



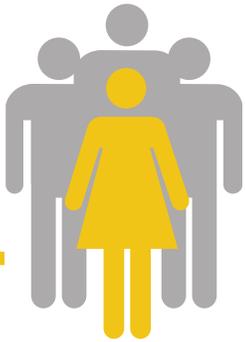
THE GENDER DIVIDE IN ACADEME

Insights on Retaining More
Academic Women



THE CHRONICLE
of Higher Education

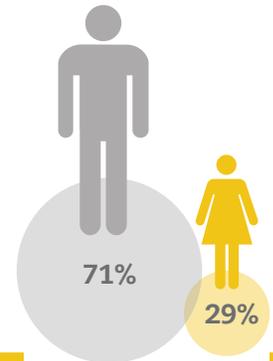
WHERE ARE ALL THE WOMEN IN HIGHER ED?



Women fill **1 in 4** college presidencies



It's a fact:
Women are underrepresented in academic and administrative ranks across campus.

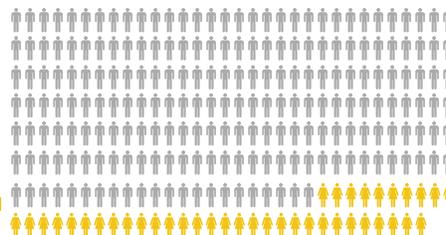


Women only represent **29%** of full professors in the U.S.



Men cite their work **64%** more than women in the past 10 years

Women accounted for **40 of the 254** people who served as chief executives of public universities and public college systems



71% of women are much more likely than men to experience both **sexual harassment and assault in STEM fields**

Women fill 1 in 4 college presidencies. Kelly Ward and Pamela L. Eddy, "Women and Academic Leadership: Leaning Out," The Chronicle of Higher Education.

Women account for 40 of the 254 people who served as chief executives of public universities and public college systems. Jonah Newman, "Women Are Underrepresented as College Chiefs but May Get Higher Pay," Data Points blog, The Chronicle of Higher Education.

Women only represent 29% of full professors in the U.S. Kelly Ward and Pamela L. Eddy, "Women and Academic Leadership: Leaning Out," The Chronicle of Higher Education.

Men cite their work 64% more than women in the past 10 years. Robin Wilson, "New Gender Gap in Scholarship," The Chronicle of Higher Education.

71% of women are much more likely than men to experience both sexual harassment and assault in STEM fields. Kelly J. Baker, "Science Isn't the Problem; Scientists Are," Vitae.



Women in Academe

There is evidence supporting that women are underrepresented in academe today. How can colleges and universities open up the path to leadership for women in the future? In this special collection of articles, read a variety of perspectives on the gender gap in higher education, including how some colleges are creating ways to retain and support female academics.

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How Small Changes Are Improving Gender Balance at One Business School

By *Beckie Supiano*

Women are underrepresented among business leaders. The University of Michigan at Ann Arbor's Ross School of Business wants to change that. And it's starting at home.

In recent years, the school has worked to increase the shares of its faculty members and doctoral students who are women. That's one way the school can help address a larger social problem, says Alison Davis-Blake, its dean. Besides, she says, it's hard to draw a diverse student body—an institutional goal—to study with a homogenous faculty.

The effort has had some success. Women are better represented among both professors and doctoral students than they were in 2010, the year before Ms. Davis-Blake arrived. Thirty-one percent of faculty members are now women, for instance, up from 26 percent in 2010.

Percentages don't tell the whole story, Ms. Davis-Blake says. For one thing, the numbers in question are relatively small: Ross has only about 120 faculty members and 90 to 100 doctoral students. Part of the effort is hiring and retaining women in fields where they are especially underrepresented, like finance and accounting. And the climate women face, as well as their number, matters. Still, the numbers do show that the school has in fact hired more women.

Share of Ross Faculty Who Are Women



So how did Ross do it?

Not with quotas, Ms. Davis-Blake is quick to point out. Not only would using quotas be illegal under state law, she says, but it probably wouldn't work.

Instead, she says, the school has introduced a number of small changes that have had outsize effects.

Like expanding the pool of interviewees. It's an obvious idea, Ms. Davis-Blake says, but still important: "If you don't interview women, you will never hire women." And in some cases, Ross hadn't been interviewing any. In the typical hiring process, faculty members came up with a ranked list of seven or eight candidates, and the top three would be brought in for interviews. The lists often included women, Ms. Davis-Blake says, but in some cases the top woman was listed fourth or fifth.

Evaluating job candidates is subjective work. And research shows that "we all have a little bias that we tend to like people who are like us," Ms. Davis-Blake says. So in an intuitive process based on limited information, a male-dominated faculty might give just enough preference to other men to effectively rule out women who'd be just as good—or even better.

So Ross started to bring in the top five candidates instead of the top three. That increased the odds of getting female candidates to the campus. Once professors and a candidate interact in person, Ms. Davis-Blake says, similarity bias is easier to overcome.

Interviewing more candidates might cost a bit more money, and it requires more time. But Ms. Davis-Blake likes that the change is "not a heavy-handed administrative intervention." Faculty members still make the hiring decisions, she says. They are simply given the resources to consider more candidates.

Flexibility in Hiring

Ross can also provide some flexibility to the next phase of the hiring process, Ms. Davis-Blake says. If, for example, the faculty's top choice is a man and a strong second choice is a woman, the school can move another faculty line forward a year so that both candidates can be hired, if that's what the faculty wants. Such a step eliminates the risk of coming back a year later and not having a female candidate the faculty would be excited to hire.

In addition, Ross has started requiring professors who lead searches to go to a university training session that covers issues including bias.

