

**WOMEN,  
WORK,  
AND THE  
ACADEMY**  
STRATEGIES  
FOR  
RESPONDING  
TO 'POST-CIVIL  
RIGHTS ERA'  
GENDER  
DISCRIMINATION



# BCRW

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## WOMEN, WORK, AND THE ACADEMY

Written by Alison Wylie, Janet R. Jakobsen, and Gisela Fosado

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In recent years, the Barnard Center for Research on Women has made a concerted effort to link feminist struggles to those for racial, economic, social, and global justice. We have built invaluable cooperative relationships with a far-reaching network of scholars, activists, and artists who contribute to the long struggle to make our world more just. This report is based on the Virginia C. Gildersleeve Conference at the Barnard Center for Research on Women, with keynote speakers Nancy Hopkins, Claude Steele, and Virginia Valian. The conference was organized by Janet R. Jakobsen and Alison Wylie, sponsored by the Barnard Center for Research on Women and made possible by a generous grant from the Virginia C. Gildersleeve Fund of Barnard College, with assistance from the ADVANCE Program at the Earth Institute at Columbia University.

The participants in this conference have all made significant contributions to our understanding of the situation women currently face in academia, highlighting the effects of a diffuse set of barriers to women's participation: small-scale, often unintended differences in recognition, support, and response that can generate large-scale differences in outcomes for women. The aim of this conference was to take stock of the extant research and interventions and to chart a course forward. (For more details about the conference, visit [www.barnard.edu/bcrw/womenandwork](http://www.barnard.edu/bcrw/womenandwork).) Much of this report is based on discussions from this conference. Participants included:

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# INTRODUCTION

WOMEN CONTINUE TO FACE GENDER DISCRIMINATION IN THIS “POST-CIVIL RIGHTS ERA” BUT IT DOES NOT OPERATE THROUGH THE KINDS OF OVERT BARRIERS TO PARTICIPATION THAT MOBILIZED ACTIVISTS IN THE 1960s; IT IS EMBEDDED IN THE FABRIC OF EVERYDAY INTERACTION

It is now more than three decades since Congress passed the landmark civil rights legislation that prohibits sex discrimination in education (Title IX, 1972), and since then women have doubled and tripled their representation in virtually all areas of undergraduate and graduate training. Women now earn 48 percent of the doctorates and more than half of all graduate degrees awarded by U.S. institutions. And yet, gender inequities have proven to be stubbornly resistant to change at the level of the professoriate; women continue to be disproportionately employed in part-time and limited-term positions; their rate of advancement through the ranks and their representation at the highest faculty ranks remains below that of men. These differences hold for minority faculty, they are compounded for minority women, and they are amplified at more elite institutions.

Why do such inequities persist? According to conventional wisdom, any gender differences in outcome reflect innate differences in the talent, drive, and commitment of women. Lawrence Summers, the former president of Harvard University, touched off a firestorm of controversy in January 2005 when he invoked his daughters' lack of interest in trucks as evidence for innate gender differences that would explain the relative absence of women in the top ranks of the sciences. His remarks drew immediate rebuttal, and in the last year the National Academy

of Sciences (NAS 2007) and the American Association of University Professors (West and Curtis 2006) have published reports that call into question the claims and assumptions he made explicit. These reports detail the accumulated results of research by social scientists in fields ranging from social psychology and cognitive science to sociology and economics and conclude that the conventional wisdom is wrong: persistent gender inequities in academia cannot be attributed to any innate cognitive deficit nor to a lack of drive and commitment in women. They must rather be explained in terms of the cumulative effects of inhospitable workplace environments, evaluation biases that reflect gender stereotyping, and institutional structures and work patterns that systematically disadvantage women in academia (NAS: S-2, 3). Outcome studies and research on the experience of under-represented minorities document similar, persistent structural blocks to their effective inclusion in the academy (i.e. Turner 2002; CAWMSET 2000; CEOSE 2000, CEOSE 2007; Nelson 2005).

Despite this accumulated body of counter-evidence, the familiar assumptions continue to circulate. For many they seem self-evident, consistent with a deep-seated conviction that academic institutions are meritocratic and fair. The recognition and explanations of systemic inequities that persist in the

academy requires a fundamental conceptual shift signaled by two insights about “post-civil rights era” gender discrimination that were brought to public attention by the widely influential “Report on the Status of Women Faculty in Science at MIT” that appeared in 1999. The first is that biases operating below the threshold of deliberate consciousness, biases in interaction that are unrecognized and unintended, can systematically put women and minorities at a disadvantage. Second, although individual instances of these “micro-inequities” may seem trivial, their cumulative effects can account for large-scale differences in outcome; those who benefit from greater opportunity and a reinforcing environment find their advantages compounded, while deficits of support and recognition ramify for those who are comparatively disadvantaged (MIT 1999: 10). As the authors of the MIT report observe, they themselves did not fully understand the ways in which they were institutionally disadvantaged until they compared notes and began to document gender differences in the distribution of resources like funding and lab space, in professional recognition and compensation, in institutional decision making and in leadership roles. They declared, with electrifying effect, that women continue to face gender discrimination in this “post-civil rights era” but that it does not operate through the kinds of overt barriers to participation that had mobilized activists in the 1960s; it is embedded in the fabric of everyday interaction, “a pattern of powerful but unrecognized attitudes and assumptions that work systematically against women despite good will” (MIT 1999: 11).

These forms of “subtle” discrimination are now a primary focus of initiatives designed to redress, across the academy, what the National Academy of Sciences committee describes, with reference to the sciences, as a “needless waste of the nation’s ... talent” (NAS 2007: ix). “Women, Work and the Academy” outlines this reframing of the issues and provides a summary of key findings drawn from recent reports on the nature, effects, and sources of gender and racial discrimination in the academy. Many of these reports include recommendations for college and university administrators on how best to recruit and retain faculty from under-represented groups. Others, most notably the report by the National Academy of Sciences (2007), identify ways in which organizations, federal funding agencies, and Congress can support a range of initiatives designed to end discrimination against women and minorities. Our aim is to provide a concise, accessible guide to the key empirical findings and recommendations presented in these reports.





