Sex, Schemas, and Success

What's Keeping Women Back?

BY VIRGINIA VALIAN

The term **glass ceiling** has become popular as a way of referring to women's lack of representation at the top levels of organizations. The term suggests that invisible factors—as much as or more so than overt discrimination—keep women from rising to the top. It also suggests that those hidden factors will probably not simply disappear with time. And it implies, moreover, that women's performance is at least equal to that of their male peers, for a ceiling keeps people down despite their competence.

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Although disputes about the implications of the glass ceiling continue, solid data from social and cognitive psychology, sociology, and economics show that men and women receive unequal returns for equal investments. More important, the evidence reveals the perceptions and practices that create and maintain inequality. To move forward, we must understand how our cognitive processes unconsciously distort our judgments about men and women and thereby perpetuate the inequities that we have long been trying to overcome. Such an understanding will allow us to determine remedies for the present impasse, ranging from affirmative action to better methods for evaluating job applicants and employees.

**Salary Discrepancies**

**Discrepancies between Men’s and Women’s Salaries** occur both in the business world and in academia. In 1991 economists Mary Lou Egan and Marc Bendick conducted a survey of U.S. professionals working in occupations with an international focus. The males and females in the study resembled one another in many ways, such as years of work experience, range of specialties, and hours worked each week. But factors that benefited men did not help women to the same degree. Women’s achievements and qualifications appeared to be worth less than men’s.

For example, a bachelor’s degree contributed $28,000 to a man’s annual salary but only $9,000 to a woman’s. And not constraining one’s career for one’s spouse added $21,900 to men’s yearly income but only $1,700 to women’s. Some factors that added to men’s salaries subtracted from women’s. Having lived outside the United States added $9,200 a year for men but subtracted $7,700 for women. Speaking a language other than English added $2,600 for men but cost women $5,100. Of the seventeen factors Egan and Bendick examined, fourteen helped men more than women.

This study is typical of others in the literature. Women tend to benefit less from their qualifications than men do. In many cases, women’s human capital—their training, years of job experience, and so on—is less than men’s. But even when men and women are equal in human capital, or when their differences are statisti-
cally equalized, men get more from their investments than women do.

Men’s advantage above and beyond their greater human capital is often termed discrimination. Those who argue that the residual unexplained disparity between men and women is evidence of discrimination have been criticized for incorrectly assuming that all relevant factors have been measured and that the single variable of discrimination accounts for the remaining unexplained differences. Thus, the criticism continues, discrimination could appear to be taking place only because of a failure to specify all the relevant sex differences.

Others have made the opposite criticism, arguing that some economic studies have erred by including variables that may themselves be the consequence of discrimination. For example, lesser work skills may be the result of less opportunity to acquire skills. While both criticisms point out potential pitfalls, the studies to date appear neither to overlook major factors contributing to disparity nor systematically to under- or overestimate discrimination.

In academia men and women now start out with equal salaries, but they do not progress at the same pace. Data from the National Science Foundation (NSF) for 1993 showed that full-time academic male and female scientists were close to parity in their salaries one to two years after they received their Ph.D.'s. But three to eight years after completing the Ph.D., women earned 92 percent of men's salaries, and at nine to thirteen years afterward, women earned only 90 percent of their male counterparts' salaries (NSF, unpublished data). Similar data hold for male and female humanists.

In medicine, as well, the pattern is early parity followed by a gap. Income data for 1990 for physicians under forty-five with two to five years of experience showed equal earnings (once human capital differences were controlled for). But for physicians with six to nine years of experience, women earned 96 percent as much as men. The story is the same in field after field; initial salaries are now close to equal for similarly trained young men and women. But disparities develop quickly.