There's been a support system for female faculty members at Ross for some time, says Gretchen Spreitzer, a professor of management and organizations. She points to "the Neighbors Group," a gathering of women on the faculty that started up shortly after she earned her Ph.D. at Ross, in the late 1990s, and continues today.

What has changed, Ms. Spreitzer says, is that those issues are now a formal, high-level priority at the school.

Cindy K. Soo joined Ross as an assistant professor of finance last year. She wasn't especially looking for a position where she would have female colleagues. After all, it's not as if there's an easy way to reach gender balance. If there were, it wouldn't still be an issue.

But since coming to Ross, she says, she has found it helpful to be in an environment where she can talk about the particular challenges of being a young, female professor.

Ms. Soo had heard stories about how difficult M.B.A. students can be in class, and she wondered: "Are they going to respect me as much because I'm a woman?"

But her first semester of teaching went well, she says, and the students were largely respectful. She had gone in armed with advice: Explain your own background and how you add value to the class you're teaching. Acknowledge that some students have a lot of experience, and ask them to use that to contribute to the class.

Similar Effort at Harvard

Ross is not the only business school trying to hire more female professors. A similar effort is under way at Harvard Business School, as part of a larger project to improve the climate for women there.

Harvard has moved on several fronts, says Frances Frei, senior associate dean for faculty planning and recruiting. It has, for instance, redesigned maternity leave to better fit with professors' teaching responsibilities. And once the school knows it wants to hire candidates, it proactively offers to help deal with potential reasons they might turn down an offer, such as finding work for a trailing spouse. When it comes to those issues, "it's not all women, and it's not no men," Ms. Frei says. The goal, she says, is to prevent good candidates from saying no due to "artificial barriers."

Those and other changes have made a difference in the past couple of years, says Ms. Frei, though she declines to provide numbers to illustrate their impact. Now, she says, Harvard is seeking a way to improve gender balance among lateral hires for senior positions. The school has had better luck getting top men than top women for such positions, Ms. Frei says. The likely culprit? A well-intentioned policy that such hires visit for a year first. That seems to present more of a hurdle for women, Ms. Frei says.

More Female Doctoral Candidates

If having more women on the faculty is important for business schools, then the Ross School has responsibilities on the supply side, too. So it has also been working to bring in more female doctoral candidates.

Share of Ross Ph.D. Students Who Are Women



Much of that effort is about raising awareness. Ross is looking for candidates who have strong research skills,

including quantitative ones. A good student in, say, psychology might not even realize that being a business-school professor is a possible career for someone with that background, says Wally Hopp, senior associate dean for faculty and research.

That's a shame, Mr. Hopp says, because it can be a great career. It's rewarding work, he says, helping to shape future leaders. The pay's good, too.

One way to spread the word is marketing materials. Ross sends brochures to a variety of departments—including sociology, psychology, economics, and engineering—at top universities around the world, Mr. Hopp says.

Another is talking to students right at Ross. Pulling students aside to ask if they've thought of becoming a professor, and saying they'd be good at it, can make a big difference, says Ms. Spreitzer, the management and organizations professor.

Christina Zafeiridou, for one, always knew she wanted to earn a Ph.D. Now a doctoral student in her fourth year of Ross's program in finance, Ms. Zafeiridou says that being a woman in a male-dominated field can sometimes be an advantage. Students, she says, might be more comfortable interacting with female faculty members. And in general, she says, "someone might think: She must be really good to do something mostly men do." Of course, Ms. Zafeiridou adds, such a perspective expects less of women in the first place.

Improving gender parity is a process where "success builds success," says Ms. Davis-Blake, the dean. Imagine a doctoral program with no women, she says. Why would a woman want to come? But, she adds, the reverse is true as well. As the school becomes more diverse, bringing in more diverse faculty members and students gets easier.

Cassandra R. Aceves, a third-year doctoral student, says she has found the environment at Ross to be very supportive of her atypical situation. Ms. Aceves's husband is also going for a Ph.D.—in a different state—and they have young twins. Being around successful female faculty members who broke down barriers sends a message, Ms. Aceves says, "that this is attainable."

It's an empowering thought. "I'm untraditional," Ms. Aceves says. "But I want a world where everybody is well represented, so I have to go and make it."

Beckie Supiano writes about college affordability, the job market for new graduates, and professional schools, among other things. Follow her on Twitter @becksup, or drop her a line at beckie.supiano@chronicle.com.

How U. of San Diego Added 8 Female STEM Professors

By *Lisa M. Baird*

Approximately 60 percent of our majors in the STEM disciplines at the University of San Diego are female, but within those disciplines the percentage of female faculty isn't even close to that. Our desire was to promote opportunities for women in STEM fields and have a more representative faculty.

The university applied for and was awarded a grant by the National Science Foundation to fund a program called Affirm, which stands for Advancement of Female Faculty: Institutional Climate, Recruitment and Mentoring, to increase the representation and advancement of women in academic science and engineering careers.

In November 2010, members of that program, an interdisciplinary team of female professors, submitted the proposal to the NSF. We knew that the funding could be used to attract and develop strategies to hire women faculty members, while the university in turn would pay for the salaries of the new hires. In 2011 we received a five-year, \$600,000 grant.

One of the first things we did next was conduct a campus-climate survey through a questionnaire and with focus groups to gauge how supported the faculty felt by the administration and their peers, and to address what we could do differently with new female faculty hires.

The other piece was implementing a strong mentoring program for existing women faculty members. I was fortunate that my Ph.D. professor was one of those pioneering women, who taught me not just about science but also about the academic community. At that time, mentorship was hard to come by. We wanted to stress that mentorship can be a strong component of success.