# KEY FINDINGS

WOMEN NOW EARN 48 PERCENT OF DOCTORAL DEGREES IN THE U.S., BUT THEIR GAINS IN THE RANKS OF THE FACULTY HAVE NOT KEPT PACE WITH THEIR GROWING PRESENCE IN THE POOL OF TRAINED ACADEMIC TALENT

## 1 Inequity in academic employment has proven to be stubbornly persistent

Despite dramatic increases in the representation of women since Title IX was instituted, the distribution of women in the academy still conforms to the inverted pyramid structure noted in the 1960s and 1970s: women continue to be under-represented at senior levels of the professoriate, especially in graduate training institutions; they continue to be disproportionately employed in part-time and non-tenure-stream positions; and they continue to be undercompensated relative to their male counterparts.

A recent AAUP report on Faculty Gender Equity Indicators (West and Curtis 2006) details the persistence of these patterns. Women now earn 48 percent of doctoral degrees in the U.S.; in 30 years they have tripled their representation among new Ph.D.s, which stood at 16 percent in 1972 (West and Curtis 2006: 5). But their gains in the ranks of the faculty have not kept pace with their growing presence in the pool of trained academic talent. Women now account for 43 percent of full-time faculty positions, up from 27 percent in 1972, but in all but a few fields their rate of appointment to tenure-track positions falls far below their representation in the candidate pool of Ph.D.s granted in the last decade (2006: 9), and rates of attrition are higher, especially in the sciences (Preston 2004). Their likelihood of holding non-tenure-track jobs is significantly higher than men's (30 percent of full-time women faculty compared to 18 percent of men), and their representation in the ranks of tenured faculty is lower still, especially in doctoral institutions where, West and Curtis observe, "full-time women faculty are only half as likely as men to have tenure" (2006: 10).

These patterns are amplified at the highest ranks and in the most elite institutions, where women still account for just 19 percent of full professors (Wilson 2004). Crucially, they persist even when a range of other variables—e.g., institutional type, measures of productivity, disciplinary affiliation—are taken into account (West and Curtis 2006: 12).

The effects of this pattern of distribution are reflected in persistent salary differences; women's average salaries "are two to nine percentage points lower than men's salaries even when they hold the same rank," and they "do not reach parity with men in any...institutional category" (West and Curtis 2006: 12).

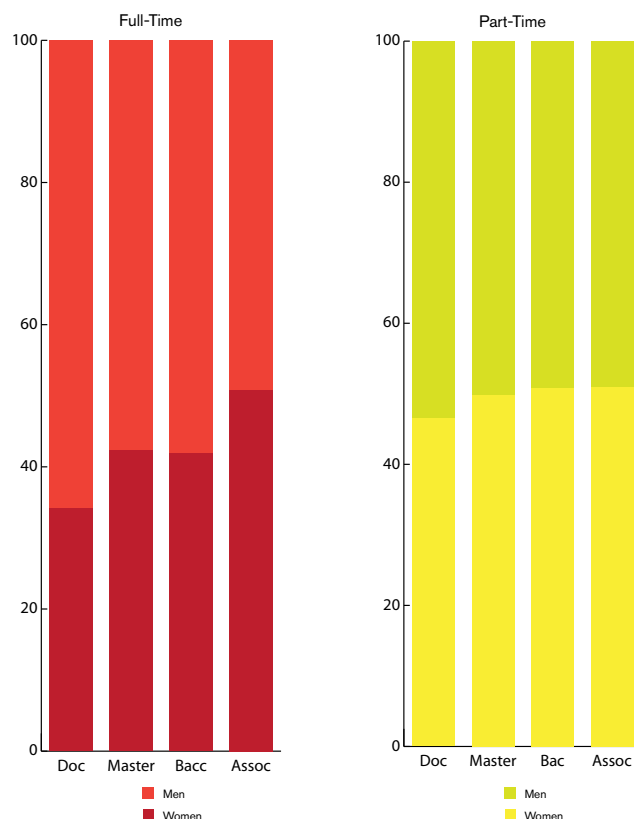
These differences hold for minority faculty, and they are compounded for minority women (NAS 2007: 1-4, 5; CAWMSET 2000: 45-48). In higher education as a whole, racial and ethnic minorities make up less than 14 percent of faculty nationwide (Turner 2002). For example, African-Americans account for five percent of full-time faculty overall (Turner), and four percent of professors and associate

professors, less than half their representation in the national workforce (National Center for Educational Statistics 2005). Moreover, minority faculty show an uneven distribution across institutions, ranks, and fields that parallels that of women: they are disproportionately employed at undergraduate and community colleges, they are concentrated in junior ranks, and they are “acutely underrepresented” in the fields of science and engineering (Nelson 2002).

Where the sciences and engineering are concerned, although improvements in the representation of minority faculty have exceeded the overall rate of growth of these fields in recent years, it remains “disproportionately low”; the National Science Foundation (NSF) Committee on Equal Opportunities in Science and Engineering (CEOSE) reports that, “collectively [American Indian/Alaska Native, African American, and Hispanic American groups] make up only 9% of the country’s S&E [science and engineering] workforce” while they account for a quarter of the workforce overall (CEOSE 2007: 3-4). In a number of fields of physical science and engineering there are no minority women at all, and they are “almost nonexistent” in the departments of elite research universities, even when you take all fields of science and engineering together (Nelson 2005: i). Although minority women are better represented in the social and life sciences, and are the most likely of all women to be tenured in the STEM (science, technology, engineering and medicine) disciplines, they are less likely to be full professors than “white women or men of any racial/ethnic group” (CAWMSET 2000: 53).

