

ROUNDTABLE

THE COGNITIVE BASES OF GENDER BIAS*

Virginia Valian[†]

Why do so few women occupy positions of power and prestige? In this paper I will concentrate on the reasons behind women's slow advancement in the professions and academia and discuss some remedies to speed up that advancement. Women's under-representation at the top of the ladder has many causes. This article details the cognitive sources of our attitudes toward men and women as professionals, along with the consequences of those attitudes.

But first it is necessary to show that there is a problem to be explained, above and beyond any sex differences in performance, choices, or values. It may be that men and women do not perform in exactly the same way, do not make the same choices, and do not want exactly the same things from work and love. I will review data to show that, even when men and women are equalized on those dimensions (sometimes statistically, sometimes via choice of sample), women do not get the same rewards from their professional investments that men do. Whether we consider salary or promotion, women lose out compared to men. Further, as examples from business, law, and academia show, the phenomena are general.

I. DATA ON WOMEN AND MEN IN THE PROFESSIONS

A. *Salaries in International Business Occupations*

The first example concerns salary in international busi-

* " 1999 Virginia Valian. All Rights Reserved.

[†] Professor of Psychology and Linguistics, Hunter College and CUNY Graduate Center, New York.

ness. The data come from a survey conducted in 1991 by Egan & Bendick¹ of United States business people who worked in internationally-related occupations. The males and females in the study were similar on most dimensions.

The investigators analyzed 17 factors that could contribute to determining men's and women's salaries. Among other variables, they examined type of degree held, years of experience, strategies for career advancement, and number of hours worked per week. Factors which helped men make higher salaries also typically helped women, but to a lesser extent. Of the 17 factors, 14 helped men more than they helped women. Women's achievements and qualifications appeared to be worth less than men's. To take one of the more striking examples, a B.A. contributed \$28,000 to a man's salary but only \$9,000 to a woman's. Not constraining one's career for one's spouse added \$21,900 for men but only \$1,700 for women. Being designated "fast track" added \$10,900 for men but only \$200 for women.

In some cases, factors that added to men's salaries subtracted from women's. For example, having lived outside the U.S. added \$9,200 for men but subtracted \$7,700 for women. Having deliberately chosen international work added \$5,300 for men but subtracted \$4,200 for women. Speaking another language added \$2,600 for men but subtracted \$5,100 for women.

Only two factors helped women more than men. Negotiating for one's salary subtracted \$5,600 for men and added \$3,500 for women. Traveling 10 more days per year added \$3,200 for men and \$6,300 for women.

This study is typical of others in the literature.² Women tend to benefit less from their qualifications than men do. Further, even when men and women start out on an equal salary footing, as, for example, is the case for new lawyers, sex differences develop over time. Salary differences are one objective measure of men's and women's progress.

¹ See Mary Lou Egan & Marc Bendick, Jr., *International Business Careers in the United States: Salaries, Advancement and Male-Female Differences*, 5 INT'L J. HUMAN RESOURCE MGMT. 33 (1994).

² For review, see VIRGINIA VALIAN, *WHY SO SLOW? THE ADVANCEMENT OF WOMEN* (MIT Press 1998).

B. *Salaries in Law*

Young men and women in major law firms currently appear to be making roughly equal entry salaries, which is an improvement over the past.³ But that equality does not appear to last for more than a few years. The same is the case for in-house counsel. Males and females are similar at entry level.⁴ At the highest ranks, however, sex disparities are large.⁵ In 1992, for example, a study of 500 corporate law departments, employing 7000 lawyers, found that income for male general counsel averaged a little over \$205,097, while females averaged \$152,412—a large difference.

C. *Partnership in Law Firms*

Salaries are one gauge of equality. Promotion is another. A study by Cynthia Epstein and her colleagues examined 8 large Manhattan law firms in depth.⁶ In 1980 women were only 3% of the partners in those firms. By 1994 the figure had risen to 12%. Those figures were similar to national figures for the top 250 firms nationally—3.5% of partners were women in 1981; 11% were women in 1992.⁷ Although the increase from 3% to 12% represents progress, other data show how this progress is rather limited.

For example, after 1984 women were 35% or more of the associates in the 8 firms.⁸ Another example comes from the progress of individuals in these firms. In 1994, 85% of the men born between 1948 and 1953 were partner, compared to 26% of the women born in those same years. Similarly, 50% of the men born between 1954 and 1959 were partner, compared to 23% of the women. Even among relatively young attorneys, women were much less likely than men to make partner.

³ See *What Lawyers Earn*, NAT'L L.J., May 10, 1993, at S11.

⁴ See *What Lawyers Make*, NAT'L L.J., Mar. 26, 1990, at S12.

⁵ See Barbara D. Franklin, *Survey Shows Women Earn Less In-House Than Men*, 208 N.Y. L.J. 1 (1992); Barbara D. Franklin, *Women Get Lower Pay in Law Departments*, NAT'L L.J., Nov. 9, 1992, at 17.

⁶ See Cynthia Fuchs Epstein et al., *Glass Ceilings and Open Doors: Women's Advancement in the Legal Profession*, 64 FORDHAM L. REV. 306 (1995).

⁷ See CYNTHIA FUCHS EPSTEIN, *WOMEN IN LAW* (Univ. of Ill. Press 2d ed. 1993).