Originally we were promised two faculty positions. As we talked with the provost and deans of the colleges of arts

and sciences and of engineering about how to advertise for the two positions, we came up with the idea of a cohort or cluster hire across disciplines.

Typically science-position ads are written tightly and prescriptively, but we wanted to try something different. Rather than picking a single department, we listed all the possible departments to which a person could apply. Our ad was wide open. We also asked candidates to describe how they would envision working as part of an interdisciplinary cohort; how they would promote interdisciplinary collaborations in the undergraduate curriculum; and their approach to, and experience with, mentoring female students and students from underrepresented backgrounds.

We had a huge number of applicants, from diverse candidate pools. We were gender-neutral during the application process, but if the choice was between two equally qualified junior-professor candidates, women were chosen. (We were in touch with our legal staff at all stages of the process.) Many of the people we interviewed said they felt drawn to the ad because their interests straddled several departments.

All of the candidates were amazing. That's the reason the provost and deans said, "Let's create additional hiring opportunities," which led to our eight new assistant professors in the STEM fields.

The new professors are Jessica Bell, chemistry and biochemistry; Molly Burke, biology; Odesma Dalrymple, industrial engineering; Imane Khalil, mechanical engineering; Jennifer Prairie, environmental and ocean sciences; Amanda Ruiz, mathematics and computer science; Joan Schellinger, chemistry and biochemistry; and Divya Sitaraman, psychological sciences.

We want this cohort of women faculty members to

get tenure and become longstanding members of the community. We intend to continue to mentor and promote women in the STEM fields. At the science center here, we have work areas in the hallways for students, and as I walk around, I see young women having help sessions with the new professors. There is this incredible energy and sense of possibility between the students and new faculty.

Lisa M. Baird, a professor of biology at the University of San Diego, is the principal investigator in a faculty effort that led to the hiring of a cohort of eight women in science, technology, engineering, and mathematics there. Here is her account of that effort, as told to Mary Bowerman.

Fostering Gender Equity on STEM Faculties Is Not My Job, Some Officials Say

By Audrey Williams June

A new paper provides a glimpse of what administrators in the sciences think about increasing gender diversity among those who teach and do research in those fields. Most of the leaders see that goal as the responsibility of someone else—often, female professors.

The paper is based on interviews with department chairs and deans in science and other STEM fields at an unnamed large, public research university. It reveals that some administrators see building the ranks of women in science departments as largely their responsibility but that more leaders have a passive attitude toward achieving gender equity, often seeing it as something that would happen over time if women behaved differently. Nearly all of the 31 people whose interviews were detailed in the paper, “You, Me, or Her: Leaders’ Perceptions of Responsibility for Increasing Gender Diversity in STEM Departments,” were male.

“Through examining the leaders’ language, I think the study gets at the ways that people try to explain the absence of women in STEM and what they think they can do about it,” said Sara I. McClelland, an assistant professor of women’s studies and of psychology at the University of Michigan at Ann Arbor and the lead author of the paper, which was published online this month, ahead of its publication in a coming issue of *Psychology of Women Quarterly*. “It’s important to learn how we describe our own roles in university efforts.”

Efforts to increase the number of female professors in science, technology, engineering, and mathematics

have been under way for decades. But recent research published in *Science* magazine revealed that the share of women who are being hired is so low that it would take nearly 100 years before half of all professors in those two fields are female.

Ms. McClelland didn’t set out to expose how leaders characterized their responsibilities toward gender equity. But when she was interviewing the administrators to see how much they knew about a federally financed program on their campus that is designed to help women excel in academic careers in science and engineering, she said, they “just wanted to talk about why there were so few women faculty even though I never asked any questions about that.”

Her subsequent analysis of the administrators’ unexpected responses involved separating them into two categories: responses that indicated the person felt a “high personal responsibility” for the gender imbalance and those that reflected “low personal responsibility” for it. The first label was applied to expressions of personal interest in doing something to improve gender diversity, while the second was applied to statements that reflected no such interest.

Sixty-one percent of the administrators were labeled as “low personal responsibility.” The rest, including all three women interviewed, fell into the “high personal responsibility” category. The women saw themselves as being even more personally responsible for increasing their ranks in the field than were the men in the same category.

High vs. Low Responsibility

What kinds of things did “high personal responsibility” participants say during interviews?

“I don’t think I had a good grip ... on what the conditions were like for women in the sciences here ... it’s pretty shocking to my mind,” said one male administrator quoted in the paper, which was written with Kathryn J. Holland, a Ph.D. student working with Ms. McClelland. “And so, I’ve been moved by it, and motivated by it, quite frankly.”

Some administrators explicitly said they considered it their job to set an example for others to follow in how female faculty members are treated.

“Leadership sets the standard, says, ‘We won’t tolerate this; we won’t tolerate that,’” one man said.

Among the sentiments expressed by low-responsibility participants was that change in the department’s makeup wasn’t necessary. In saying so, they often compared their department with others that had even fewer women in them. Some in that group also said gender discrimination is no longer frequent.

“Looking back on it now, you can see that that sort of thing doesn’t happen anymore,” said a male participant. “At least not that I’m aware of in our program, or I’d like to think it doesn’t in our program.”

The researchers also asked the administrators who they believed should help solve gender-equity issues in STEM fields—men or women. According to the paper, a common theme from administrators was that female faculty members “chose to have families, and as a result, their careers in STEM departments were often cut short.”