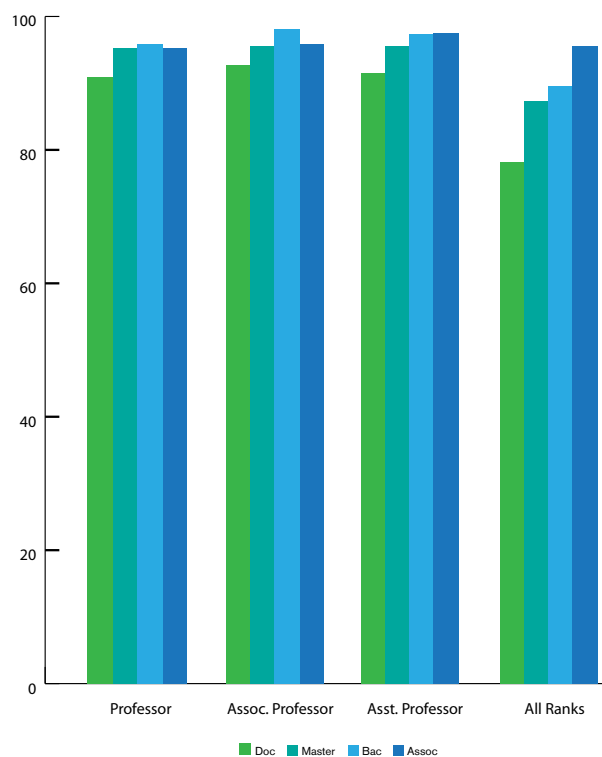
The salaries of minority faculty trail those of white faculty. One consequence of the pattern of distribution that concentrates minority faculty in two-year colleges and undergraduate institutions is that, as a consequence of institutional affiliation, they have access to fewer resources and lower salaries (Pearson 2005). In the sciences and engineering where minority faculty are least well represented, their salaries are significantly depressed; in its 2000 Biennial Report to Congress the NSF committee found that the median science faculty salary for white Americans was \$9,000 more than for Hispanic Americans, and \$7,000 more than for African Americans (CEOSE 2000: 31).

In the next 50 years it is projected that current minority groups (Hispanic, Asian, and African American) will double their representation in the workforce; together they will account for nearly half the U.S. workforce. These demographic shifts reinforce the point that academic institutions cannot afford to maintain hiring, retention, and promotion practices that deflect qualified women and minority scholars. This is especially acute for the sciences and engineering: “[T]he nation must cultivate the scientific and technical talents of all its citizens, not just those from groups that have traditionally worked in [STEM] fields” (CEOSE 2000: 2).



### EQUITY INDICATOR 1

Faculty Employment Status by Gender and Institutional Category 2005-06 (West and Curtis 2006)



### EQUITY INDICATOR 2

Full-Time Faculty, Women's Average Salary as a Percent of Men's, by Institutional Category 2005-06 (West and Curtis 2006)

## 2 Current rates of improvement cannot be expected to resolve the problem any time soon



It is no longer plausible that it is just a matter of time before gains at various stages in the training “pipeline” will translate into institutional change in the academy. Legislative protections against formal discrimination have been firmly in place for over 30 years, and in many fields gender parity was realized in the training pipeline by the mid-1980s. Even in the sciences women have been awarded 25 percent or more of Ph.D.s since 1970, but their representation among full professors remains less than 10 percent, well below what you would expect given “the number of doctorates awarded ... [and] the number of years it takes to move from Ph.D. to full professor” (Greenwood 2000). The NAS report updates and specifies this claim for the sciences: “For over 30 years women have made up over 30 percent of the doctorates in social and behavioral sciences and over 20 percent in the life sciences. Yet at the top research institutions, only 15.4 percent of the full professors in the social and behavioral sciences and 14.8 percent in the life sciences are women” (NAS 2007: S-2).



In a carefully constructed analysis of the impact that various hiring and retention policies can be expected to have on the representation of women at a model research institution, Marschke et al. conclude that, under current conditions parity will never be reached (2007: 17). If contemporary hiring, retention, and promotion practices continue, they project, the representation of women among faculty will stabilize at just over a third, and that improvement will take roughly 40 years (2007: 20). The gender composition of the faculty could match that of contemporary Ph.D. candidate pools (roughly 40 percent across fields) if policies were implemented that ensure equality in hiring and promotion, and that counteract higher exit rates among women, but even that achievement would take 30 years.



Improvements in the representation of minority groups also show signs of stalling at the more senior academic ranks (CAWMSET 2000: 53) and, recently, at advanced levels of doctoral training in the sciences (CEOSE 2007: 5). For example, although the number of chemistry Ph.Ds has more than doubled since 1990, the number of African Americans hired as assistant professors at the nation’s top 50 chemistry departments has remained at zero. The combined representation of African and Hispanic Americans in chemistry constitutes just one percent of all tenure-track faculty members at these top programs (Nelson 2005). In short, “although the pool of minority faculty is underdeveloped...it is also underutilized” (Turner 2002).

## 3 Unintended and unrecognized forms of discrimination play an important role in reproducing substantial inequities in outcome

The NAS Committee on Maximizing the Potential of Women in Academic Science and Engineering provides a comprehensive assessment of the best current research on factors commonly cited to explain the persistent under-representation and marginalization of women in the sciences. They conclude that these patterns cannot be explained in terms of innate cognitive differences, or by a lack of drive and commitment on the part of the women who are now completing graduate science training in record numbers. Evaluation biases that reflect the operation of internalized gender and racial schemas, and institutional structures that systematically disadvantage women and under-represented minorities, must be recognized to play a role (NAS 2007: S-2, 3). All indications are that the diffuse,

cumulative forms of discrimination identified by authors of the MIT report are well entrenched and, in combination with demographic inertia (Marschke et al. 2007: 2-4), are highly effective in reproducing systemic gender inequities.

The recent push to extend Title IX compliance reviews to science education reflects this assessment. The catalysts for this recommendation—arguments developed by Rolison (Rolison 2000; Zare 2006: 46) and in the 2004 report of United States Government Accountability Office (US-GAO)—stress the need to attend to “subtle” factors, like mentoring practices and the workplace environment, that play a role in reproducing patterns of attrition and disparities in compensation in the sciences (US-GAO 2004: 23-24). In press releases announcing the Title IX initiative, the assistant education secretary for civil rights, Stephanie Monroe, emphasized the need to go beyond “the numbers,” to consider the intent of policies, how they are enacted, and the range of ways in which women are disadvantaged in the sciences by forms of discrimination that “may be ‘subtle’ and not involve written rules but barriers that are still quite real” (e.g., *The Weekly Standard*; *National Journal* 2004).

Reports documenting the problem in these terms include: the American Association of University Professors’ AAUP Faculty Gender Equity Indicators 2006 (West and Curtis); reports by university task forces, for example, Harvard’s 2005 “Report of the Task Force on Women Faculty” (<http://www.hno.harvard.edu/gazette/daily/2005/05/women-faculty.pdf>), a special report on “Women in Higher Education” in *The Chronicle of Higher Education* (Wilson 2004); and government agency reports such as the Congressional Commission on the Advancement of Women and Minorities in Science, Engineering, and Technology (CAWMSET), and NSF ADVANCE grant recipient reports ([www.nsf.gov/crssprgm/advance/itwebsites.jsp](http://www.nsf.gov/crssprgm/advance/itwebsites.jsp)).