⁸ See Epstein et al., *supra* note 6.

Among those hired in 1985, 16% of men but only 5% of women were promoted to partner by 1994. The differences could not be explained by the prestige of the attorneys' law school or undergraduate school, or by their specialty.

Similar studies looking at somewhat earlier data tell the same story: women are required to meet a higher criterion for promotion than are men.⁹ From study to study, the advantage of being male ranges from about 13% to 200%.

D. *Promotion in Academic Medicine*

The circumstances in academic medicine are similar to law, as is shown by a survey of female and male physicians who were first appointed to a U.S. medical school faculty in 1980. One hundred and fifty-three women and 263 men were queried about their status in 1991.¹⁰ The women were much less likely than the men to be promoted to associate or full professor. In 1991 (11 years after their first appointment) 23% of men were full professors, compared to 5% of women; 60% of men were associate professors, compared to 54% of women; and 14% of men were assistant professors, compared to 38% of women.

The women tended to publish less, to be senior author on fewer papers, to have fewer grants, and to be in primary care rather than surgical specialties. But even after controlling for those variables, women were still less likely than men to be promoted.

An important finding from this study was that men and women reported different resources at the time of their first appointment: men reported having more dedicated office and laboratory space, reported beginning their career with grant support, and reported having protected time for research to a greater degree than women.

Thus, women did not receive as many resources as men,

⁹ See Joan Norman Scott, *A Woman's Chance for a Law Partnership*, 71 SOC. AND SOC. RES. 119 (Jan. 1987); Stephen J. Spurr, *Sex Discrimination in the Legal Profession: A Study of Promotion*, 43 INDUS. AND LAB. REL. REV. 406 (Apr. 1990). For Canadian data, see JOHN HAGAN & FIONA KAY, *GENDER IN PRACTICE: A STUDY OF LAWYERS' LIVES* (Oxford Univ. Press 1995).

¹⁰ See Bonnie J. Tesh et al., *Promotion of Women Physicians in Academic Medicine. Glass Ceiling or Sticky Floor?*, 273 JAMA 1022-25 (1995).

either because they asked for them and did not receive them, or because they did not ask for them.

E. *Tenure in Academia*

The data for academia show that men and women start out on a roughly equal footing with respect to both rank and salary. But women begin falling behind after a few years. Women's lack of advancement relative to men is clearest in tenure data. Across all disciplines and across universities and 4-year colleges, there has been no reduction in the tenure gap between men and women. In 1976-77, 64% of men were tenured and 44% of women; in 1995-96, 72% of men were tenured and 48% of women.¹¹ Thus, the tenure gap was 20 percentage points in 1976-77, and 24 percentage points in 1995-96. The maintenance of the gap is not due to increasing percentages of women in assistant professor positions.

F. *Post-Doctoral Fellowships*

Although most data suggest that men and women fare equally well at the beginning of their careers, there are some data to the contrary, at least with respect to prestigious fellowships. Recent data about awarding science post-doctoral fellowships in Sweden suggest that early merit is more difficult for women than men to achieve.

This study looked at how the Swedish Medical Research awarded post-doctoral fellowships in 1995.¹² Although women were 46% of the applicants, they received only 20% of the fellowships. An analysis of the judgments made by the senior scientists on the panels showed that women received lower "scientific competence" scores than men did. To determine what contributed to scientific competence, the investigators developed a model called "impact points," using a combination of productivity and prestige of the journal in which the young scientists had published. This model predicted scientific competence scores well for the young

¹¹ See THE ANNUAL REPORT ON THE ECONOMIC STATUS OF THE PROFESSIONS, 1995-1996 (Am. Ass'n of University Professors Mar.-Apr. 1996).

¹² See Christine Wenneerås & Agnes Wold, *Nepotism and Sexism in Peer-Review*, 387 NATURE 341 (1997).

male applicants. But women had to receive 100 or more impact points in order to get the same rating from the judges than a man with 40 or fewer impact points got. Here, too, the data suggest that women must achieve much more than men in order to be rated equivalently deserving.

G. *Early Merit*

One might hypothesize that those women who are successful in acquiring prestigious awards early in their profession would have career paths that were comparable to those of men. Disparities between men and women might be different if comparisons were restricted to those people who have demonstrated early merit. Sonnert & Holton¹³ surveyed a selective group of men and women who had received prestigious national post-doctoral fellowships between 1952 and 1986. Between 1987 and 1990, the sample was queried about its career paths.

Despite their early demonstration of merit, women were less successful at moving through ranks than men (with the exception of biologists). Women who had earned their degrees in the physical sciences, math, and engineering after 1978 were almost a full rank behind their male peers 9 to 12 years later; women in social sciences were more than three-quarters of a rank behind. That slower progress held even when productivity and other variables were controlled.

Women were also less successful than men in another way: for women but not for men, there was an inverse relationship between rank and institutional prestige. For women, the more prestigious their institution, the lower their rank (again, biology was an exception); for men there was no relation.

¹³ See GERHARD SONNERT & GERALD HOLTON, GENDER DIFFERENCES IN SCIENCE CAREERS: THE PROJECT ACCESS STUDY (Rutgers Univ. Press 1995); Gerhard Sonnert & Gerald Holton, *Career Patterns of Women and Men in the Sciences*, 84 AM. SCIENTIST 63 (1996).

