

OPINION

How a Tiny Bit of Gender Bias Adds Up to Hurt Women's Careers

By Jessica Nordell
Graphics by Yaryna Serkez

When the computer scientist and mathematician Lenore Blum announced her resignation from Carnegie Mellon University in 2018, the community was jolted. A distinguished professor, she'd helped found the Association for Women in Mathematics, and made seminal contributions to the field. But she said she found herself steadily marginalized from a center she'd help create — blocked from important decisions, dismissed and ignored. She explained at the time: "Subtle biases and micro-aggressions pile up, few of which on their own rise to the level of 'let's take action,' but are insidious nonetheless."

It's an experience many women can relate to. But how much does everyday sexism at work matter? Most would agree that outright discrimination when it comes to hiring and advancement is a bad thing, but what about the small indignities that women experience day after day? The expectation that they be unfailingly helpful; the golf rounds and networking opportunities they're not invited to; the siphoning off of credit for their work by others; unfair performance reviews that penalize them for the same behavior that's applauded in men; the "maninterrupting"?

When I was researching my book "The End of Bias: A Beginning," I wanted to understand the collective impact of these less visible forms of bias, but data were hard to come by. Bias doesn't happen once or twice; it happens day after day, week after week. To explore the aggregate impact of routine gender bias over time, I teamed up with Kenny Joseph, a computer science professor at the University at Buffalo, and a graduate student there, Yuhao Du, to create a computer simulation of a workplace. We call our simulated workplace "NormCorp." Here's how it works.

NormCorp is a simple company. Employees do projects, either alone or in pairs. These succeed or fail, which affects a score we call “promotability.” Twice a year, employees go through performance reviews, and the top scorers at each level are promoted to the next level.

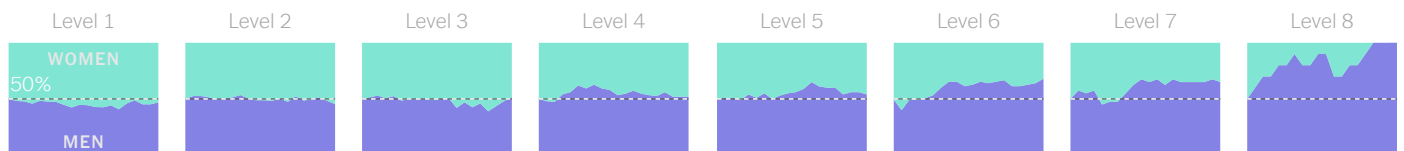
NormCorp employees are affected by the kinds of gender bias that are endemic in the workplace. Women’s successful solo projects are valued slightly less than men’s, and their successful joint projects with men accrue them less credit. They are also penalized slightly more when they fail. Occasional “stretch” projects have outsized rewards, but as in the real world, women’s potential is underrecognized compared to men’s, so they must have a greater record of past successes to be assigned these projects. A fraction of women point out the unfairness and are then penalized for the perception that they are “self-promoting.” And as the proportion of women decreases, those that are left face more stereotyping.

We simulated 10 years of promotion cycles happening at NormCorp based on these rules, and here is how women’s representation changed over time.

Simulation of Normcorp promotions over 10 years, with female performance undervalued by 3 percent



Simulation results over time



Note: Each run of this interactive shows one of the 100 simulations conducted by the author.

These biases have all been demonstrated across various professional fields. One working paper study of over 500,000 physician referrals showed that women surgeons receive fewer referrals after successful outcomes than male surgeons. Women economists are less likely to

receive tenure the more they co-author papers with men. An analysis at a large company found that women's, as well as minority men's, performance was effectively “discounted” compared to that of white men.

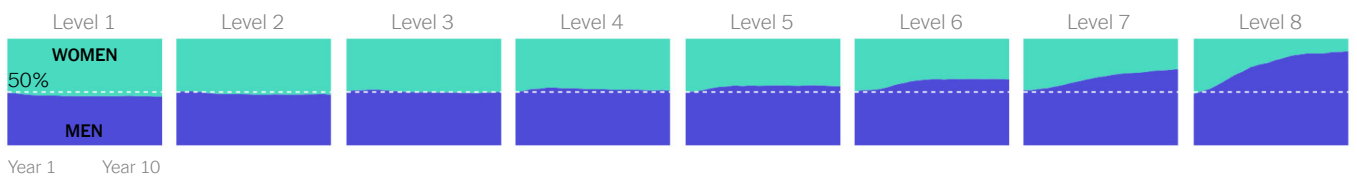
And women are penalized for straying from “feminine” personality traits. An analysis of real-world workplace performance evaluations found that more than three-quarters of women's critical evaluations contained negative comments about their personalities, compared to 2 percent of men's. If a woman whose contributions are overlooked speaks up, she may be labeled a self-promoter, and consequently face further obstacles to success. She may also become less motivated and committed to the organization. The American Bar Association found that 70 percent of women lawyers of color considered leaving or had left the legal profession entirely, citing being undervalued at work and facing barriers to advancement.