That sentiment, expressed by low-responsibility participants, characterized women as being responsible for their own low numbers in the sciences. A member of that same group of administrators also suggested that women can succeed in the sciences if they become “more aggressive” when seeking support as a way to fit into departmental culture.

That characterization of women isn’t new, Ms. McClelland said.

“For decades, women have been described as needing to change themselves in order to fit into STEM-workplace environments instead of the other way around,” she said. “Men are described as sensitive or becoming sensitive to gender issues, but they’re not described as needing to change their attitudes toward women.”

Administrators in the study spoke of male colleagues in a different light. Men were framed as not part of the problem but as being responsible for solving it by “learning more and by retiring.”

Over all, high-responsibility leaders most frequently held men more responsible for gender diversity, along with themselves, while low-responsibility leaders mostly said female faculty members were responsible for the gender-diversity problem in the sciences and for solving it.

Audrey Williams June writes about the academic workplace. Her areas of expertise include faculty pay, the academic job market, the recruitment and retention of faculty members, work-life balance in the academy and efforts to diversify the professoriate

There Is a Gender Pay Gap in Academe, but It May Not Be the Gap That Matters

By Jonah Newman

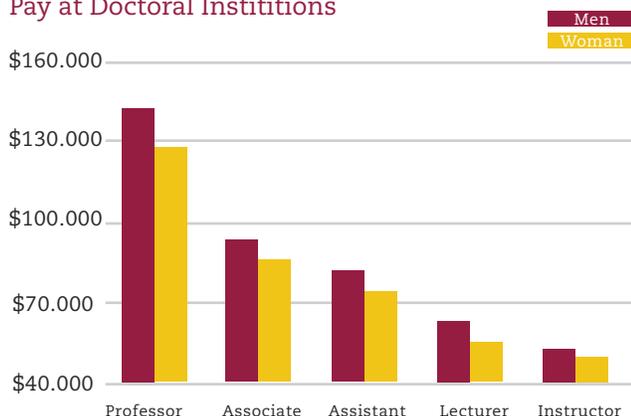
The gender-based wage gap has been in the spotlight lately, as the Obama administration used a pair of executive orders this week to remind the country that women make 77 cents for every dollar men make, according to oft-quoted (and sometimes criticized) data from the Census Bureau.

New data released this week by the American Association of University Professors show there is a gender wage gap in academe, too. However, the bigger problem in academe—as in society at large—may not be a wage gap, but a representation gap.

Fewer Women at Higher Ranks

At doctoral universities, where the difference between male and female pay is the largest, women across all faculty ranks make about 78 cents on the dollar, nearly the national average ratio for all women. But, as critiques of the 77-cents-on-the-dollar data point will tell you, that doesn't tell the whole story.

Pay at Doctoral Institutions



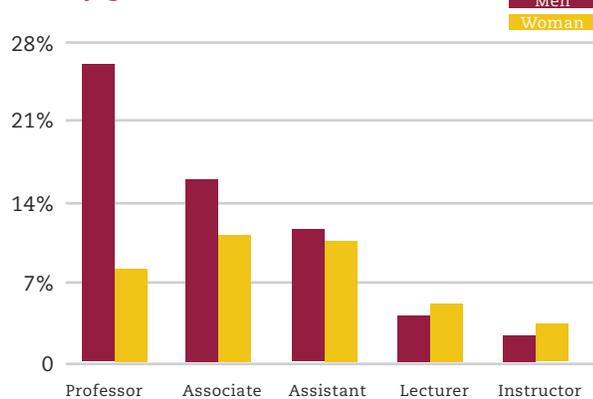
If you compare men and women at the same faculty rank, female full professors make 90 percent of what their male colleagues make. For associate professors, assistant professors, lecturers, and instructors, the numbers are 93 percent, 91 percent, 88 percent, and 96 percent, respectively.

All of those figures are better than 78 cents, though still not equitable. But how, you might wonder, can 88, 90, 91, 93, and 96 average out to 78 over all? To explain, we need to look beyond the percentages to actual salary figures and—more important—to the numbers of men and women they represent.

As illustrated in the graph above (which draws on AAUP data), the average male full professor at a doctoral university makes \$141,883 per year, while the average female full professor makes 90 percent of that, or \$127,858. But across all doctoral universities, male full professors make up 26 percent of the total full-time faculty, while female full professors are only 8.4 percent. That means there are more than three times as many male full professors at doctoral universities as there are women in those ranks.

At the other end of the faculty-pay spectrum, male instructors make an average of \$53,722, while female instructors make an average of \$51,379, or about 96 cents on the dollar. But there are about three female instructors for every two male instructors at doctoral universities.

Faculty gender breakdown



That means the average salaries of all male faculty members at doctoral universities are pulled upward by the disproportionate number of male full professors. Likewise, the average salaries of all female professors are dragged down by their overrepresentation in the lower-paid faculty ranks.

Women also tend to make up a higher proportion of the faculties at lower-paying institutions, such as two-year colleges, according to the AAUP. So not only do men make up a higher proportion of the highest-paid ranks, but they are also overrepresented at the higher-paying institutions, like research universities.

Women's underrepresentation in the upper echelons of the academic workplace could partly be the result of hiring practices at universities 20 or 30 years ago, when some of today's highest-paid professors may have been hired and outright sexism in hiring was, perhaps, more common. If that's the case, then the more-even proportion of women and men in assistant-professor posts, at the start of their academic careers, could be promising.

However, Kelly Ward, who studies academic leadership as chair and professor in the College of Education at Washington State University, cautions that women tend to drop out of the academic pipeline more often than men do, choosing to stay at the associate-professor rank due to discriminatory workplace practices, parenting choices, or being overlooked for promotion to full professor because of a focus on teaching and service rather than research. She calls it the "leaky pipe" phenomenon.