H. *Rank and Institutional Prestige*

The inverse relationship between rank and institutional prestige is seen throughout academia. Women are over-represented at institutions of lower prestige. Take for example the circumstances of college presidents. In 1995, an American Council on Education study conducted by Ross & Green showed that, in 1995, women were 6% of the presidents at private universities which grant the Ph.D. (the most elite group of schools) but 25% of presidents of private two-year colleges (a very low-prestige group of schools).¹⁴

A similar piece of data comes from a comparison of elite private and public universities: women are a smaller percentage of the professoriate at each rank at private universities compared to public ones.

II. PROGRESS ACROSS THE PROFESSIONS

There has been progress in all the professions. More women get advanced degrees in law, medicine, business, and academic fields. More women are entering the professions. More equality is seen in rank and salaries early in people's careers. But the first problem is that there has been little progress in promotion, partnership, and tenure. Broadly speaking, women's abilities, accomplishments, and contributions appear to be worth less than men's even when they have the same credentials (or differences in credentials are controlled for).

The second problem goes deeper and concerns the criteria that are being used. To take just one example, men in academia, from the United States to Finland to Israel, are more productive than women: they publish more papers. Men's quantity is higher than women's. Advancement is linked to productivity.

But if we look at quality—as measured by citation counts per article—women's quality is higher than men's. An individual paper by a woman is cited more, on average, than

¹⁴ MARLENE ROSS & MADELEIN F. GREEN, *THE AMERICAN COLLEGE PRESIDENT*. (Am. Council on Educ. 1998).

an individual paper by a man.¹⁵ Citation rate is of course an imperfect measure of quality, but quantity is an imperfect measure, too. Men and women appear to make different trade-offs; men focus on quantity over quality and women trade quantity for quality. So the problem is not just that the criteria are not evenly applied, but that the criteria themselves are too narrow.

III. EXCEPTIONS TO THE RULE

Everyone can think of women who are exceptions to the general patterns I have described. But it is important to realize that an exception is just that—an atypical event. The fact that there are a few successful women should not distract us from the main body of evidence, which shows that, overall, women are not as successful as men even when they have the same credentials.

IV. CAUSES OF WOMEN'S SLOW ADVANCEMENT

Now I want to turn to the causes of women's slow advancement. I want to explain why women's credentials appear to be worth less than those of men. My explanation uses two key concepts: gender schemas and the accumulation of advantage. The application of gender schemas makes it more difficult for women to accumulate advantage.

Schemas are hypotheses that we use to interpret social events. Schemas are similar to stereotypes but the term "schema" is more inclusive and more neutral. Schemas are necessary cognitive structures. We could not get through our daily life without being able to categorize events, people, and situations. Gender schemas are hypotheses about what it means to be male or female, hypotheses that we all share, male and female alike. Schemas assign different psychological traits to males and females. We think of males

¹⁵ See J. Scott Long, *Measures of Sex Differences in Scientific Productivity*, 71 SOC. FORCES 159 (1992); Gerhard Sonnert, *What Makes a Good Scientist?: Determinants of Peer Evaluation Among Biologists*, 25 SOC. STUD. OF SCI. 35 (1995); H. Zuckerman, *Persistence and Change in the Careers of Men and Women Scientists and Engineers: A Review of Current Research*, in WOMEN: THEIR UNDERREPRESENTATION AND CAREER DIFFERENTIALS IN SCIENCE AND ENGINEERING: PROCEEDINGS OF A WORKSHOP 123 (L.S. Dixon ed., 1987).

as capable of independent action, as oriented to the task at hand, and as doing things for a reason. We think of females as nurturant, expressive, and behaving communally. In brief: men act; women feel and express their feelings.¹⁶

The main answer to the question of why there are not more women at the top is that our gender schemas skew our perceptions and evaluations of men and women, causing us to overrate men and underrate women. The small daily events in which men get a slight advantage add up over the long haul to put them at a large advantage relative to women.

There are, of course, situations in which women are actively discriminated against and even harassed. But in many professional contexts, nothing seems overtly. Gender schemas explain what is wrong when the problem is invisible or appears trivial; they operate on a minute-to-minute basis throughout the work day. Gender schemas are also the psychological basis of structural inequalities that hurt women (such as unnecessarily long work hours that presuppose the absence of a personal life).

¹⁶ Bem and others have used the expression "gender schema" differently from the usage I employ. See SANDRA L. BEM, *THE LENSES OF GENDER: TRANSFORMING THE DEBATE ON SEXUAL INEQUALITY* (Yale Univ. Press 1993). In Bem's usage, people who are "gender schematic" simultaneously tend to typify the expectations held of their gender (e.g., the males have many stereotypically masculine traits and few stereotypically feminine traits) and tend to apply those expectations strongly in their perception of others. To gender schematics, gender is a very important category in evaluating the self and others. Gender schematics contrast with people who are "aschematic." Aschematic individuals neither markedly conform to the expectations held of their gender (e.g., the males are either high or low on both masculinity and femininity) nor impose conformity on others.

