whose hiring precedes these efforts) do not know which new female hires made it into the job on a gender-neutral basis and which did not. The point matters in an industry where merit determines personal advancement, because no strong worker of either sex wants to be caught with weaker coworkers on a joint project. It is easy to see, even if impossible to justify, the backbiting and disrespect towards female employees whose overall contribution to the project is believed by male workers to be lower than their own. And so it is the very existence of the supposed diversity program that generates many of the social tensions that are reported by other male and female employees alike.

The situation gets only worse when the issue is examined in dynamic terms. As economists Edward Lazear and Sherwin Rosen [wrote](#) years ago, job promotion resembles a tournament format like those used in chess and tennis. With each successive round, the weaker players are weeded out until only the stronger ones remain. Any initial gaps between the men and women in tech jobs therefore will only increase with each successive round. The explanation is mathematical. In oversimplified style, imagine that the men are evenly distributed from 10 to 20 and the women from 5 to 15. When the first cut is complete, the surviving men will rank between 20 and 15 and the surviving women between 15 and 10, so that the overlap disappears. The gaps only increase thereafter with each successive cut.

What to do

This underlying trend is a problem for Google and Facebook with their sensitivities to gender imbalances. But how best to respond? Unfortunately, there is no simple solution. One possibility is to use somewhat different promotional standards. Another is to promote women into roles where the technical skills matter less. Yet another is to invest more resources, as Google and Facebook have done, to narrow the gap. Unfortunately, the one strategy that will not work in the long run is to heap verbal abuse against foolhardy dissidents like James Damore who failed to grasp the ironic power of the old maxim, “the greater the truth, the greater the libel.” Damore’s memo provoked such a hostile response because it rang true.

Sundar Pichai

Note to employees from Google CEO

August 8, 2017

A difficult time

This has been a very difficult time. I wanted to provide an update on the memo that was circulated over this past week.

First, let me say that we strongly support the right of Googlers to express themselves, and much of what was in that memo is fair to debate, regardless of whether a vast majority of Googlers disagree with it. However, portions of the memo violate our Code of Conduct and cross the line by advancing harmful gender stereotypes in our workplace. Our job is to build great products for users that make a difference in their lives. To suggest a group of our colleagues have traits that make them less biologically suited to that work is offensive and not OK. It is contrary to our basic values and our Code of Conduct, which expects “each Googler to do their utmost to create a workplace culture that is free of harassment, intimidation, bias and unlawful discrimination.”

The memo has clearly impacted our co-workers, some of whom are hurting and feel judged based on their gender. Our co-workers shouldn’t have to worry that each time they open their mouths to speak in a meeting, they have to prove that they are not like the memo states, being “agreeable” rather than “assertive,” showing a “lower stress tolerance,” or being “neurotic.”

At the same time, there are co-workers who are questioning whether they can safely express their views in the workplace (especially those with a minority viewpoint). They too feel under threat, and that is also not OK. People must feel free to express dissent. So to be clear again, many points raised in the memo—such as the



portions criticizing Google's trainings, questioning the role of ideology in the workplace, and debating whether programs for women and underserved groups are sufficiently open to all—are important topics. The author had a right to express their views on those topics—we encourage an environment in which people can do this and it remains our policy to not take action against anyone for prompting these discussions.

Google's code of conduct

The past few days have been very difficult for many at the company, and we need to find a way to debate issues on which we might disagree—while doing so in line with our Code of Conduct. I'd encourage each of you to make an effort over the coming days to reach out to those who might have different perspectives from your own. I will be doing the same.

I have been on work related travel in Africa and Europe the past couple of weeks and had just started my family vacation here this week. I have decided to return tomorrow as clearly there's a lot more to discuss as a group—including how we create a more inclusive environment for all.

Further reading

[How Far Has Gender Equality Come? Tech Insiders Share Their Insights](#) 3/10/2020

[REPUBLICAN engineer \(Kevin Cernekee\) fired by Google says company bullies conservatives](#) 8/1/2019

[Kevin Cernekee slams Google](#) Fox News 8/2/2019

[Google fires conservative engineer \(Mike Wacker\) who exposed bias against conservatives](#) 6/1/2019

[James Damore's diversity lawsuit against Google comes to quiet end](#) – May 2020