"If we just sort of keep doing what we doing, I think we will see the number of women [at the top levels]

creep up," she says. "But it's going to require a little bit more attention to the pipe, so to speak, and not just the pipeline."

Inequality Across Disciplines

Another factor in the faculty-pay gap is pay disparity across fields. We know, for example, that professors of engineering at doctoral universities make, on average, 20 percent more than do professors of psychology. Furthermore, engineering is a male-dominated field, while psychology is dominated by women.

Ms. Ward cites mentorship programs for women in science, technology, engineering, and mathematics—the STEM fields—as one solution for getting women not only to go into higher-paying disciplines but also to stay there.

But the discipline-based discrepancy also highlights an inherent weakness in the data: We can't compare similar female and male faculty members—women and men who teach in the same field and have been teaching for the same amount of time. If we could, then we could more easily determine if the wage gap was the result of wage discrimination.

Nevertheless, to deal with pay inequity in academe, institutions need to act on a more systemic level, Ms. Ward says. She notes that workplace policies, tenure and promotion processes, and the work-life balance pose challenges for women who want to work their way up the academic ladder.

To close the gap, "it's going to take intentionality," she says. "It's not going to get better on its own."

So while women rising in academic rank should begin to narrow the gender pay gap, it may take policy adjustments to close the gap completely.

Jonah Newman is a database reporter for The Chronicle. He previously worked as a reporting intern at Homicide Watch D.C. and was an intern at the Jerusalem Post and the St. Louis Post-Dispatch. He is a graduate of Northwestern University, where he studied journalism and international studies.

Faking It: Women, Academia, and Impostor Syndrome

By *Kate Bahn*

Impostor syndrome—the feeling that, regardless of your accomplishments, you’re still about to be unmasked as a fraud—is an all-too-common affliction among academics. Ironically, it’s the successful who tend to suffer from it: In order to feel like you’re faking it, you need to have already reached a certain level in your discipline. Think of it as a twisted version of the Socratic paradox—the more you know, the more you feel like you know nothing.

We’ve been talking about this phenomenon, and its consequences, for a while. The term itself, in fact, dates back to 1978—when a pair of psychologists, writing in *Psychotherapy: Theory, Research, and Practice*, identified “the impostor phenomenon in high-achieving women.”

The topic is telling. While both men and women experience impostor syndrome, women are far more susceptible. Given the messages of inadequacy that many women have internalized throughout their lives, it’s hardly surprising that many of us are wondering if we can hack it. Recently, I read Sheryl Sandberg’s *Lean In*. Instead of coming away feeling inspired, I felt unnerved: “Can I really do all of this? Can I be a successful professional woman?” Images of those hyper-successful and well-rounded women who have succeeded can make the rest of us moderately-successful women feel inadequate.

What’s alarming is that the more education and professional skills women acquire, the less confident we seem to feel. Witness a recent survey of undergraduates at Boston College, which showed that female students finished college with lower self-esteem than they started with. Male students, on the other hand, graduated with greater self-confidence (albeit lower GPAs) than their female peers.

What’s to blame for that divergence? The survey’s findings point to “the pressure to look or dress a certain way” and “the hookup culture” as major contributors. Which

makes sense: It’s no secret that women face tougher beauty standards than men do. And if a female student feels insecure about her looks, that may leave her feeling less confident in other areas, including the classroom.

I’d venture to say that this dynamic doesn’t go away in graduate school. And these pressures, modified for a more professional setting, continue further up the academic ladder. When packing for academic conferences, I’ve spent more time than I’d care to admit trying to find that perfect outfit that adheres to professional standards, but isn’t too frumpy or too risqué.

That’s not to say I favor the gender-neutral standard of ill-fitting grey pantsuits that’s in vogue in my mostly male discipline; I’d just rather not have to worry that I’m being judged on the length of my skirt, or whether my hair is up or down, instead of my intellect. In her book, *Wonder Woman: Sex, Power and the Quest for Perfection*, Barnard College’s president, Debora Spar, calculated the amount of time she spends on self-care just to meet the excessive societal expectations for women. (Spoiler alert: It’s considerable.) I’d wager money that her male peers, and mine, don’t spend anywhere near that much time on their looks, nor do they feel much pressure to do so. Sadly, though, it’s another hurdle women must jump through just to step into the game, even in academia.

Ridiculous beauty standards aside, female students may also face real obstacles to being heard in the classroom. In college seminar courses, where students are expected to debate and discuss what they’re learning and participation often counts toward their grade, female students may come to feel unwelcome if male students are allowed to interrupt and dominate discussions, as studies show males are wont to do (sorry, guys). Anyone who’s ever attended a Ph.D. or law seminar knows what I mean.

Unfortunately, even well-intentioned and fair-minded professors may inadvertently reinforce outdated gender norms by praising or calling on men more than women. Those cues, if they occur often enough, can shake female students' intellectual confidence and signal to them that their contributions aren't as valued as those of their louder (and ruder) male peers.

As women progress through college, grad school, and their careers, these daily inequities can easily add up. And that can undermine women's professional performance on everything from job applications to salary negotiations; it can even hurt their tenure prospects. For example, studies have shown that women generally apply only to those jobs for which they're totally qualified, whereas men tend to have no compunction about applying if they meet some, but not all, of a job's requirements. Women are less likely to tout their own research and more likely to be saddled with excessive service commitments than men are, too.