In my usage, gender schemas refer to the implicit hypotheses that almost all of us share about the nature of men and women. Gender schemas are the beliefs we hold in common—whether we want to or not—about the genders. See DAVID BAKAN, *THE DUALITY OF HUMAN EXISTENCE* (Rand McNally 1966); Carol L. Martin & Charles Halverson, *The Roles of Cognition in Sex Role Acquisition*, in *CURRENT CONCEPTIONS OF SEX ROLES AND SEX TYPING: THEORY AND RESEARCH* 123 (D. Bruce Carter ed., 1987).

A. *Gender Schemas in Perceptions of Others*

Experimental data demonstrate that we do not see other people simply as people; we see them as males or females. Once gender schemas are invoked, they work to disadvantage women by directing and skewing our perception, even in the case of objective characteristics like height. In one example, the experimenters exploited the fact that our schemas include the information that men are on average taller than women.¹⁷ In this experiment, college students saw photographs of other students and estimated their heights 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.

Unbeknownst to the students who were doing the estimating, the experimenters had matched the photographs so that for every photograph of a male student of a given height there was a female student of the same height. But the students were affected by their knowledge that men are on average taller than women. They judged the women as shorter than they really were, and the men as taller. The students' schemas distorted their judgments.

In this experiment, as is typically the case, there were no differences in how male and female observers perceived the others. We all have nonconscious hypotheses about males and females, and we all use those hypotheses in perceiving and evaluating others.

In the case of professional competence, perceptions are similarly prone to error, probably more so than with height. We are likely to overvalue men and undervalue women. We can see why that would be the case. Gender schemas should play a large role in evaluations whenever (a) schemas make a clear differentiation between males and females, and they do so for professional competence as much as for height, and (b) when evidence is ambiguous and open to interpretation, as is the case with professional competence. It is tempting to think excellence is straightforward, but it isn't, as some of the data on women in the professions demonstrates.

¹⁷ See Monica Biernat et al., *Stereotypes and Standards of Judgment*, 60 J. PERSONALITY AND SOC. PSYCHOL. 485 (Apr. 1991).

B. *Two Applications to Real Life*

First, if we return now to the study on international business people, we can interpret the data on the lower value of women's credentials. Recall that having lived outside the United States added \$9,200 for men but subtracted \$7,700 for women and that speaking another language added \$2,600 for men but subtracted \$5,100 for women. We can now understand that speaking another language and living outside the U.S. are interpreted differently for males and females.¹⁸

As expected with gender schemas, employers only interpret such qualifications as career preparation when men have them. The gender schema for men would see a man as choosing to be abroad or learn a language not for the intrinsic pleasures of those activities but for their instrumental benefits. But the gender schema for women would see them as choosing such activities for their own sake. When men go abroad, their choice signals career commitment. When women go abroad, their choice signals indifference to a career.

Second, schemas also operate in making judgments of scientific competence. Recall the study of the Swedish Medical Research and how it awarded post-doctoral fellowships in 1995.¹⁹ The judges did not intend to discriminate. But their schemas represent women in general as less scientifically qualified than men. Those schemas affected how the judges viewed information that they probably considered to be objective but was in fact ambiguous and open to interpretation.

¹⁸ See Egan & Bendick, *supra* note 1.

¹⁹ See Wennerås & Wold, *supra* note 12.

C. *The Origin of Gender Schemas*

The cognitive component of gender schemas, I suggest, is the extrapolation we make from one fundamental sexual division of labor to the realm of personality. Women are capable of bearing and nursing children. Mothers physically nurture their children, and physical cues are disproportionately important in the formation of schemas. We extrapolate from physical nurturance to nurturance at a more metaphorical level.

Hypothesis formation is a natural human activity; it is the basis of science. But neither its naturalness nor its necessity guarantee it to be free from error. In the case of the physical world it is relatively easy for us to correct our false hypotheses. It is natural to hypothesize a flat earth, but we can find out we are wrong.

Unlike schemas concerning physical causes and effects, social schemas can themselves not only amplify but create

differences. We cannot create a flat earth, but we can create sex differences.

Once in place, gender schemas easily become entrenched. First, physical differences reassure us that people are different, even if the physical differences have no bearing on, for example, people's competence or ability. Second, we tend to reason from extreme examples, interpreting extreme examples as an indication that a trait is more common than it is. The existence of a few hyperfeminine and hypermasculine individuals creates polarities that act as magnets to draw the sexes apart. Third, as hypothesis-formers, we tend to dichotomize. As "cognitive misers" we prefer to create two categories rather than more, and to see those categories as mutually exclusive. We thus refer to the "opposite" sex, for example, as if males and females had opposite traits rather than almost completely overlapping traits. Our schemas prime us to notice traits consistent with the schema and not to notice traits that are inconsistent. We thus constantly validate and reconfirm our gender schemas.

D. *Reaping the Rewards of Success*

Not only do schemas affect perceptions of competence, they also make it difficult for women to reap the benefits of their achievements and be perceived as leaders (as shown by an experiment conducted by Porter & Geis²⁰). College students were shown slides displaying five people seated around a table, with one at the head of the table and two on either side. The group was described as working together on a project. Sometimes all the people were male, sometimes they were all female, and sometimes the group included both males and females.

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 identified as the leader. In mixed-sex groups, the man at the head of the table was always identified as the leader. But if a woman was at the head, she

was not reliably labeled as the leader; a man seated elsewhere at the table was labeled as the leader about equally as often.

