

SUMMER



GOM

2015

"You're in charge DON'T MAKE A MESS!"

If we told you that you had the power to either save or ruin someone's life, would you believe us? When we put it like that, it sounds like a huge responsibility, befitting of a person of immense status and influence. It's a position of power that no decent person would dare take lightly. You'd be surprised by how many people who hold that kind of power don't even realize that they have it, though. The people who define our opinion of the world and ourselves, those who teach us how to think, leave permanent impressions on us. And while we may not believe it, we are those people.

We are the teachers who open students' minds to all the possibilities of the world, we are also the bullies on the playground who forever convince each other of our worthlessness; we're the well-meaning but often naive people who are completely unaware of the impact we have on those who look to us with respect. But can we accept that? How many of us still feel the sting of negativity and the warm glow of encouragement from life encounters with people we respected? These people, for better or worse, have changed us, often without even knowing it. We wonder what the world would be like if we were more prudent with our own influence.

People love to say that someone else's reaction to their influence isn't their responsibility. This is blatantly untrue. Educators are intrinsically trusted, because learning is a process by which we adjust and revise our thought processes and world views as a direct result of our educators' influence. Educators, in this way, hold one of the highest positions in our entire society. And people in positions of power who refuse or neglect to

acknowledge that power and act in a manner not commensurate with their station are criminal or negligent, respectively. So says the law (and common sense); no questions. The problem is, most of us don't consider ourselves to be educators, yet we undeniably are. By nature of the fact that we are budding experts in our fields, mentors to other early career researchers, big sisters and brothers, and organizational leaders, there is someone, somewhere who looks up to us, and whose world will be changed somehow by the things we say and do. We can deny it if we like, but given how big the potential consequences, why take that chance?

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Whoa, that's heavy, but it's not all bad. There have been so many inspiring, goose-bump raising stories of great teachers who save lives just by embracing the power of everyday acts of mindfulness. We're sure you can think of at least

one person who changed the way you think in some meaningful and positive way, and in doing so changed the trajectory of your life. Where would you be without the one person who reached out to you when you were at a

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crossroads in your life and pulled you towards new understanding? What would happen if they instead pushed you aside? Many students do not have traditional parental figures in their lives to act as role models for success and perseverance, and rely on their educators to fulfill these positions in their lives. So, what are the consequences of bad mentorship? Someone takes a left turn when you could have helped them make the right one. We need to weight the type of influence a mentor has over somebody's life, self confidence, and development as much as we weight the things that are legally binding or otherwise troublesome. And given that we're all fallible and we're going to make mistakes, aiming for constant and total mindfulness in our dealings with others is the only thing that makes sense.

We may be thinking that this doesn't yet apply to us, but as graduate students, a critical measure of success, in which most of us have tied up our self worth, is the words and actions of our peers and advisors. We don't have frequent exams or papers. We rarely get graded in any meaningful sense of the word. It is unusual for an excellent student to know that they are excelling unless they are told, because there is very rarely a mechanism for communicating such excellence otherwise. The open format in academia is essential for developing independent thinkers and protecting

intellectual freedom, however, without a common set of standards by which to judge our progress, many of us find ourselves seeking approval. Enter our advisors, our educators, our colleagues, and our peers, all of whom we look to for guidance and confirmation. Many of us know what it's like to have advisors that are careless with us. Those of us who are truly lucky know that thoughtful, considerate, and self-aware mentors can develop the kinds of students that have the confidence and skills to go anywhere and do anything. But should the outcome of one of the most impactful experiences in our adult lives really be left up to luck? We are all either privileged or reluctant products of someone's mentoring philosophy, and we have the choice to either take what we've learned and continue the good or bad practices we've been taught. As graduate students, we are all teachers and mentors - and there are very few moments in life in which we will not be required to act as a teacher or a mentor in one form or another. We don't have a choice in whether or not we influence others; our only

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relevant choice is if we're going to wield that influence to empower or devalue those who implicitly trust and admire us. Regardless of where we end up, we must be mindful in our daily interactions with others. We may never know which of our interactions will end up saving, or ruining, lives, but if we move forward assuming that every interaction will change one in some meaningful way, maybe we'll all do better.