Rank and Tenure

As with salary, so with rank and tenure in academia. Male and female faculty members begin on a close to equal footing but become unequal over time. In 1995, for example, about 12 percent of men and women humanists five years or fewer beyond receipt of the Ph.D. had tenure; 3 percent of the men were full professors compared with 2 percent of the women. But six to fifteen years after completion of the Ph.D., 65 percent of male humanists had tenure, while only 51 percent of women humanists professors did; 21 percent of the men were full professors, compared with 10 percent of the women.

Data for scientists are thinner, but a detailed study of highly qualified scientists conducted at Harvard by Gerhard Sonnert and Gerald Holton found that women were less successful at moving through the ranks than men. For example, women who had earned their degrees in the physical sciences, math, or engineering after 1978 were almost a full rank behind their male peers between 1987 and 1990, the years of the study; women in the social sciences were more than three-fourths of a rank behind. That lower rate held even after controlling for productivity and other variables. Women, unlike men, traded off rank for institutional prestige. For women, the more prestigious their institution, the lower their rank; for men there was no such relationship.

Data from the AAUP and other sources show no reduction in tenure disparity in recent decades. In 1976–77, 64 percent of male professors had tenure, while 44 percent of female professors did. In 1995–96, 72 percent of men were tenured, but only 48 percent of women were. In other words, the tenure gap was 20 percentage points in 1976–77 and 24 percentage points in 1995–96. (The persistence of the gap is not attributable to increasing percentages of women in assistant-professor positions.)

Gender Schemas

As these data reveal, women rise too slowly through the professions, and their credentials appear to be worth less than men's. To understand why that is so, I developed an explanation that relies on two key concepts: gender schemas and the accumulation of advantage. Our unarticulated beliefs about men and women—gender schemas—make it harder for women (and easier for men) to accumulate advantage and rise to the top.

Schemas are hypotheses that we use to interpret social events. A schema resembles a stereotype, but is more inclusive and neutral. Gender schemas are hypotheses that we all share, men and women alike, about what it means to be male or female. Schemas assign different psychological traits to males and females. We see boys and men as capable of independent action, as agents; they are task-oriented and instrumental. We see girls and women as nurturant, communal, and expressive. In brief, men act; women feel and express their feelings.

Women have more trouble than men in reaching the top because our gender schemas skew our perceptions and evaluations, causing us to overrate men and underrate women. Experimental and theoretical work in social and cognitive psychology and sociology supports this thesis. People are not perceived as people but as males or females. Once gender schemas are invoked, they work to the disadvantage of women and the advantage of men by directing and skewing perception.

Laboratory experiments that control for variables that might affect people's judgments have illustrated how gender schemas operate. The findings from such experiments complement the statistical data offered in the preceding paragraphs. Despite their artificiality, the experiments allow us to isolate the factors that account for the lag in women's achievements.
Take, for example, a laboratory study conducted by New York University psychologist Madeline Heilman that asked different groups of students in an M.B.A. program to evaluate a female applicant for a managerial job. The number of other women candidates in a pool of eight people varied for each group of student evaluators. For one group, the female applicant was the only woman; for others, she was one of two women, one of three, one of four, or one of eight.

Composition of Pool

WHEN WOMEN MADE UP 25 PERCENT OR LESS of the applicant pool, the female candidate was evaluated more negatively than when women made up 37.5 percent or more of the pool. Being in a small minority made a female applicant appear less qualified and less worth hiring. Even more interesting were the assessments of the woman's personality. When women made up 25 percent or less of the applicant pool, the student judges perceived the female applicant as more stereotypically feminine—unambitious, emotional, indecisive, and soft—than when women accounted for 37.5 percent or more of the pool.

Such skewed perceptions pervade every evaluation of men and women. Even for objective characteristics such as height, people do not perceive males and females accurately. In a compelling laboratory experiment by University of Kansas psychologist Monica Biernat and her colleagues, college students were shown photographs of other students and were asked to estimate their height in feet and inches. The photos always contained a reference item, such as a desk or a doorway, so that height could be accurately estimated.