Again, there were no differences between male and female observers. Both made the same judgments. There was no intention to discriminate. Nevertheless, the female leader who is sitting at the head of a table loses out compared to the male leader. The symbolic position of leadership carries less symbolic value for a woman than a man. Women are less likely to obtain the automatic deference that marks of leadership confer for men. Women are objectively hurt in situations of that sort, even if observers intend no hurt. They do not reap the rewards of success to the same extent that men do.

²⁰ See Natalie Porter & Florence L. Geis, *Women and Nonverbal Leadership Cues: When Seeing is Not Believing*, in *GENDER AND NONVERBAL BEHAVIOR* (Claro Mayo & Nancy Henley eds., 1981).

E. *Accumulation of Advantage*

Many of the examples that I have discussed are small things. One might be tempted to dismiss concern about such imbalances as making a mountain out of a molehill. But mountains are molehills, piled on top of one another over time.

Small imbalances add up to disadvantage women. Success is largely the accumulation of advantage, exploiting small gains to get bigger ones. A computer simulation²¹ shows the importance of very small amounts of bias. The researchers simulated an 8-level hierarchical institution, with a pyramidal structure. They staffed this hypothetical institution with equal numbers of men and women at each level. The model assumed a tiny bias in favor of promoting men, a bias accounting for only 1% of the variability in promotion. After many series, the top level was 65% male. Even very small amounts of disadvantage accumulate.

F. *A Third Application to Real Life*

We can now reconsider the finding that women physicians first appointed in 1980 had fewer research resources than did men physicians. Women are more likely than men to be seen—and perhaps to see themselves—as deserving few resources. If there is a space crunch, it will seem natural for women to take up less space than men, more natural both in the eyes of those who are allocating space and in the eyes of the women themselves. The consequences for women are serious, because space and time for one's research is an advantage that allows a researcher to accumulate future advantages. Women who lack space and time are at a serious disadvantage.

What is responsible for women's lack of progress in the professions and in academia is the gender schemas through which we all—male and female alike—perceive and evaluate women. The small but systematic undervaluation of women culminates in women's smaller salaries compared to men,

²¹ See Richard F. Martell et al., *Male-Female Differences: A Computer Simulation*, 51 AM. PSYCHOLOGIST 157 (1996).

slower rates of promotion, and lesser access to resources necessary to excel at their jobs.

G. *Gender Schemas and Perception of the Self*

Not only do gender schemas influence our perceptions of others, they also influence our perceptions of ourselves. To succeed, it is important to negotiate effectively. To do that, one must have a feeling of (at least moderate) entitlement. But women tend to be low in entitlement, as is shown by a number of experiments. Women work harder and more efficiently than men for the same pay and accept as fair less pay for the same work.²²

An example from real life comes from tennis. In 1991, Monica Seles argued for equal prize money for men and women in tennis tournaments. Two other players responded publicly. Steffi Graf was quoted as saying, "We make enough, we don't need more," and Mary Joe Fernandez was quoted as saying, "I'm happy with what we have; I don't think we should be greedy."²³ Women interpret equality as greed.

One way that gender schemas affect women, then, is in their perception of themselves as worth less and entitled to less. Women also, through the chores they are given to do in childhood, become accustomed to acting for others' good, to laboring for love.²⁴

In 1995, Seles, Graf, and other top players wrote a letter to the Australian Open, protesting their decision to substantially increase the size of the men's purse for 1996, so that the men's purse was \$390,000 more than the women's.²⁵ But while the players protested, they also pledged not to boycott the tournament—for the good of the game. Naturally, the Australian Open organizers saw no reason to equalize the prize money, and the women played for less.

²² See Brenda Major, *Gender, Justice, and the Psychology of Entitlement*, in 7 *SEX AND GENDER. REV. OF PERSONALITY AND SOC. PSYCHOL.* 124 (Phillip Shaver & Clyde Hendrick eds., 1987).

²³ Sandra Bailey, *Some Women Faulting Demand for Equal Pay; Graf Says There's No Need to Make More*, WASH. POST, June 2, 1991, at B9.

²⁴ See Jacqueline J. Goodnow, *Children's Household Work: Its Nature and Functions*, 103 *PSYCHOL. BULL.* 5 (1988).

²⁵ See Bill Gallo, *A Grand Slam Against Women*, DENVER WESTWORD, Jan. 31, 1996, at 47.

As adults, it is difficult for women to take themselves seriously as professionals who are entitled to a good salary, to promotion. Others do not take them seriously and have lower expectations for them. That, in turn, makes it difficult for them to take themselves seriously—difficult for them to negotiate successfully for space, resources, and money.

Not only, then, do gender schemas result in lower evaluations of women than men, but they also result in a lower sense of entitlement and efficacy in women than men.

V. REMEDIES

What is to be done? As the foregoing should have made clear, gender inequity is a multi-faceted problem which has its roots in implicitly held, even if explicitly disavowed, beliefs about sex differences, beliefs whose consequences are played out daily. Gender schemas cannot be changed over the short run. But their mode of action and their deleterious results can be understood and countered.

Meyerson & Fletcher have a framework for discussing change which can be adapted to give a perspective on different types of remedies.²⁶ One approach to improving women's status in organizations is to teach women the norms and practices of the institution, so that women have the information they need to be successful. This approach helps solve the problem that women do not get the same kinds or amounts of information that men do. Everyone needs information about how to succeed. Compared to women, men tend to receive more information and to receive it via many informal sources. Although such an approach can be conceived as rectifying women's deficiencies, it can also be conceived as rectifying institutions' failure to communicate equally what is necessary for success. On that perspective, the institution is deficient for not ensuring equal access to information.