Our model does not take into account women, such as Lenore Blum, who quit their jobs after experiencing an unmanageable amount of bias. But it visualizes how these penalties add up over time for women who stay, so that by the time you reach more senior levels of management, there are fewer women left to promote. These factors not only prevent women from reaching the top ranks in their company but for those who do, it makes the career path longer and more demanding.

Small change, big difference

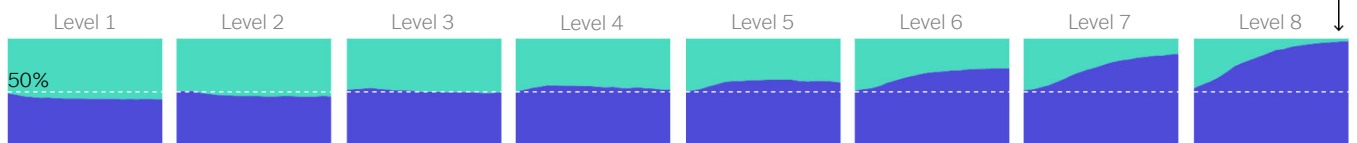
Even a tiny increase in the amount of gender bias could lead to dramatic underrepresentation of women in leadership roles over time.

Women's performance is valued 3 percent less



Two times fewer women at level 7 and only 2 percent of women at C-suite.

Women's performance is valued 5 percent less



Note: Average result based on 100 simulations.

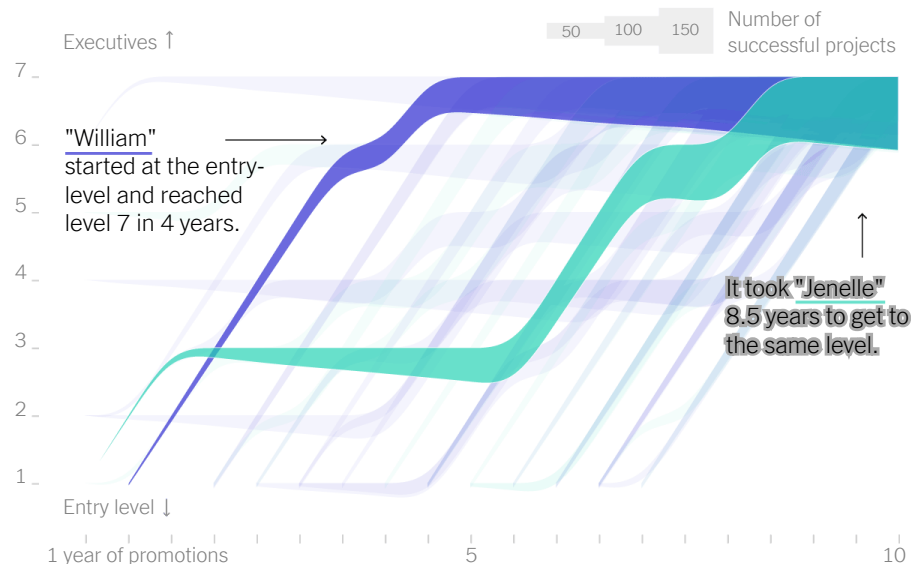
When we dig into the trajectory of individual people in our simulation, stories begin to emerge. With just 3 percent bias, one employee — let's call her Jenelle — starts in an entry-level position, and makes it to the executive level, but it takes her 17 performance review cycles (eight and a half years) to get there, and she needs 208 successful projects to make it. “William” starts at the same level but he gets to executive level much faster — after only eight performance reviews and half Jenelle's successes at the time she becomes an executive.

Our model shows how large organizational disparities can emerge from many small, even unintentional biases happening frequently over a long period of time. Laws are often designed to address large events that

happen infrequently and can be easily attributed to a single actor—for example, overt sexual harassment by a manager — or “pattern and practice” problems, such as discriminatory policies. But women’s progress is hindered even without one egregious incident, or an official policy that is discriminatory.