Mindfully yours,
The GQM Editors

Joelle A. Labastide
Dina Navon

"helping you help me: ADMINISTRATIVE STEPS TOWARD GENDER EQUITY IN ACADEMIA"

Do you need a reminder of how gender biases exist in STEM fields? Cool, me too. Here is a partial list of studies which demonstrate implicit bias towards women in STEM fields. Moss-Racusin & Handelsman (2012) showed that in the hiring of lab managers where the same resume was reviewed, but substituting traditionally female and traditionally male names, the women were less likely to be hired, the women were offered less pay, and faculty were less willing to mentor women. Steinpreis, Andres & Ritzke (1999) found wide discrepancies between male and female genders on reviews of CVs for faculty job applications and tenure candidacy. Trix & Psenka (2003) highlighted gender bias in language used to describe faculty candidates in recommendation letters. Harvard University has come up with an online tool called [Project Implicit](#) where you can check your own implicit bias on a number of topics like race, gender, and sexual orientation. And so on, forever, this stuff is actually really easy to find on Google.

What really sucks is that these studies all focus on binary gender identities (man/woman) and completely ignore the existence of nonbinary gender identities. I'll write an article on that later.

Institutional change is undeniably important to social movements, and the movement towards gender equity in STEM fields is no exception. [Missy Titus](#) explains a metaphor which compares trying to succeed as a woman in STEM to trying to run up a "down" escalator. This metaphor portrays the importance of institutional change very clearly. While women can organize to provide one another with encouragement and support in their journey up the "down" escalator, it is institutions which have the power to, say, switch the direction of the escalator, or to allow women to ride the men's "up" escalator. The point is that women shouldn't have to work twice as hard for the same career payoff as men. Rather, institutions should make steps towards making the same amount of work equal the same payoff regardless of gender identity.

It is painfully obvious in my department that there are not very many different genders represented, and that there are very few women. My professors, department heads and deans have started to notice this. A few of them have even asked me what they can do help. It's been a decent mix of people who I'm pretty sure are just asking so they can check it off their being-a-good-person list (ick), with people who actually care about my humanity and want me to succeed (yay!). Either way, though, I have been asked this enough times that it felt worthwhile to carefully consider my answers and formulate a few suggestions which I pose here as a decent starting place. This is by no means a comprehensive list.

by Rachel Striker Koh

require all university faculty, staff, and students to undergo training on sexual harassment

Not that we need to hear it from a Yale professor to make it real, but in case anybody needs a Ph.D. scientist to say it, Dr. Priyamvada Natarajan (professor of Astronomy at Yale and invited speaker for Gender Matters lecture series in April 2016 at UMass) suggested in her lecture an "improved research policy and education on sexual misconduct" as one way to decrease the "gender gap" in STEM academia. UMass faculty are required to do one training when they are hired, but never again. A better policy, which has been adapted by many universities and is required by law in some states, would be to require faculty to renew this training every two years. An even better policy would require staff and students to do the same.

incentivize faculty to broaden their curricula

The ABET engineering education criteria were broadened in 2000 to an "A-K" approach which looks at engineering education in a holistic and multidisciplinary way. Departments are encouraged to educate students across broadly-defined learning outcomes, including effective communication and an understanding of the "impact of engineering solutions in a global, economic, environmental, and societal context." Engineering courses, then, should consider this broader spectrum of learning outcomes. For example, the study of thermodynamics includes principles that could apply to gas engines, the human metabolism, and solar energy. It has been shown that broader applications of engineering appeal more to women and students of color-- this was part of the rationale for broadening the scope of the ABET criteria in the first place. But my thermodynamics class only included gas engines in the curriculum-- at many universities there is no incentive to actually broaden curricula, so these 15-year-old updates to the ABET criteria haven't made their way into most university classrooms. Professors who have been teaching the same class the same way for years or decades have no reason to spend the extra effort to make their curricula more inclusive. Even new professors have no incentive to pay attention to inclusivity, or to develop curricula that differ from what they were taught. Department heads and deans could encourage the adoption of more broad-based curricula by offering faculty and departments incentives to this effect.