## 4 Subtle forms of gender bias work through various mechanisms at all career stages

Evaluation bias that operates along gender lines is well documented in academic contexts. By the early 1970s studies had appeared which showed that C.V.s and publications receive comparatively negative assessments if the author’s name is recognizably female, rather than male, whether the raters are male or female and regardless of field (e.g., Lewin and Duchan 1971, Tosi and Einbender 1985). Subsequent research documents similar effects in other areas. When academic psychologists were asked to assess inexperienced job candidates, they were more likely to recommend hiring a man with the same qualifications as a woman (Steinpreis et al. 1999). Student evaluations reveal patterns of bias that track gender norms; women

faculty are rated lower in areas where they display competence that violates gender role expectations (Basow 1994; Langbein 1994: 550-551). And a Swedish study of a competitive postdoctoral award process found that women need substantially more “impact points” to receive the same competence score as a man (Wenneras and Wold 1997). Anonymous review processes can have a leveling effect that reinforces the results of the evaluation bias studies; for example, “blind” auditions have been found to increase the number of women selected for symphonies by 33 percent (Goldin and Rouse 2000). In short, in the academic realm, as elsewhere, “people are less likely to hire a woman than a man with identical qualifications” and are less likely to “ascribe credit to a woman than to a man for identical accomplishments” (NAS 2006: S-2).

The effects of evaluation biases are evident in subtle differences in the way women’s accomplishments or credentials are described. Women may find their accomplishments attributed to luck or the support of colleagues and mentors and their failures treated as the norm, just what could be expected of a woman. Letters of recommendation tend to be shorter for women, and they contain more “grindstone” adjectives (e.g. “hardworking”) and fewer standout adjectives (e.g., “brilliant”), even when the applicant’s accomplishments are similar (Trix and Psenka 2003).

The criteria used to evaluate academic performance may themselves reflect gendered norms that disadvantage women as when, for example, assertiveness and single-mindedness are valued over flexibility, diplomacy, curiosity, and dedication (NAS 2006: S-2). In such cases, women face a well-documented double-bind; if they fulfill the expectations of the job, so defined, they violate the conventions of appropriate behavior for women, sometimes with profoundly negative effects professionally as well as personally (Babcock and Laschever 2003: 62-63, 87-89; Valian 1999: 125-144).

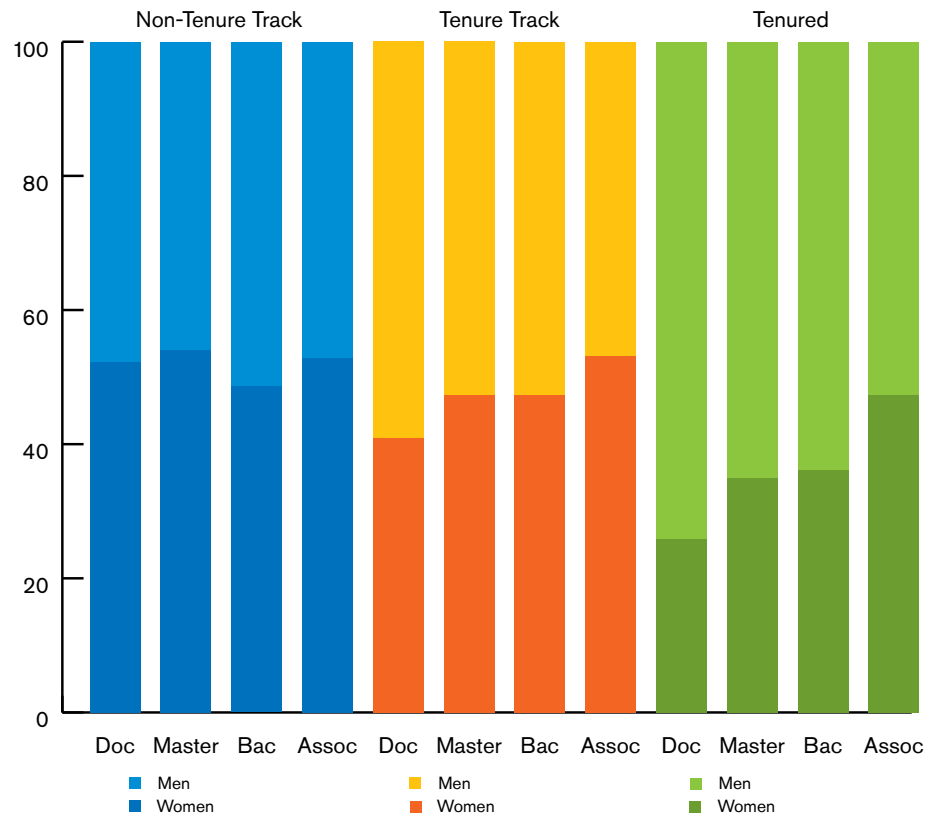
Gender-normative expectations may affect not only how women’s work is evaluated, but also what kinds of work women do compared to similarly placed men. Women faculty do more committee service than men (Carnegie Foundation 1990), but they tend to serve on less important committees and in positions that have lower levels of decision-making power (Bagihole 1993). Women also tend to choose service work oriented to helping others rather than attaining power (Twale and Shannon 1996).

The fact that academia is not family friendly adds another dimension to gender bias; as Drago observes, “it is difficult to simultaneously achieve career success while making and meeting commitments to family” (2007: 4). When the expectations of an “ideal worker” require the kind of