Another approach is to change those large-scale practices in institutions that make it difficult for men and women to be equally successful. Reducing those limitations, such as by instituting affirmative action procedures, helps

²⁶ See Debra E. Meyerson & Joyce K. Fletcher, *A Modest Manifesto for Shattering the Glass Ceiling*, 28 HARV. BUS. REV. 127 (2000).

reduce structural limitations.

Finally, there are subtle aspects of institutional life that put women at a disadvantage. Both men and women may be unaware of these disadvantages. The third class of remedies looks for small-scale changes in daily practices that can, over time, have large-scale effects. One example would be changing recruitment procedures, by looking at a broader group of people than would normally be considered.²⁷ What is most useful about Meyerson & Fletcher's approach is their suggestion that small-scale changes in an institution can markedly improve gender equity. Several specific recommendations follow.

A. *Equity Measurement*

To know whether an institution is equitable, we need data on basic measures such as recruitment, salary as a function of years of experience, time to promotion, and retention. Such records must be kept and analyzed on an annual basis. The first step in ensuring equity is establishing whether inequity exists in the most obvious measures of success. But equity also involves determining possible inequalities in more subtle resources, such as office space, access to computer resources, and access to internal institutional funds. It is possible for everyone in an organization to be unaware of hidden inequities. By asking very successful people within an institution what resources help them do their jobs well, one can at least determine the most important resources available. By widely surveying workers in the institution, one can determine the extent to which people are aware of and make use of available resources.

²⁷ I have departed from Meyerson and Fletcher's taxonomy in several ways. First, I have omitted one of the approaches they discuss. Second, and more important, there are few remedies that fit neatly into only a single category. Mentoring, for example, can be seen as a remedy directed to changing an individual. But it also rectifies structural informational imbalances in an institution, and by departing from usual practice, it also changes the style of an institution in more subtle ways.

B. *Institutional Intervention Programs*

The Johns Hopkins University Department of Medicine, within the School of Medicine, developed an intervention program with impressive results.²⁸ In 1990 there had been only 4 women at the middle level of associate professor; by 1995 there were 26.

The improvement was not due to changes in promotion criteria. Rather, it was due to changes in how information was transmitted to women, and how women were treated by senior faculty. The school found, for example, that women were put up for promotion later than their male peers. That was in part because evaluators failed to identify qualified women and in part because women did not know the criteria for promotion.

One change was to evaluate annually each female faculty member (and later, each male faculty member). At the evaluation, the professor was given explicit information about her or his progress. Another change was to have a meeting once a month to give women faculty concrete information about how to move through their professional careers and how to handle different problems that might arise. Those meetings were necessary in part because mentors of male junior faculty were more likely to pass along that information than were mentors of female junior faculty. The senior faculty did not intend to put junior women at a disadvantage, but were more likely to interact informally with junior men. Much useful information is conveyed informally.

Another change was to provide senior faculty with explicit information about how to mentor, in an effort to eliminate disparities in treatment of junior men and junior women. The department had learned, for example, that mentors invited men junior faculty to chair conference sessions (and thus receive public exposure) 6 times as often as they invited women junior faculty.

Yet another change was to restrict meetings to weekdays

²⁸ See Linda P. Fried et al., *Career Development for Women in Academic Medicine: Multiple Interventions in a Department of Medicine*, 276 JAMA 898 (1996).

between 9 and 5. By so doing, the department did not force faculty to choose between their commitment to their work and their commitment to their non-work lives. This total program exemplified all three of the approaches discussed earlier. It also required a significant commitment of resources; improvement in the status of women is possible, but not without institutional commitment. That, in turn, requires a strong, committed leader.

C. Leadership

Leaders at institutions are important not only because they control resources, but also because they can use their authority to equally legitimate aspiring female and male leaders. We know something about how legitimation works and can use that knowledge to benefit males and females equally.

In one study, undergraduate evaluators watched a videotape in which 5 graduate students had a group discussion.²⁹ Two different versions of the tape were made. They varied only in what happened at the very beginning, where a male faculty member introduced one of the students as the leader. In one version of the tape the faculty member vouched for the student's expertise, mentioning the student's theoretical knowledge and performance ability. In the other version the faculty member simply said the student would be the leader.

Except for that difference, the two videotapes were identical. After watching the video, the evaluators judged the student leader on a number of dimensions, including how much leadership the leader showed, how good the leader's contributions were, how desirable it would be to hire the leader, and how much salary the leader deserved. In the tape where the faculty member had vouched for the student's expertise, the

leader scored higher on every measure. There was no difference in how male and female evaluators responded.

The same effect occurred, and to the same degree,

²⁹ See Virginia Brown & Florence L. Geis, *Turning Lead Into Gold: Leadership by Men and Women and the Alchemy of Social Consensus*, 46 *J. PERSONALITY AND SOC. PSYCHOL.* 811 (1984).

whether the student leader who was being judged was male or female. Female and male faculty were equally effective legitimizers. Although women in power can help other women, women may not perceive this. Women may feel powerless even if they are in a position to help others. Successful women may also feel there is barely enough room for them, let alone them plus other women.