all-gender restrooms

We cannot talk about gender inequity without talking about trans*, nonconforming and nonbinary gender identities. (Well, we can, the women in STEM movement has, and this is enormously problematic.) While cisgender women are victims of gender-based oppression in STEM fields and on college campuses, trans* and gender nonconforming folks face a whole slough of gender-based oppression that we don't even have to think about. It's not my experience to speak to, but there are all kinds of online resources for learning about the experiences of trans* folks and how to support them. Genny Beemyn, director of the UMass Stonewall Center, has made recommendations for university policies, including making all-gender restrooms easily accessible across campus and including preferred name and pronoun on class rosters.

Gender Bias: At a Glance

AS TOLD BY GOOGLE

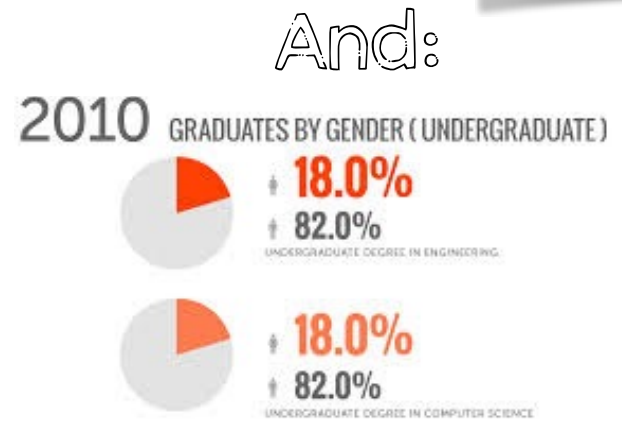


but we're here...



"Female junior faculty in the life sciences are still paid less than men, and they still have more trouble gaining tenure" (Guardian)

"Men are much more likely than women to have a STEM job regardless of educational attainment." (ESA)



Women hold only 27% of all computer science jobs (Forbes)

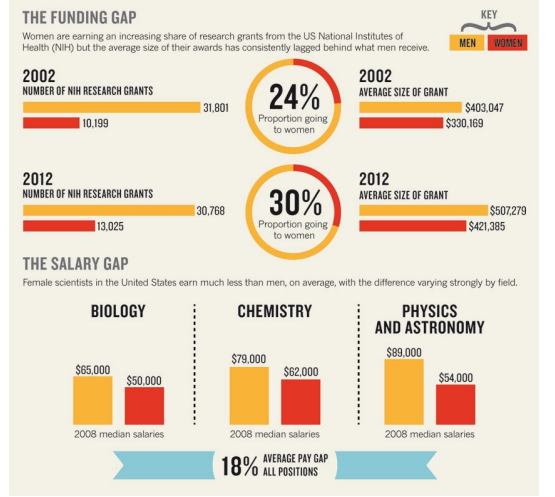
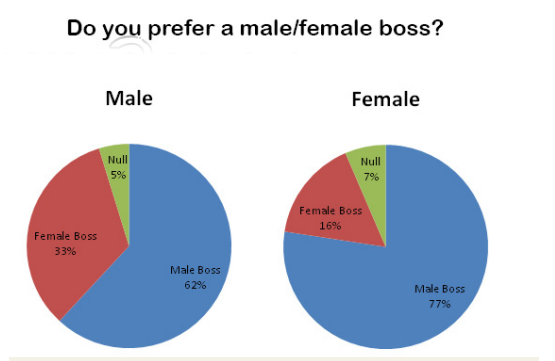
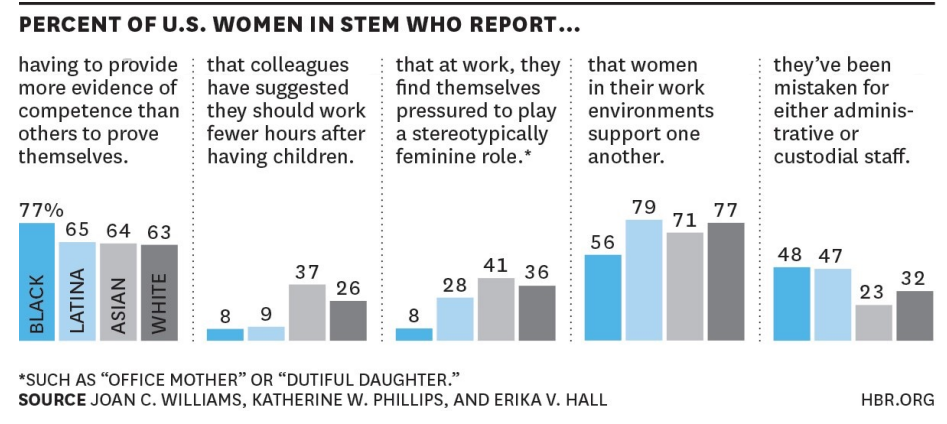
Women have seen no improvement in STEM since 2001