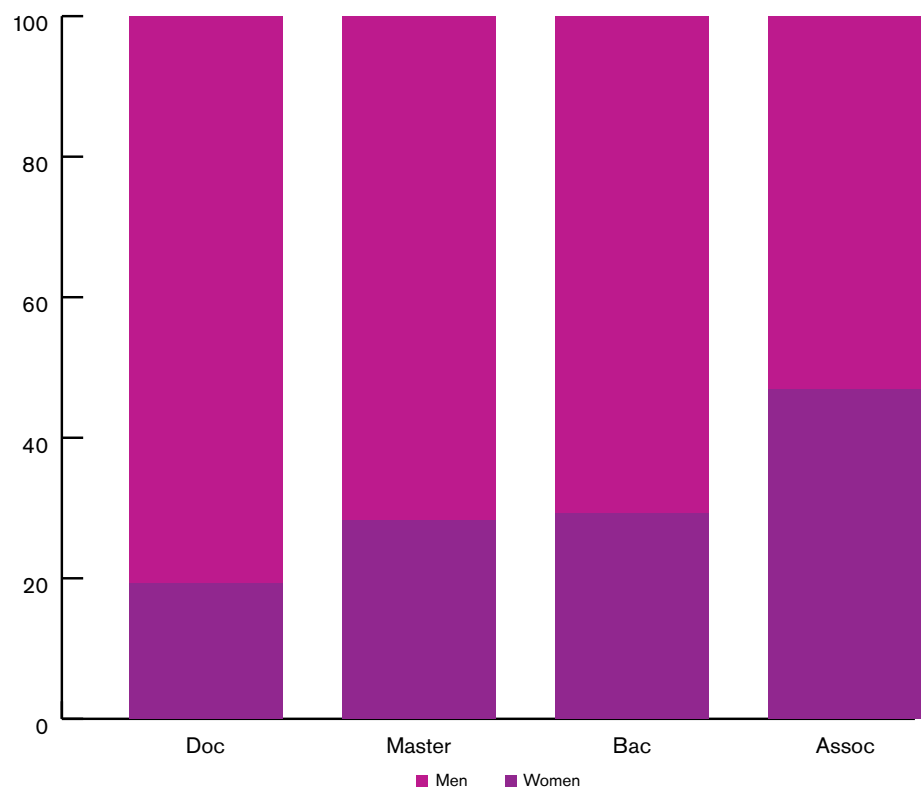
all consuming and exclusive career commitment typical of academia, these work-family tensions are particularly acute for women (Williams 2000). The gendered expectations of caregiving not only create the time bind made famous by Hochschild (1989, 1997), but put women in the position of negotiating roles that are defined by fundamentally conflicting values. Drago describes strategies of “bias avoidance” among women in Chemistry and English by which they limit family obligations (e.g., remaining single or childless), or strive to minimize their visibility in work contexts (e.g., “stealing” time for family from work; not taking advantage of parental leave or provisions for stopping the tenure clock), to ensure that they will be taken seriously as professionals (2007: 5-6).

These biases are reflected in and are further compounded by persistent gender inequities in rates of advancement and compensation, in research awards and in the allocation of resources like laboratory and office space (Tesch et al. 1995). Starting salaries are 2.9 percent to 8.4 percent lower for women than for men with comparable rank and experience (Toumanoff 2005; see also Ash et al., 2004), and they lag behind those of men even when factors like differences in productivity and characteristics of the employing institution are taken into account (Ginther 2004: 4; see also Long 2001: 187-217). Women faculty take longer to be promoted than their male counterparts (Valian 2005), and the gender gap in salaries widens as you move up the academic ranks. Although this gap has narrowed in recent years, Ginther reports that, in the sciences, a third of the salary differential reported for full professors remains unexplained (2004: 3-4).



### EQUITY INDICATOR 3

Tenure status of Full-Time Faculty by Gender and Institutional Category 2005-06 (West and Curtis 2006)



### EQUITY INDICATOR 4

Full Professors by Gender and Institutional Category 2005-06 (West and Curtis 2006)



## A NEW PARADIGM

WHEN INSTITUTIONAL DECISION-MAKERS LACK INFORMATION ABOUT THE OPERATION OF COGNITIVE SCHEMAS AND INTERACTION PATTERNS THAT REPRODUCE BIAS, AND HAVE NO CLEAR MANDATE TO COUNTERACT THEM, EVEN PEOPLE OF GOOD WILL FIND IT HARD TO CORRECT FOR BIASED DECISION-MAKING. OVER TIME, THESE PATTERNS BECOME ENTRENCHED IN THE INSTITUTIONAL CULTURE AND IN STRUCTURES OF MARGINALIZATION THAT FURTHER ISOLATE AND DISADVANTAGE WOMEN AND MINORITY SCHOLARS

What accounts for gender differences in outcome?

Decades of close analysis of the “root causes that give rise to the observed outcomes” (Long 2001: 2) are now paying off, as many lines of inquiry converge on a shared understanding that can be used to guide policy changes. The new framework shows that, despite the absence of formal barriers to access or discriminatory intent, gender differences should not be attributed to factors internal to the women themselves: their hypothesized lack of ability (the cognitive deficit thesis); their absence from the pool of trained women (the pipeline thesis); or their lack of drive and commitment. This alternative framework for thinking about and acting to change discrimination in the academy turns on two key insights:

- 1** Gender and race bias exists in the social fabric of everyday interaction; it is articulated in persistent, small-scale, but systematic differences in recognition, evaluation, and response that reflect the expectations

central to conventional gender and race schemas.

Crucially, these mechanisms include patterns of automatic response that operate below the threshold of conscious awareness, unintended and unrecognized.

- 2** The resulting “micro-inequities” are cumulative, generating substantial and persistent differences in outcome along gender lines. They manifest themselves in disparities in types of appointment, rates of promotion, patterns of recognition and professional rewards, lifetime earnings profiles, as well as in the lower levels of job satisfaction often reported by senior women scientists.

This new paradigm has taken shape in research programs that have developed over the last 30 years in fields as diverse as experimental psychology and social psychology, organizational sociology, labor economics, and socio-historical science studies. Key aspects of this research include the following:

## 1 Cognitive and social psychologists have delineated cognitive schemas that operate below the threshold of conscious intention, generating differential patterns of response along lines of gender and race/ethnicity, as well as a range of other dimensions of social inequity

The theoretical and empirical foundations for recognizing the role of cognitive schemas in sustaining stubbornly persistent gender and race inequities were laid by psychological research on various forms of “implicit cognition”—in particular, unconsciously held attitudes and stereotypes—that dates to the late 1970s (Greenwald and Krieger 2006).

Valian characterizes gender schemas as “implicit, or non-conscious, hypotheses about sex differences” (1999: 3) that we internalize early and that prefigure our expectations of and interactions with others (1999: 112-118). In *Why So Slow*, she draws together the results of a wide range of experimental work which shows how pervasive and resistant to change these schemas are. They account for the differences in professional evaluation documented by the studies of evaluation bias mentioned above, in which women’s credentials and projected capabilities are underestimated in a manner consistent with the expectations of entrenched gender schemas. She argues that the “visible” differences in support, recognition, and outcomes for women should be understood to arise from the operation of these “invisible” cognitive mechanisms; they “hold up the glass ceiling” (1999: 1-2).