Perceptions of leadership do not arise in a vacuum. We judge people not only on the basis of their performance, but on the basis of any prior information, including what others say about them. If the prior information legitimizes the leader, the leader's behavior is more likely to be seen as an example of being a good leader. If the prior information is not legitimizing, judges do not see a leader in as positive a light. Since institutional leaders are credible authority figures, they play an important role in determining who else will be seen as a leader.

The student evaluators were queried about the authority figures' statements about the leaders. Although the evaluators correctly remembered the gist of the authorities' statements, they believed that those statements had no effects on their own judgments. People believe that their judgments are independent of others' influence even when that influence demonstrably contributes to their judgments.

D. Development of Valid Criteria

Institutions can try to develop valid and objective criteria for evaluating people's performance. This is difficult to do because we tend to reuse criteria over and over again, without analyzing their validity. But there are examples where other criteria are available for consideration. As I mentioned earlier, women in academia publish less than men but, in general, their individual papers seem to be of higher quality. Universities can decide to put more of a premium on quality.

E. *Communication of Criteria*

Institutions can ensure that they communicate the criteria for advancement equally and explicitly to both men and women. Women are less likely than men to learn informally about the criteria; they are disadvantaged by the traditional routes of communication.

F. *Correction of Flaws in Evaluations*

Institutions can train evaluators to correct errors in evaluation procedures; we know something about how to make people better evaluators. We know, for example, that people make better decisions—and fairer decisions—when they are accountable for those decisions and must justify them. We also know about errors of reasoning that occur even when gender is not an issue, but are exacerbated by gender schemas. Such errors include illusory correlation and failure to appreciate covariance. An experiment on a phenomenon called "blocking" demonstrates another type of error, in which both males and females are unlikely to perceive causes that might genuinely contribute to a person's performance if a prior hypothesis—such as a gender schema—independently predicts their performance.³⁰

In the experiment, participants learned a number of facts about four fictitious students who had passed a welding course and four who had failed. 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. Some participants also received information about the students' gender. In one condition, as would be expected on the basis of gender schemas, all the passing students were male and all the failing students were female. In another condition, half the students who passed were male and half the students who failed were male. Participants were asked to say why some students had passed and others had failed.

³⁰ See David M. Sanbonmatsu et al., *Stereotype-Based Blocking in Social Explanation*, 20 PERSONALITY AND SOC. PSYCHOL. BULL. 71 (1994).

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, the participants would be unlikely to notice the other characteristic which predicted performance, namely course load. The division of success and failure along gender lines, the researchers hypothesized, would block students' ability to see that gender covaried with course load. In contrast, participants given information that did not support expectations based on gender schemas should be more likely to see that course load was an explanation of students' performance.

As predicted, the participants who were told that half the males passed and half failed were more likely to perceive that course load was related to passing or failing than did the participants who were told that only males passed and only females failed. There was no difference between female and male participants.

The welding experiment has obvious implications for judgments about women in professional settings. People who see a woman fail at a task that they expect her to fail at, because of the influence of gender schemas, will be unlikely to perceive other possible causes of her failure. They will attribute her failure to her sex rather than search further for other reasons, even if those other reasons are the actual causes for her failure. It may even seem to observers that a search for other causes is a search for excuses. Evaluators who understand that their own gender-based expectations may conceal the real causes of people's performance will be more likely to search for reasons for failure that they might otherwise have overlooked.

Another important aspect of this experiment is the link the researchers established between their results with gender schemas and similar results from purely cognitive tasks.³¹ In one such task, participants classified different letter sequences into two types. After they had developed a rule based on one differentiating property of the sequences, they classified new sequences. The participants continued classifying according to their rule, failing to notice that the

³¹ See *id.*

new sequences contained additional properties providing the same classification. The old rule blocked perception of the new regularities. An established hypothesis tends to block people's recognition of valid alternative hypotheses. Blocking occurs even in tasks that have no association with gender schemas, which shows that it is a general cognitive phenomenon.

G. Law

A separate, broad class of remedies is legal. It is difficult to measure the objective impact of affirmative action, but it does seem to have improved the representation of women.³² The virtue of affirmative action is its implicit recognition that women have been and are held to a higher standard than men. Women are systematically and typically underrated in professional life; a mechanism is needed to compensate for people's faulty judgments. One such mechanism is affirmative action.

The subjective effects of affirmative action are, unfortunately, easier to measure and are generally negative. Women do not want to be perceived as the beneficiaries of affirmative action. In a series of experiments, Heilman and her colleagues have shown that men and women react differently to being told that they have been chosen for a leadership position on the basis of their gender rather than on the basis of a (bogus) test of leadership ability.³³ Briefly, men rate themselves equally highly whether they are told that they were chosen on the basis of sex or on the basis of merit. Women, however, rate themselves highly only if they are told that they were chosen on the basis of merit. If told they were chosen on the basis of sex, women rated their performance

³² See SUSAN D. CLAYTON & FAYE J. CROSBY, *JUSTICE, GENDER, AND AFFIRMATIVE ACTION* (Univ. of Mich. Press 1992).