The experimenters matched the photographs so that for every photograph of a man of a given height, there was a woman of the same height. Here, then, was an easily visible characteristic to be measured in "objective" units. One might have expected accurate evaluations. But the evaluators' knowledge that men are on average taller than women affected their judgment. When exposed to a sample contrary to the general rule, they perceived the women as shorter and the men as taller than they really were. In this experiment, as is typical, there were no differences in how male and female observers perceived others.

This experiment and others suggest that if someone has a schema about sex differences, that schema affects the person's judgments. Observers perceive individuals who diverge from schemas in light of their own gender hypotheses. If the schema is accurate, as it is for height differences, that will exacerbate errors made about individuals. Evaluators tend not to question their judgment, because it is supported by a real overall difference.

The implication of schemas for judgments of professional competence are clear. Evaluators may be faced with men and women who are matched on the qualities relevant to success. The evaluators may sincerely believe that they are judging the candidates objectively. Yet they are likely to overestimate the men's qualifications and underestimate the women's because of schemas that represent men as more capable than women.

Take, for example, data from a study of postdoctoral fellowships awarded by the Swedish Medical Research Council in 1995. Women made up 46 percent of the applicant pool but only 20 percent of the winners, because panels of senior scientists rated women as inferior to men in scientific competence. A subsequent analysis used an "impact" index to rate the candidates' productivity and the prestige of the journals in which they published. This analysis showed that women with a hundred or more impact points had been rated by the original panels as equal in scientific competence to men with twenty points. The evaluators no doubt considered themselves to be objective and impartial judges of scientific merit. But as these and other findings on gender schemas suggest, people tend to underestimate women and overestimate men in ways ranging from height to professional ability whenever they have antecedent beliefs about sex differences—even when those beliefs are unarticulated.

No Credit for Leadership

GENDER SCHEMAS NOT ONLY MAKE IT DIFFICULT for women to be evaluated accurately; they also make it difficult for women to reap the benefits of their achievements and be recognized as leaders. Consider a study in which college students viewed slides of five people seated around a table working together on a project. The students were asked to identify the leader of the group. In same-sex groups, the man or woman sitting at the head of the table was always selected as the leader. In mixed-sex groups, a man at the table's head was reliably picked out as the leader. But if a woman sat at the head, she was not always labeled as the leader; a man seated elsewhere was chosen as the leader about as often. As in other studies, there were no differences in the perceptions of female and male participants.

Failing to label a woman seated at the head of a table as a leader may have no discriminatory impetus behind it. But a woman leader is nevertheless prone to lose out compared with a man in the same position, because she is less likely to receive the automatic deference that marks of leadership confer on men. As a result, the woman is objectively hurt even if observers intend no hurt. She has to work harder to be seen as a leader.

A real-life example from a prestigious university, circa 1990, shows gender schemas in action. A new female faculty member in a science department at a prestigious university has a conference with her department chair about what courses she will teach. She is eager to teach a large introductory lecture course. The chair refuses, saying that the students will not accept a woman in that format. The woman presses a bit, saying she thinks she can do it and would like to try. The chair doesn't want to take a chance and instead gives the lecture course to a new male faculty member.

We can ask two questions about his decision: why does he make it and how does it affect the woman's future? The chair makes that decision because gender schemas influence how he perceives and
evaluates the scientist. He sees her not just as a scientist but as a female scientist. As such, she is probably unable to handle a large group of people. She lacks the authority a male automatically has by virtue of his sex.

We might be tempted to dismiss the incident. We might be tempted to tell the woman not to make a mountain out of a molehill. But the woman ends up teaching a laboratory course that requires much more work, giving her less time for research and publishing and putting her at a disadvantage relative to her male colleague who teaches the lecture course. She also has had a small failure she didn’t deserve, giving her a small psychological disadvantage, because she has something to worry about that her male colleague does not.

Accumulation of Advantage

ALTHOUGH A SINGLE COURSE ASSIGNMENT IS a small thing, small things add up. Success is largely the accumulation of advantage, the parlaying of small gains into larger ones. Mountains are molehills, piled one on top of the other.