Women remain as scarce as ever in engineering, computing, and advanced manufacturing.

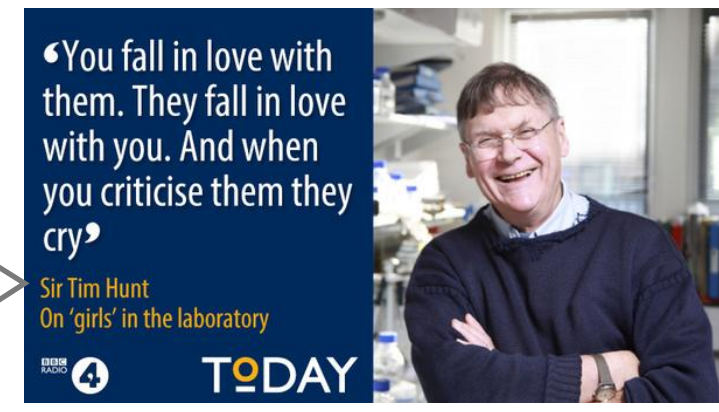
Women as a percentage of the:	2001	2014
Engineering Workforce	25%	24%
Computing Workforce	36%	36%
Advanced Manufacturing Workforce	19%	18%

Source: Change the Equation, "The Diversity Dilemma," 2015

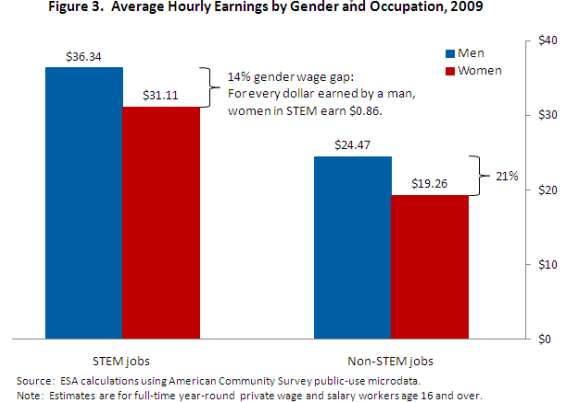
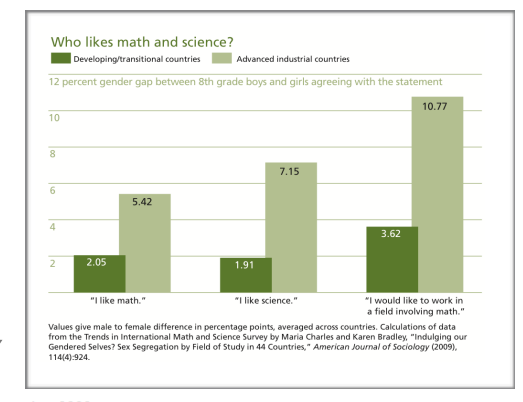
In part because of these things...