And is it any wonder women often have a harder time negotiating when they're not only fighting a "negotiation double standard," to borrow a phrase from Slate's Katy Waldman, but also their own self-doubts? If we downplay our achievements and question our own abilities and worth, then how can we expect hirers, colleagues, publishers, and tenure-and-promotion committees to recognize them?

On the bright side, impostor syndrome may drive some people to work so hard that they succeed in spite of their chronic self-doubts, assuming they don't burn out first. For the rest of us, though, the first step to kicking our feelings of inadequacy may be recognizing where they come from and talking about them. As Robin Fleming, chair of the history department at Boston College, said of her institution's survey: There's a "kind of solidarity" in knowing that maybe you aren't "the only person who [feels] that way."

That's where support groups can help. Feminist groups can bolster women's self-esteem by providing safe spaces for discussion and affirmation that yes, they do belong in academia. In fact, a number of female academics from my own economics program meet occasionally to discuss our experiences. There are stories of being talked over in the classroom; of feeling uncomfortable speaking

up in seminars while our male colleagues ask even the most inane questions without hesitation; of our advisors launching uncomfortable inquiries into our personal lives; of how our academic schedules affect our romantic lives. And through this, we support and encourage one another as women to acknowledge our academic achievements and our place in our program. We call ourselves the Economisses.

Likeminded confederations—like the Art + Feminism Wikipedia Edit-a-Thon group, which draws attention to the important contributions of women in academia—can help women recognize and promote their own accomplishments on a personal and professional level.

But fighting impostor syndrome goes beyond that. If you're a teacher, for example, it's worth thinking about how you can change the culture around you.

Professors can make a concerted effort in the classroom to note the contributions of female students and encourage them to speak up. (I, for one, always appreciate it when a professor says, "We haven't heard from any women yet." This practice not only draws attention to the role of gender in the classroom, but also explicitly lets women know that they are, in fact, welcome.)

And as a professor, you can make a surprising difference just by opening up about your own academic insecurities. Talk frankly with your students about how you overcame doubts or are still working to overcome them. Knowing that professors feel like fakers from time to time, too, might help the rest of us feel a little less self-conscious—and a little more like we belong.

Kate Bahn is a doctoral student in economics at the New School for Social Research and a writer and co-editor at LadyEconomist.com

Women don't refer to their own research nearly as often as men do

By Robin Wilson

When Barbara F. Walter went to Princeton University last spring to tell political-science professors about her study revealing a new gender gap in academic publishing, she was surprised to see the reasons for the divide play out right in front of her.

Her study documented that in scholarship on international relations, work by men is cited more often than work by women. Among the reasons: Female authors are only half as likely as male authors are to cite their own research.

“The women in the room spoke first, saying there was something dirty and underhanded about citing your own work, that it seemed somehow wrong,” recounts Ms. Walter, a professor of political science at the University of California at San Diego. “But then a male graduate student said he was shocked because it had never occurred to him that self-citation was a negative. The other men were all saying it was perfectly normal and asking, Why wouldn't you want to promote your own work?”

As the professional importance of journal citations grows, Ms. Walter's findings on self-citation are revealing. Universities are using article citations—which technology has made easy to measure—in evaluating scholars for hiring, promotion, and other academic rewards. Her study points to one more way—in addition to salary, tenure rates, and research dollars—that men are staying ahead of women in academe.

Now Ms. Walter's data on self-citation are being bolstered by a new analysis of 1.6 million scholarly articles published across disciplines over the past 60 years and held by JSTOR, a digital archiving service. Researchers

at the University of Washington, who in 2012 found that women do not publish scholarly articles at rates equal to their presence in most fields, have released a study, performed at the request of The Chronicle, showing that men have been 56 percent more likely than women to cite their own scholarly work. That gap, instead of declining as more women enter the academy, has actually widened—with men self-citing 64 percent more than women over the past 10 years.

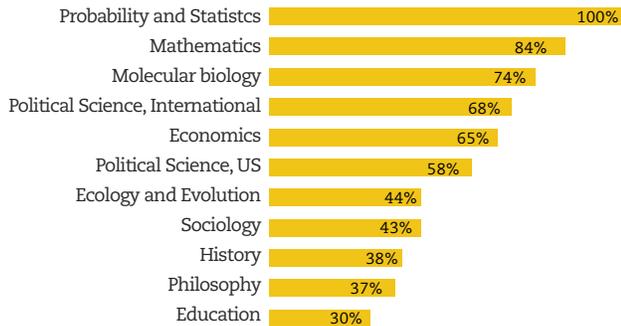
“We are talking about what essentially is the biggest database of articles there is, and this is quite a large gender difference,” says Shelley J. Correll, a professor of sociology at Stanford University who is working with the Washington researchers on a paper on the study. Ms. Correll, who directs Stanford's Clayman Institute for Gender Research, says the gap between men and women on self-citation is consistent with other studies showing that women tend to assess their performance more negatively than do men and are more reluctant to promote themselves.

“If men are self-citing at a higher rate, and we are using those data to decide things like who to hire,” says Ms. Correll, “then men are gaining an advantage.”

For many scholars, determining when to cite either their own work or others' can be tricky. Almost every scholar has been accused of failing to credit another professor's research. “I've received poison email messages from people saying I'm trying to harm them by not citing them, but their work either didn't fit in my analysis or I'd never heard of it,” says Bryna Kra, a professor of mathematics at Northwestern University. “Citations are a touchy subject.”

Not Afraid to Give Themselves Credit

At a time when scholars are increasingly judged by how frequently their work is cited in their own work—driving up their citation rates. The percentages below show how much more likely male authors have been than female authors to cite themselves in select disciplines over the past 60 years.