A computer simulation demonstrates how the accumulation of advantage and disadvantage can work. Psychologist Richard Martell and his colleagues at Teachers College of Columbia University created a model eight-level hierarchical institution, staffed initially by equal numbers of men and women. Their model assumed that over time a certain percentage of incumbents would be promoted from one level to the next. It also assumed a tiny bias in favor of promoting men, a bias accounting for only 1 percent of the variability in promotion. The researchers ran the simulation through a series of promotions. After many runs, the highest level in the institution was 65 percent male. In the long run, a molehill of bias creates a mountain of disadvantage.

Our gender schemas cause us systematically to overrate men and underrate women. Our doing so culminates in lower salaries and slower rates of promotion for women. Knowing how these gender schemas work can help us understand why women in fields such as international business gain less advantage from their credentials than their male colleagues do. When men learn another language and live outside the United States, they are seen as preparing for their careers, engaging in those activities not because they enjoy them but because they expect an economic return. Women, in contrast, are perceived as choosing such activities for pleasure. Men accumulate advantage more easily than women because men are seen as more professional than women.

One School’s Success Story

FORTUNATELY, THE SITUATION IS NOT HOPELESS. WE CAN improve women’s status in different ways, institutionally and personally. The Johns Hopkins University School of Medicine has shown what can be done to address the problem of lower salaries and slower promotion rates for women.

In 1990 the university’s Department of Medicine had only four women associate professors. A task force found that women were put up for promotion later than their male peers, both because evaluators failed to identify qualified women and because women did not realize what was required for promotion. Each female faculty member (and later, each male faculty member) began to receive annual evaluations that gave her explicit information about her progress. The women also obtained concrete information in monthly meetings on how to develop their careers and how to handle different problems that would arise. On top of that, senior faculty members learned how to mentor their junior colleagues, so that disparities in treatment between junior men and women could be eliminated.

The monthly meetings and mentoring addressed serious problems in the department’s treatment of junior faculty members. Mentors gave junior men more guidance and help than they gave junior women. For example, mentors invited junior men to serve as chairs at conferences six times as often as they invited junior women to do so. The junior men thus received more public exposure than their female colleagues.

Within five years, the program was a success. By 1995, with no change in the criteria for promotion, the department had twenty-six women associate professors. More subtle aspects of the women’s experience also improved. In 1990, 38 percent of the women said that the institution welcomed them, while 74 percent of the men said so. In 1993, 53 percent of the women felt welcome—a dramatic improvement within a short period of time, albeit one that fell short of equity. The Johns Hopkins experience demonstrates that institutions willing to dedicate resources to improving the status of their female employees can do so.

Affirmative Action

AFFIRMATIVE ACTION IS ANOTHER INSTITUTIONAL TOOL that can counteract the effects of gender schemas. Designed to guarantee representation of women and minorities in the work force according to their numbers and qualifications, affirmative action policies implicitly acknowledge the social and psychological realities that I have just described. Affirmative action recognizes that gender-blind policies are impossible to implement because there are no gender-blind evaluators.

Affirmative action procedures acknowledge that people are not hired simply on the basis of their qualifications. Those who have an unfair advantage because of their membership in a particular group receive preferential treatment according to characteristics irrelevant to the jobs they seek. Those irrelevant characteristics have prevented women and minorities from getting their fair share of good jobs.

Although affirmative action has been misperceived as making employers hire a woman or minority candidate over a more qualified white man, it in fact ensures the hiring of female and minor-
ity candidates who are more qualified than their white male competitors. It also gives hiring preference to female or minority candidates who are as qualified as white male applicants. The goal is a work force in which no group is overrepresented.