Women's path to success might be longer and more demanding

Career paths for employees that reached level 7 by the end of the simulation.



Note: Shows one of the 100 simulations conducted by the author, gender bias at 3 percent.

Gender bias takes on different dimensions depending on other intersecting aspects of a person’s identity, such as race, religion, ethnicity, sexual orientation, disability and more. Another American Bar Association study found that white women and men of color face similar hurdles to being seen as competent, but women of color face more than either group.

Backlash, too, plays out differently for women of different racial groups, points out Emory University management professor Erika Hall. A survey of hundreds of women scientists she helped conduct found that Asian American women reported the highest amount of backlash for self-promotion and assertive behavior. An experimental study by social psychologist Robert Livingston and colleagues, meanwhile, found that white women are more penalized for demonstrating dominant behavior than Black women. Our model does not account for the important variations in bias that women of different races experience.

So what’s to be done? Diversity trainings are common in companies, educational institutions and health care settings, but these may not have much effect when it comes to employees’ career advancement. The sociologists Frank Dobbin and Alexandra Kalev found that after mandatory diversity trainings, the likelihood that women and men of color became managers either stayed the same or decreased, possibly due to backlash. Some anti-bias trainings have been shown to change behavior, but any approach needs to be evaluated, as psychologist Betsy Levy Paluck has said, "on the level of rigorous testing of medical interventions."

We also explored a paradox. Research shows that in many fields, a greater proportion of men correlates with more bias against women. At the same time, in fields or organizations where women make up the majority, men can still experience a “glass escalator,” being fast-tracked to senior leadership roles. School superintendents, who work in the women-dominated field of education but are more likely to be men, are one example. To make sense of this, we conceptualized bias at work as a combination of both organizational biases which can be influenced by organizational makeup and larger societal biases.

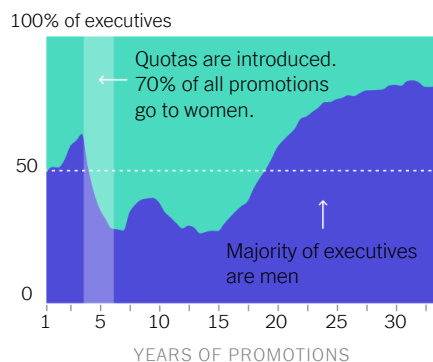
What we found was that if societal biases are strong compared to those in the organization, a powerful but brief intervention may have only a short-term impact. In our simulation, we tested this by introducing quotas — requiring that the majority of promotions go to women — in the context of low, moderate, or no societal bias. We made the quotas time-limited, as real world efforts to combat bias often take the form of short-term interventions.

Our quotas changed the number of women at upper levels of the corporate hierarchy in the short term, and in turn decreased the gender biases against women rising through the company ranks. But when societal biases were still a persistent force, disparities eventually returned, and the impact of the intervention was short-lived.

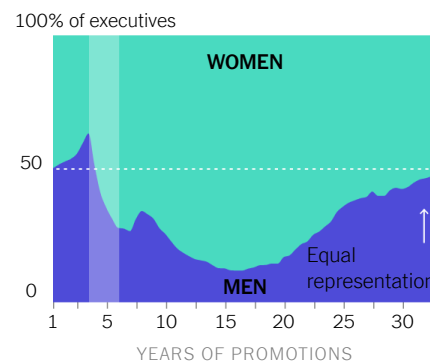
Quotas may not be enough

In the presence of societal biases, the effect of a short-term program of quotas disappears over time.

Societal bias has moderate effect



Societal bias has no effect



What works? Having managers directly mentor and sponsor women improves their chance to rise. Insisting on fair, transparent, and objective criteria for promotions and assignments is essential, so that decisions are not ambiguous and subjective, and goalposts aren’t shifting and unwritten. But the effect of standardizing criteria, too, can be limited, because decision-makers can always override these decisions and choose their favored candidates.

Ultimately, I found in my research for the book, the mindset of leaders plays an enormous role. Interventions make a difference, but only if leaders commit to them. One law firm I profiled achieved 50 percent women equity partners through a series of dramatic moves, from overhauling and standardizing promotion criteria, to active sponsorship of

women, to a zero-tolerance policy for biased behavior. In this case, the chief executive understood that bias was blocking the company from capturing all the available talent. Leaders who believe that the elimination of bias is essential to the functioning of the organization are more likely to take the kind of active, aggressive, and long-term steps needed to root out bias wherever it may creep into decision making.

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