³³ See Madeleine E. Heilman et al., *Skirting the Competence Issue: Effects of Sex-Based Preferential Selection on Task Choices of Women and Men*, 76 J. APPLIED PSYCHOL. 99 (1991); Madeleine E. Heilman et al., *Self-Derogating Consequences of Sex-Based Preferential Selection: The Moderating Role of Initial Self-Confidence*, 46 ORGANIZATIONAL BEHAV. AND HUM. DECISION PROCESSES 202 (1990); Madeleine E. Heilman et al., *Intentionally Favored, Unintentionally Harmed? The Impact of Sex-Based Preferential Selection on Self-Perceptions and Self-Evaluations*, 72 J. APPLIED PSYCHOL. 62 (1987).

more negatively than was objectively appropriate, took less credit for a positive outcome than was objectively warranted, and had less interest in continuing as a leader. In the absence of direct information, a man's view appears to be, "I will think well of myself unless I receive explicit information to the contrary. Even if I am chosen on the basis of my sex, I probably deserve to be chosen, anyway." A woman's view appears to be: "I will think ill of myself unless I receive explicit information to the contrary. If I am chosen on the basis of my sex, I probably didn't deserve to be chosen."

One could cite the negative psychological effects of affirmative action as a reason for abolishing affirmative action procedures. I would argue, however, that such a step moves in the wrong direction. Instead of discarding affirmative action, we need to educate men and women about the ways in which gender schemas give men an advantage, an advantage that affirmative action helps nullify.

We can also teach men and women about when and why meritocratic principles fail to work, however sincerely they are espoused. We are all given ample evidence that the "best person"—even if that notion can be sensibly defined—does not always get the job. But we cling to the idea of a "just world"³⁴ in which the deserving are rewarded and the unrewarded are undeserving. What supports that erroneous belief is our explicit espousal of principles of meritocracy and fair play, and our explicit use of such principles to justify decisions that we make about others. Our sincere 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.

There is nothing intrinsically wrong with the notion of merit—if one recognizes the impediments to applying it. The first impediment is that "merit" is usually defined by people who are already in a position of power, and the definition bears a striking resemblance to the profile of those people. Other qualities, which may be equally or more conducive to success, are neither spontaneously considered nor welcomed when suggested by others. Second, "merit" tends to assume a single best person, even though our measuring instruments are not good enough to do more than group people into

³⁴ See MELVIN J. LERNER, *THE BELIEF IN A JUST WORLD* (Plenum 1980).

clusters, within which we cannot rationally pick the "best." Third, judgments of "merit," as we have seen, are influenced by our beliefs about social groups.

These impediments do not mean we should discard the idea of merit. Rather, by specifying what the impediments are, we can develop better procedures for evaluating people, appreciate the limitations in our ability to specify merit, understand the proper role of affirmative action, and educate the judiciary in how sex discrimination works.

We can also understand what it means to be meritorious enough. A suit brought by Jenny Harrison in 1989 against the University of California at Berkeley reflects sophisticated thinking about gender.³⁵ In 1986 Harrison was an assistant professor in the mathematics department at the University of California at Berkeley. The department had seventy-one tenured professors, of whom one was a woman. In a split vote, the department recommended against tenure. The higher-level university committees ratified that decision. Harrison argued that both the quantity and quality of her work was at the average of the eight men who had been tenured during her time at Berkeley. Her quantity equalled that of three of the men, and her quality equalled that of four of the men. (In 1993 Harrison and the university agreed to an out-of-court settlement which resulted in her returning to Berkeley in 1993 as a full professor with tenure. She was not "vindicated," in that there was no discussion of the 1986 decision against her, but she did get tenure.)

Harrison's performance, by her reckoning, had not been outstanding relative to her male Berkeley peers who had recently been granted tenure. She accepted the criteria (quantity and quality) and rated herself in the middle range. What makes Harrison's case noteworthy is that she understood that being in the middle range of those who had been promoted was, or should be, good enough. To merit promotion one should be within the range of other people who receive promotion; one should not have to meet higher standards.

What is perhaps most insidious about the biased evaluations women receive is that everyone comes to see as reason-

³⁵ See Paul Selvin, *Jenny Harrison Finally Gets Tenure in Math at Berkeley*, 261 SCI. 287 (1993).

able the idea that women should perform better than men if they want to get ahead. Men and women adopt high standards for women, and women adopt high standards for themselves. But the idea of proving that you are equal by proving that you are better is an idea which will guarantee that most women will fail, just as it would guarantee that most men would fail were it applied to them.

That is not to say that women should not aspire to excellence. Everyone should. It is to say that excellence has more than one face, and that, even if there is agreement on the criteria, the standard of comparison in deciding whether people deserve a job, partnership or tenure, or a high salary, is the range of other people who have been hired, gained partnership or tenure, or given a high salary. The standard of comparison should not be the ideal to which one aspires, but rather the actual people who hold the positions and salaries at issue. One may fall far short of one's aspirations, but still deserve partnership or tenure.

Women can and should benefit from affirmative action. Attorneys can and should use the existing psychological data and theory to demonstrate the existence of sex discrimination in particular circumstances.

In sum, institutions, leaders, and women themselves can improve the position of women in a variety of ways. On balance, there is some reason for optimism. Although women's advancement is still too slow; although gender schemas operate covertly, and bias evaluations; although small examples of bias add up to disadvantage women; and although people's reasoning is prone to particular types of errors; we can understand how these processes work and do something to counteract them.