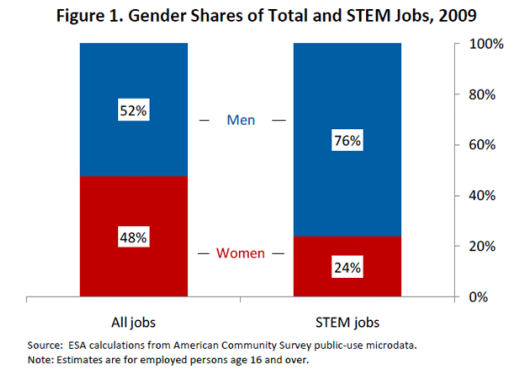
don't forget this guy



This is hopeful



"Women who do receive STEM degrees are less likely to work in STEM jobs than their male counterparts" (ESA)



understand intersectionality: hire faculty of color and especially black women

We also cannot talk about gender inequity without talking about the uniquely intersectional experiences of women and trans folks of color. A [Harvard Business Review study](#) revealed that among a multiracial group of women in STEM, Black women are more likely to report having to provide more evidence of competence than others to prove themselves, they are less likely to report that women in their work environments support one another, and they are more than twice as likely to be mistaken for administrative or custodial staff as compared to white women. Seek out and recruit faculty of color. Look harder. Hire them. Hire so many of them. As full professors. Then advocate for them. Support them. Recognize how difficult it is to be a faculty member of color at a predominantly and historically white university. Do so much better than an [affirmative action statement](#). Do so much better than you are doing now.

require faculty to attend workshops on inclusive teaching

Most faculty probably don't even realize how bias can show up in their teaching. Most faculty probably aren't trying to perpetuate oppression in their classrooms. Most faculty I know are good people who care about being good teachers. But [even the most well meaning teachers can bring bias into the classroom without knowing it](#). Faculty and administrators need to know what [microaggressions](#) are and how to avoid perpetuating them in their classrooms (e.g. learn how to pronounce non-anglo names, even if it is hard or takes time.) [Mervis \(2005\)](#) showed in a study on gender bias in peer review articles that just educating reviewers on implicit bias helps to decrease that bias. The same principle applies to teaching. A [study from the University of Michigan](#) demonstrates that internal committees of scientists and engineers who have studied the literature on gender and science, and convey these findings to their colleagues, are especially effective.

new author reflection

"Escaping Expectations, CREATING ASPIRATIONS"



photo by Lee Walsh

by Christie Laurel Cutting

When I joined the GWIS communications committee this summer, I found myself the single inexperienced member of a committee full of people who had the obvious camaraderie, productivity, and openness of a group that has been working closely together for quite a while. Eager to integrate into a group that I immediately found inspiring, I volunteered at the first meeting to write an article on probably the only topic I had the cred to write about: why I joined GWIS. A great plan, right? Except I realized that, up until that point, I hadn't actually thought deeply about why I joined this particular organization.

So, there is the obvious reason - the fact that gender disparity and inequality still exist in a world that is so forward thinking in other ways equally

baffles and infuriates me. Through my work in research, I have witnessed intelligent people creatively and systematically solve some of the world's most difficult problems but remain unable or unwilling to treat people equally because of their gender. This has been an eye-opening experience and a clear signal to me that gender issues are far from settled, though many like to claim they are.

Digging a little deeper, I realized that I have been fortunate to have a few key female STEM mentors in my life, so the thought of entering into a STEM field was destigmatized for me in a way which it is unfortunately not for so many women and girls. I could certainly reason that, in joining GWIS, I was

hoping to find ways of serving as an example for someone, in even a minute way, of a thriving woman in STEM, and to provide that destigmatization that I did not even realize at the time was so important to my choice of future career.

Looking back even farther now - what was the particular stigma that I overcame to get where I am today? I grew up in a socioeconomically disadvantaged community in North Carolina, where if you made it out of high school without getting pregnant or addicted to drugs you could settle down and fulfill your womanly duty of raising a nice southern family. It wasn't that I felt actively oppressed - it was more that almost nothing was expected of me. I'd be an upstanding member of my community just by graduating high school and waiting to have babies until I was married. I mired in this

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situation through most of my adolescence, feeling stuck and uninspired, until I had a small conversation with someone where they described to me the characteristics of a scientist: detail-oriented but never losing sight of the big picture, great at solving puzzles and recognizing patterns, and always curious about the world around them.