Steele’s research on “stereotype threat” draws attention to the powerful (negative) effects that the expectations associated with conventional race and gender stereotypes can have on the performance of under-represented minorities and women in a range of contexts, including the academic (1998). In Steele’s studies, these effects are documented for subjects who are well trained and know they are accomplished in the areas in which they are being evaluated; despite long term exposure to the expectation that, for example, African Americans will not perform well on standardized tests or girls will not be good at math and science, the subjects Steele studies have not disidentified from these fields. Even so, he finds that when internalized race or gender schemas are mobilized in a test situation, the performance of his test subjects is compromised, despite their training and previous accomplishments.

The gender schemas described by Valian, like the racial stereotypes studied by Steele, are resistant to revision, even in face of strong counterevidence. This gives rise to a number of well-documented effects, including contradictions between consciously avowed beliefs and automatic or unconscious

responses. When socially entrenched schemas are widely reinforced and internalized by everyone, they have the capacity to shape self-evaluation. They create internal conflict for those who persist in fields that conventional stereotypes rule out as inaccessible or inappropriate for them, and generating well documented patterns of self-selection out of these fields.

When these schemas operate unchecked, they systematically bias our evaluations and interactions, reproducing social hierarchies in which women and minority scholars find themselves marginalized, their talents and expertise suspect, and their contributions devalued.

## 2 Sociological studies identify interaction patterns that reproduce inequality and institutional structures that can either amplify or disable the operation of discriminatory mechanisms

In a recent presidential address to the American Sociological Association, Reskin identifies a number of features of organizational structure and process that affect the degree to which inequality will be fostered or discouraged (2003: 10-14). For example, inequity thrives when decision-making processes lack transparency and clear accountability for outcomes. Similarly, when decision-makers lack information about the operation of cognitive schemas and interaction patterns that reproduce bias, and have no clear mandate to counteract them, even people of good will find it hard to correct for biased decision making. Over time, these patterns become entrenched in the institutional culture and in structures of marginalization that further isolate and disadvantage women and minority scholars.

Unconscious patterns of affiliation also make it difficult for members of marginalized groups to become part of the daily activities and informal social relations that make up much of academic practice. Those who do not comfortably fit into a departmental culture may find themselves on the margins of crucial communication networks. The effects of this marginalization will be all the more profound if the institutional culture is one in which information, advice, and mentoring are informal.

## 3 Demographic, life-course, and cohort studies document the cumulative effects of “micro-inequities” and offer models of the processes that generate large-scale differences in outcome along lines of gender and race/ethnicity



The thesis that academic careers are shaped by the gradual “accumulation of advantages and disadvantages” was proposed by Merton in the 1960s (1968). He argued that the academic reward system is structured by “psychosocial processes” which ensure that those who are already highly recognized often benefit from further misattributions of credit. He described this compounding of advantage as the “Matthew effect,” invoking Matthew 13:12: “For whomsoever hath, to him shall be given, and he shall have more abundance; but whomsoever hath not, from him shall be taken away even that he hath.”

Twenty-five years later, Rossiter reframed this analysis, drawing attention to complementary and systematic patterns of under-recognition by which the contributions made by members of socially marginal groups are discounted (1993). She refers to this cumulative disadvantage as the “Mathilda effect,” in honor of the 19th-century suffragette Mathilda Gage (1993) who, Rossiter argues, developed a critical perspective on the ways in which women’s contributions to collective understanding had routinely been deflected.

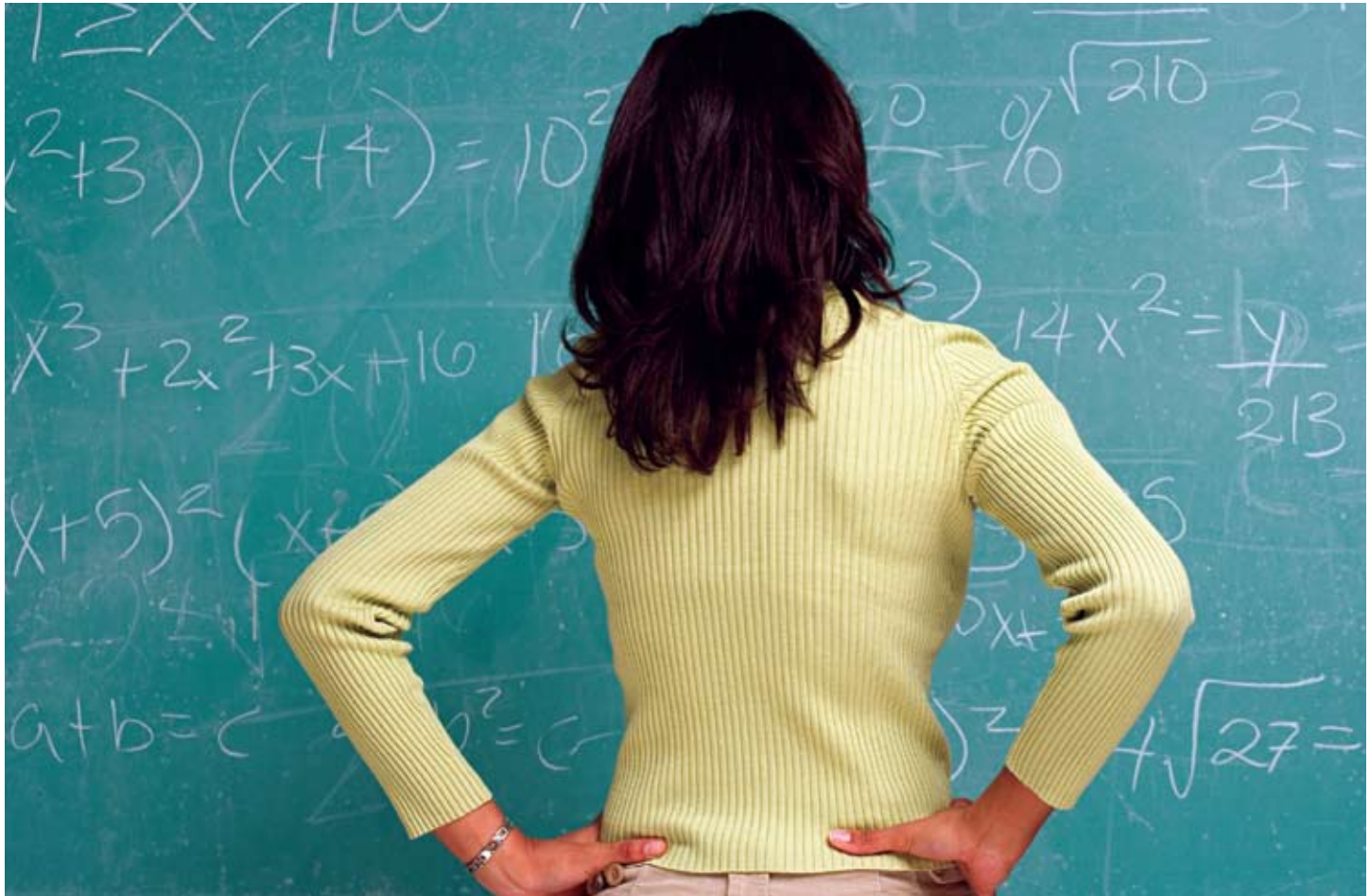
A “kick-reaction” model developed by Cole and Singer in the early 1990s takes into account the effects of both over- and under-recognition on the careers of scientists. They argue that significant divergence in career paths of scientists can arise from small differences in the number of positive as opposed to negative “kicks” they receive, and in the degree to which they respond positively or negatively to these kicks (1991).