The sensitivity over citations reflects their growing importance as a key metric in scholarly productivity. Using websites like Google Scholar and Thomson Reuters Web of Science, anyone can track citations of a scholar's articles, books, abstracts, and other work in just about any field. In the sciences, the citation metric is part of the "h-index," a tool created in 2005 to assign a number to the relative importance of a scholar's publications.

Though citation numbers have been criticized as a blunt instrument, they are increasingly put into the mix when faculty committees and administrators decide whether a scholar should be hired or promoted. If citations to a professor's work are low, that can be a red flag—particularly in the sciences and social sciences.

"I was on a committee for promotion in another department in the humanities and I happened to look up citations to the candidate's book that had come out a couple of years earlier, and there were only 11 cites," says Claudia Goldin, a professor of economics at Harvard University. "You have to ask a question of the people in that person's department: Is this a tree that has fallen in the forest that no one heard?" Ms. Goldin says scholars in the other department brushed off her concerns and accused her of being a "bean counter," and the university ended up approving the scholar's tenure bid.

Perhaps 11 sounded so minuscule to Ms. Goldin because Google Scholar says her 1990 book, *Understanding the Gender Gap: An Economic History of American Women*, has 1,600 citations.

Douglas N. Arnold is a professor of mathematics at the University of Minnesota-Twin Cities who is considered a "highly cited" author by Thomson Reuters. That means he is among the 250 most-cited researchers worldwide in mathematics. "Citation is a direct measure of influence on the literature of a subject, and it is also a strong indicator of scientific contribution," says the Thomson Reuters website highlycited.com. "When one researcher cites another's work, he/she is acknowledging the relevance of that work to the current study."

Entering Mr. Arnold's name in Thomson Reuters Web of Science shows that his work has been cited 3,421 times, including 55 self-citations, or just 1.6 percent of the total. The website provides a year-by-year graph since 1995—his citations reached more than 300 in 2011. His 2002 paper in *SIAM Journal on Numerical Analysis* helped gain him the classification of "highly cited"—it has been referenced a total of 824 times, or 63 times per year since publication.

As a result of his highly cited status, Mr. Arnold got an email message last year from King Abdulaziz University, in Saudi Arabia, saying he had been identified as a "highly ranked researcher" and offering to pay him for two weeks' work on the campus as a distinguished adjunct professor. Mr. Arnold, who says such assignments can earn scholars up to \$70,000 a year, didn't accept the offer. And despite the accolades he's received because of his citation status, he isn't pleased at the way citations are used as a proxy to measure scholarly worth.

"Citations are used as a superficial way to judge how good somebody is," says Mr. Arnold, who was an author of a 2011 article on the dangers of citation metrics. "It is all part of the trend to degrade the importance of expert opinion. It used to be you could read the paper and have a picture of what was valuable. Now it's much easier to just look at the citation numbers."

At least one study shows that self-citations are important not only in boosting a scholar's overall citation rate, but that self-citations have an exponential affect—drawing a corresponding increase in citations from others down the line. A 2007 article on that study in the journal *Scientometrics* called "Does Self-Citation Pay?" analyzed 65,000 papers by Norwegian scientists and determined

that 11 percent of the articles' author citations were self-citations. One self-citation, the study found, increases the number of citations from others by about one after one year and by about three after five years. "These results carry important policy implications for the use of citations to evaluate performance and distribute resources in science," the article says.

The 1.6 million papers analyzed by the University of Washington researchers contain roughly 40 million citations, one million of which are self-citations. Men represent 78.1 percent of the authors in the collection but are responsible for 84.8 percent of self-citations, while women represent 21.9 percent of the authors but are responsible for just 15.2 percent of the self-citations. Over all, that means men have cited themselves 56 percent more often than women have, says Jevin D. West, the lead researcher on the JSTOR project and an assistant professor in the information school at Washington.

The researchers found that the gap between men and women varied significantly by field. For example, in mathematics, men were 84 percent more likely to self-cite than were women, while in sociology they were only 43 percent more likely. In general, Ms. Correll says, the gap between men and women is smaller in fields that have more female professors. Men dominate the natural sciences, where self-citation rates are higher than in most other fields. In mathematics, women were barely present until a couple of decades ago. Some mathematicians point to another explanation for the large gap in their field: Articles often aren't cited for 10 to 20 years after they're written.

When female professors talk about whether and how frequently they cite their own work, their hesitancy to claim credit often comes through. Bonnie Honig, who holds a named chair in the departments of modern culture and media and political science at Brown University, has spent nearly 25 years in the academy, yet she says she has begun citing more of her work only in the past few years.

"I started to think of it as giving a sense of the archive, a road map for graduate students who aren't being trained by us," she says. Then she stops to correct herself. "Listen to that. I mean to say grad students who are not being trained by me."

Earlier in her career, she says, she considered it "bad manners" to cite herself: "For women, self-citation looks like self-promotion." Now, she says, "I see I was actually hiding something that students might find useful by going out of my way not to mention my own stuff."

Some women have established elaborate personal guidelines to help themselves determine when it's appropriate to self-cite and when it's not. Marybeth Gasman, a prolific professor of higher education at the University of Pennsylvania, talks to students in her graduate course on research topics about the etiquette of citing. She says she frequently cites herself because she is often following up on her earlier work about historically black colleges and universities, on which she is an authority. She estimates that if she writes a 60-page paper on the subject with 100 citations, four will be to her own work. But she is careful to cite only what she considers her major work on the topic.

"I wrote the first paper on women's history at HBCU's, so if I'm going to do another paper on women related to HBCU's, I have to cite that first one," she says. "But I've written 10 other papers related in some way to women and HBCU's, and I don't cite all of those. Just the seminal one."