The misunderstanding about affirmative action stems in part from our belief that hiring procedures are meritocratic and that the best person gets the job. Even though we all have ample evidence that the "best person" (if such a notion can be sensibly defined) does not always get the job, we cling to the idea of a "just world" in which the deserving are rewarded and the unrewarded are underearning. We rely on principles of meritocracy and fair play to justify decisions that we make about others. Our explicit commitment to equality makes it difficult for us to perceive the extent to which we make unfair, nonmeritocratic evaluations and decisions based on gender and race schemas.

Those schemas are themselves the other source of our misconceptions about affirmative action. From the outset, nonwhite, nonmale job candidates are perceived as having fewer qualifications than white male applicants. Such persons, it is assumed, need affirmative action to get a job. In reality, however, affirmative action helps to counteract the continuing, if unwitting, overvaluation of white males.

**Better Reasoning**

**BESIDES IMPLEMENTING INSTITUTIONAL REFORMS TO eliminate the inequities that gender schemas encourage, people can learn to reason better. The findings of cognitive psychology can help us avoid mistakes in judging other people. Even without the influence of schemas, evaluators are prone to errors in reasoning. They tend to give too much weight to extreme examples, ignore information about how frequently different events occur, and overestimate the value of their personal experience. Social schemas intensify those errors.**

A common error is the failure to appreciate covariance, the phenomenon in which two factors vary together. For example, University of British Columbia psychologist Mark Schaller and his colleagues asked college students to assess the leadership potential of men and women in a fictitious company in which most executives were men and most office workers were women. Within each group, the same percentages of men and women showed leadership ability. In this example, leadership ability and status within the company covaried. The covariation misled the male student judges, who erroneously inferred that the male workers had more leadership ability than the females. Those students saw only that, overall, more men than women showed high leadership ability; they neglected the fact that most executives were men. Follow-up studies demonstrated that students were less likely to make such gender errors after receiving training in the logic of covariance. People can be trained to reason in a way that will minimize the effects of gender schemas.

A similar reasoning error is the blocking of relevant hypotheses. If people have a hypothesis that explains a regularity, they tend not to entertain other valid hypotheses. That is, they often fail to perceive causes that might contribute to a person's performance if a prior hypothesis—such as a gender schema—indisputably predicts that performance.

An experiment by University of Utah psychologist David Sanbonmatsu and colleagues demonstrated how blocking works. Participants in the experiment learned a number of facts about fictitious students who had taken a welding course. Many of the facts were irrelevant to the students' success or failure, but one piece of information—about course load—was important. Students with a light course load passed, and those with a heavy course load failed. Participants also received information about the students' gender. One group learned that all the passing students were male and all the failing students were female. Another group learned that half the students who passed were male, and half the students who failed were male. Participants were asked to evaluate why some students had passed and others had failed.

The experimenters reasoned that participants would expect males to be more likely than females to pass a welding course. If the gender information supported such an expectation, they thought, the participants would not notice the other characteristic that predicted performance, namely course load. The division of success and failure along gender lines would block students from seeing that gender covaried with course load. In contrast, participants given information that did not support expectations based on gender schemas would tend to see that course load explained the students' performance. The results verified the predictions.

- The welding experiment has obvious implications for judgments about women in professional settings. People who see a woman fail at a task they expect her to fail at because of the influence of gender schemas will probably not perceive other possible causes of her failure. They will attribute her failure to her sex instead of looking for other reasons, even if those other reasons actually caused her failure. They may even feel that a search for other causes is a search for excuses.

Evaluators can learn how to correct for blocking in the same way that they can learn to understand covariation. Once trained to reduce errors in their reasoning, these people may then be able to mitigate the effects of gender schemas in their own judgments. Understanding that their own gender-based expectations may affect their assessment of other people, these evaluators will thus judge others more fairly and accurately.

On balance, there is some reason for optimism. Although women's advancement is too slow, although gender schemas operate covertly and bias evaluations, although small examples of bias add up, and although people's reasoning is often flawed, we can understand how these processes work and do something about them. Relying on our knowledge of how schemas work and how advantage accumulates, we can make institutions genuinely fair.