In *Who Succeeds in Science* (1995)—a study of elite scientists—Sonnert and Holton refine this model, arguing that kicks and responses must be understood to be interactive. Differences in behavioral-attitudinal responses widen as those disproportionately subject to negative kicks come to appreciate that they may face impediments to the development of their careers over which they have little control. Sonnert and Holton conclude that “it is no longer possible to point to a few dramatic and clear-cut career obstacles for women scientists” (1996: 63). By implication, Long argues, “with each progressive stage of the stratification process, it becomes more difficult to distinguish outcomes that are the result of individual differences between women and men from outcomes that are the result of men’s cumulative advantage over women in science (2001: 216-217).

Taken together, these models and the studies on which they are based show how large-scale differences in outcome can be accounted for in terms of cumulative disadvantage, and suggest that gender differences in the characteristics of individuals must be understood to be co-constituted by external environmental barriers.

# RECOMMENDATIONS

ACTIVE INTERVENTION IS NEEDED TO ADDRESS ISSUES OF GENDER EQUITY IN THE ACADEMY. IF INTERVENTION IS TO BE EFFECTIVE, WE MUST BE CLEAR ABOUT THE SOURCES OF INEQUITY AND FOCUS NOT JUST ON BLATANT DISCRIMINATION, BUT ALSO ON SUBTLE BIAS AND STRUCTURAL INEQUITY



The shift in paradigm we have outlined requires us to rethink our strategies for bringing about institutional change if we are to ensure the effective participation of highly trained women and minority scholars in the academy. It is necessary but insufficient to challenge intentional forms of discrimination. Gender and racial schemas are internalized by everyone and often operate despite good intentions on the part of individuals. It follows that familiar dynamics of blame that turn on accusations of discriminatory intent are counterproductive. As Valian argues, everyone is liable to make errors in judgment as a consequence of the gender schemas they have internalized; what they should be held accountable for is the failure to scrutinize their judgments critically and take steps, personally and institutionally, to counteract these errors. It also follows that institutional change will require many different types of intervention. The arguments that will raise awareness about these subtle forms of discriminatory

practice and the strategies that will be effective in changing them will vary widely depending on context and institutional actors. That said, a recent comparative assessment of strategies for promoting diversity in corporate contexts offers some instructive lessons for academia. Kalev, Dobbin and Kelly find that the most effective interventions are those that establish a specialized position or committee whose primary responsibility is to make institutional change (2006: 590-591): “[S]tructures that embed accountability, authority, and expertise” have much more impact than programs aimed at reducing managerial bias (by means of training and evaluation) or counteracting the social isolation of women and minorities (mentoring and networking), and they enhance the effectiveness of these latter two types of strategy (Kalev, Dobbin and Kelly 2006: 661). The following are recommendations for leaders and decision makers within colleges and universities, and for the professional organizations that cross-cut these institutions.

1 Rather than making it a priority to change women and minorities so that they fit academic institutions in their current configuration, adopt strategies for changing these institutions so that they are more inclusive on a number of dimensions. These strategies should include pathways to professional success that do not pose intractable conflicts between work and the rest of life. **Policy recommendations for college and university leaders include:**

- Create a position in the college/university's central administration with responsibility for developing and implementing a coordinated plan to counteract bias against women and underrepresented minorities in hiring, institutional support, evaluation, and promotion (Harvard 2005: 11). Appoint a person to this position who is committed to institutional change and accountable for achieving results (CEOSE 2007: 21; Kalev, Dobbin and Kelly 2006: 661).
- Require deans, department heads, search committee chairs, and other faculty who have personnel management responsibilities to take workshops designed to educate them about the ways in which unconscious bias can be overcome. The ADVANCE projects have developed a number of effective models for such training, many of which are outlined on their websites (see the ADVANCE web portal: <http://research.cs.vt.edu/advance/index.htm>).
- Review criteria for appointments, tenure, and promotion to ensure that they reflect the stated mission and values of the institution and are not implicitly biased against women and minority faculty (NAS 2007: 6-3).
- Make search committees accountable for demonstrating that they have conducted a fair, broad, and aggressive search before approving faculty appointments.
- Document and publish regular reports on progress in increasing diversity and representation.
- Institute periodic salary reviews to identify and rectify the salary inequities that arise as the compounded effect of subtle forms of evaluation bias.
- Create funds to support targeted hiring (Harvard 2005: 30).
- Establish a college/university-wide dual-career program. A number of models for these are outlined in *The Two-Body Problem* (Wolf-Wendel et al. 2003).
- Undertake a comprehensive review of the campus need for child care services and support, and of existing facilities available to faculty. Ensure that benefits packages provide direct access to, or include options for supplemental support that faculty can use to secure low cost, good quality child care, elder and partner care, and to meet other life needs that

people are likely to encounter (Harvard 2005: 39-40; NAS 2007: 6-15 to 6-17).