Rose McDermott, another professor of political science at Brown, says that if she is the sole author of a piece of scholarship, she usually references the work of others in the field instead of her own. "If I'm really the only one who's done work in that area, I will cite it," she says. "But only if I feel there was something really seminal or really unique that other people aren't doing."

Men seem to have fewer rules that might limit self-citation. "I self-cite quite a lot because we've now published 1,024 original scientific papers, and, if I were to be arrogant, a lot of our work is at the cutting edge," explains J. Fraser Stoddart, a professor of chemistry at Northwestern. In some papers, he may have no citations back to his own work. But in papers about an area that his group has been studying since 2010, nearly 30 percent of the references are self-citations. "We are about the only group that is highlighting one particular area of chemistry, so in order to put it into context," he says, "we have no option but to cite our own previous work."

Likewise, David B. Collum, who chairs the department of chemistry and chemical biology at Cornell University, says that in some papers, as many as a third of the citations are to his own work on the organic chemistry of lithium. That's because he basically founded research on the subject 30 years ago. The research area has been wildly successful, something Mr. Collum measures in part, he says, by the fact that he has submitted 55 papers in a row without rejection to the *Journal of the American Chemical Society*.

"I forged out on my own and entered a field almost no one dared go into," he explains. "When I went into it, they said I'd never get funded, that I'd die." Instead, "now there are portions of the field that I own." He is not a fan of what he calls the "obsession" over measuring citations. And sometimes, he says, journal editors tell him he shouldn't cite his own work more than 10 times. "But I say, Look, I try to cite accurately, but I have published every single paper on some topics. Who else should I cite?"

Such attitudes, while perhaps natural for men, can be dangerous for women, says Joan C. Williams, a professor of law at the University of California's Hastings College of the Law and director of its Center for WorkLife Law. "So much of the literature assumes women are demure and they just need to man up," she says. But it isn't that simple. Girls learn that "a good woman is modest and self-effacing," says Ms. Williams, and women who attempt to resist that and act more like men can pay a price.

"At a certain period of my life, I started doing what the guys did who were swaggering around and getting a lot of stuff for that behavior," says Ms. Williams, who just published a book with New York University Press called *What Works for Women at Work: Four Patterns Working Women Need to Know*. "So I started to do it, and I almost immediately realized the same rules didn't apply to me. Self-promotion is part of the tightrope of being too aggressive, and when women promote themselves they almost always get pushback from both other women and from men."

Beyond workplace attitudes, some of the ways in which women typically work can reduce their likelihood of self-citation, scholars say. Women tend to write more broadly across fields, while men are more apt to

specialize, writing several papers in a narrower subfield, which allows them to more naturally cite their earlier work on the same topic. In addition, women also tend to collaborate with smaller groups of researchers than do men and to sustain those relationships for longer, says Cassidy R. Sugimoto, an assistant professor in the school of informatics and computing at Indiana University at Bloomington.

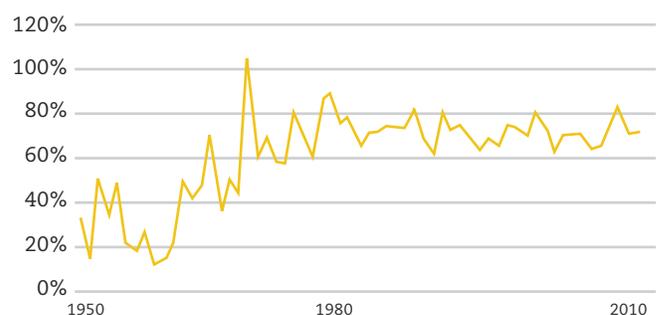
Men are frequently involved with many more collaborators in large research groups, including those that stretch internationally. As a result, Ms. Sugimoto and her co-authors wrote in an article in *Nature* in December, "women are less likely to participate in collaborations that lead to publication." That limits both their citations and their self-citations.

"Let's say that as a woman, I collaborate with my two friends, and we do so extensively over time," Ms. Sugimoto explains. "We may each publish one paper a year, so that's three papers my work is cited in. But if I'm a man in high-energy physics and one of 300 authors, then the volume of papers increases, and I'm cited in all of them."

Terrell L. Strayhorn, an associate professor of higher education at Ohio State University, says that for women and scholars from ethnic minority groups, self-citation should be part of a strategy to get more attention for their work. As an editor of *Spectrum: A Journal on Black Men* and associate editor of *The Journal of Higher*

A Widening Gender Gap

During the 1950s, men in an average year were less than 50 percent more likely than women to cite their own work. As more women began to enter academe, that gap widened. Today men in all fields are around 65 percent to 70 percent more likely to self-cite.



Source: Analysis by U. of Washington researchers of roughly 40 million citations included in 1.6 million scholarly articles in JSTOR database published between 1950 and 2010

Education, Mr. Strayhorn says he often reads manuscripts by minority women who fail to cite any of their own work. "I'll get reviews back on the paper, and sometimes reviewers say, 'You really need to cite this person's work,' and they are talking about the scholar who wrote the piece herself."

Mr. Strayhorn says it will take self-citation for the work of women and minority scholars to gain acclaim. "We're living in a time where a lot of papers in social sciences get published by citing the canon," he says. "But right now the canon is still predominantly white and male. One way to break that down is to make sure we're citing more-recent scholars, and that means citing ourselves."

With 25 years' experience covering higher education, Robin Wilson writes in-depth articles for The Chronicle, stories about a controversy or issue that often examine the matter in a new light and sometimes run contrary to conventional wisdom.

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