Well, something clicked, because from that moment on I was happy to forsake friends, family, and any remnant of a sense of community for pursuing my ambition to become a scientist and having an impact that could reach farther than the tiny world I found myself trapped in. No one tried to stop me because no one knew what I was doing - I didn't trust anyone to support me in my goal. I thought that I would at best encounter indifference and at worst staunch resistance. So I pursued my own science education and eventually applied to colleges and

scholarships, and not even my parents entirely knew what I was doing until I told them which schools I was accepted to and how I planned on affording them (mostly through a huge amount of student loans).

Since going to college, I've met a myriad of inspiring, passionate, ambitious people who I have identified with and opened up to, but I know that the path I took was unusual. I got out of my community through a combination of luck, crippling debt, and passion that bordered on unhealthy obsession; even though I have achieved some measure of happiness and balance since then, it was hardly a healthy way of achieving my goals. Leaving these types of communities is an option that never occurs to many people and is unfortunately inaccessible to many others. Complicating matters further, this inaccessibility and resistance to these types of paths is disproportionately placed on women. The odds of a woman breaking out of her traditional, expected role in such situations are slim, even in the headstrong, short-sighted, unsupported way that I did it. And doing that in what would be considered a healthy, traditional way? The odds are almost too slim to consider, so many of us just don't.

So, I could come up with reasons why I had joined GWIS, but they only served to make me feel more insecure about writing this article. Most of my reasons seemed so generic! Were the connections to my past true motivating factors or only after-the-fact rationalizations? How could I match the passion and leadership that I felt in every other woman at the GWIS meeting? Can I really claim to be doing

. . .What is the process of change and what is the role of the individual in it?

anything to further this cause that I say that I care about by just showing up to a meeting?

Instead of allowing myself to continue to spiral into self-deprecation (a bad habit of mine, for sure), I decided to approach the issue more generally and scientifically – how are unjust things changed? What is the process of change and what is the role of the individual in it? The thing is, when we think of big societal change, we don't think of ordinary individuals; we associate it with larger than life leaders. While this is a uniquely and beautifully human way of viewing progress, it is not only wrong but can actively impede change. We can take a lesson from thermodynamics on this – changing a system from its current state requires an input of energy. It is not hard to qualitatively imagine the immense energy input that would be required to change something as massive and entrenched as the thought process of an entire society. While leaders and figureheads without a doubt catalyze such changes, the majority of that energy comes from the sustained effort of many, many people who believe steadfastly that the change is possible.

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While there is no doubt that progress has been made in addressing gender-related inequality, it is a change which is absolutely still in progress, and one that you can undoubtedly contribute to. You are doing so much more than you think by just showing up and saying "What can I do to help?" You are doing so much more than you think by just having one conversation with someone in which you change their perspective on gender, even a little bit. You are doing so much more than you think by publicly showing your support for those who are discriminated against because of their gender identity.

I am taking some amount of time out of my life to write this article, an amount which is small compared to the time I spend on other things in my life – my research, my friends, my hobbies, my family. But if only one person reads this article and is inspired to act in their own small way, I will have definitively pushed an entire society just that little bit closer to equality. And it is the sum of these millions of tiny influences that eventually overpowers forces as powerful as prejudice and hate, and shifts the equilibrium in a positive way.

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So, why did I join GWIS? Because the equal treatment of people of all genders is a change that I believe is possible, that I believe is necessary, that I believe will elevate our society, and that I truly believe will be something we can only accomplish together.

Editorial Comment

We are so pleased to officially introduce Christie to the GWIS community, second year PhD student in Chemistry and new member of the GQM team. When we met Christie, we were immediately inspired by her brilliant, brave, and tenacious approach to just about everything, and were fascinated with her unique and thought provoking story. As an active member of several student organizations, and with a flare for solving problems (chemical and otherwise), Christie is our kind of gal: committed to professional and personal excellence, and just enough fun.

See a bit of yourself in Christie's story?

[Click here to leave her a note](#)