- Institute a parental leave policy that includes provisions for automatic extensions of the tenure clock and other appointment extensions.

2 When an academic institution finds that it has trouble recruiting or retaining women and minorities, rarely is this an isolated problem. Institutional leaders, members of decision-making bodies, appointments and review committees need to inculcate an awareness of, and develop strategies for, counteracting the effects of unconscious factors that may bias their judgment.

**Recommendations for decision makers and members of decision-making bodies include:**

- Structure evaluation procedures and decisions about resource allocation to ensure accountability for decisions and the transparency of the criteria on the basis of which they are made.
- Recognize that effective strategies for institutional change require specialized expertise and organizational structures of accountability. The composition of an institution's senior administration and the leadership of its academic review committees (search, promotion, and tenure) has an impact on its effectiveness in addressing systemic inequities. It is important that those with experience and training on diversity issues—often but not exclusively women and minority faculty—play a leadership role in such committees and that they be consulted in the process of making key administrative appointments (see comments by Stewart in Wilson 2004; MIT 1999).
- Search and hiring committees are also more effective in identifying and attracting a broad pool of candidates if their membership is diverse (Earth Institute at Columbia University 2007). Using assertive language when declaring an interest in women and minority applicants can help (Smith et al. 2004), as can various strategies for expanding the range of recruitment sources and actively seeking out qualified candidates; for example, contact graduate programs with high numbers of women or minority candidates and ask colleagues explicitly to recommend good women and minority candidates.
- Academic review committees can counteract the biasing effects of unconscious stereotypes if they structure the evaluation processes to ensure the transparency of procedures and criteria, and if they are accountable for outcomes. It can help to evaluate candidates on a number of discrete

dimensions and to use multiple criteria that accurately reflect the requirements of the position (see remarks by Stewart in Wilson 2004; Georgi 2000). It also makes a difference if evaluators use standardized evaluation forms so they are accountable for the accuracy and consistency of their rankings (Mero and Motowidlo 1995). Evaluators who are rushed, or who lack contextual information, tend to rely on stereotypes and when, for example, gender normative assumptions become salient, they rate women lower (Martell 1991; Tosi and Einbender 1985; Steinpreis et al. 1999).

- Facts that members of search and review committees should know include the following:
  - Qualified potential candidates are frequently eliminated from short lists on the basis of assumptions about their personal life that reflect race and gender-normative assumptions. Women, for example, are thought to take more time off from work. On average, however, “women take more time off during their early careers to meet their caregiving responsibilities... but over a lifelong career, a man is likely to take significantly more sick leave than a woman” (NAS 2006: S4, chapter 5).
  - The critical factor affecting publication productivity is access to institutional resources; marriage, children, and elder-care responsibilities have comparatively limited effects (NAS 2006: S4, chapter 4).
  - Women and minorities are judged more fairly when they constitute 30 percent of the reference class against which their performance is evaluated (Sackett et al. 1991; NAS 2007: 5-16).
- Grants are available in some areas to support efforts to increase diversity at an institutional level. These include, for example, the Sloan Awards for Faculty Career Flexibility (see the American Council on Education website: [www.acenet.edu](http://www.acenet.edu)) and the ADVANCE Program established by the National Science Foundation to increase the representation of women in academic science. A network of ADVANCE projects has developed a rich set of resources for assessing the status and effective integration of women and minorities into the academy on a number of dimensions and has documented an array of strategies for intervention. These resources are available on the websites developed by ADVANCE recipients (see the NSF ADVANCE web portal: <http://research.cs.vt.edu/advance/index.htm>).

**3** Professional organizations can help build a movement to institute less biased practices that reach across institutions. It is insufficient, however, to provide women and minorities compensatory support so that they are better fitted to succeed in an entrenched disciplinary culture. The effects of

constantly negotiating expectations of failure and grudging acknowledgment of success are significant and cumulative; they can compromise performance and promote disidentification from the discipline and from employing institutions. Field or profession-based associations can take the lead in promoting best practices and countering working conditions that deflect women and minorities from academic careers. **Policy recommendations for professional organizations include:**

- Document the representation and the experience of women and minority scholars in the field, and determine whether there are particular types of problems they face. Do public perceptions of the field, or its internal culture, mobilize stereotype threats for underrepresented groups? Have conventions of practice become entrenched that make work-life balance particularly hard? (NAS 2007: 5-5)
- Identify and publically recognize those institutions that have instituted best practices where inclusiveness and equity are concerned, as well as those that are especially inhospitable.
- Form an inter-institution monitoring organization to track progress in realizing the goals of equity in hiring, retention, and promotion (NAS 2007: 6-18 to 6-25).
- Make sure that there is a reasonable representation of women and minority scholars on conference programs and editorial boards, among keynote speakers and award recipients, and on the program committees, executive boards, and decision making bodies of the professional organization.
- Assess annual meetings and other public fora sponsored by the organization for their inclusiveness. For example, do they provide child care for those attending meetings?
- Educate the membership about gender bias and the cumulative effect of micro-inequalities in academia.

**4** Formal legal challenges to institutionalized discrimination remain a crucial foundation for equity. So long as educational institutions continue to deflect women and minorities, there is a rationale for extending Title IX

compliance reviews to federally funded educational institutions broadly, rather than limiting them to the sciences. That said, it is important to recognize that legal compliance establishes a minimum standard for university equity; institutions need to take initiatives that go well beyond this baseline. **Policy recommendations for federal agencies include:**

- Ensure compliance with anti-discrimination laws at institutions of higher education by withholding federal grants from institutions that do not comply with Title IX.
- Require yearly reports that provide the information necessary to determine whether colleges and universities engage in discrimination.
- Encourage diversity and provide technical assistance to help institutions achieve it.
- Develop models of best practice and provide workshops that will educate institutional representatives and those adjudicating applications for federal funding about how they can most effectively counter the effects of “post-Civil Rights era” discrimination.
- Track the composition of the applicant pools and the breakdown by gender and minority status of those who receive funding and publish the results.
- Institute programs for extending grants or providing other forms of support for grant recipients who have family care responsibilities.

## CONCLUSIONS

EQUITY IS A MATTER OF JUSTICE; IT SHOULD BE VALUED ON THIS BASIS ALONE. BUT IT IS ALSO INSTRUMENTAL TO OTHER GOALS OF THE ACADEMY. GENUINELY INCLUSIVE POLICIES AND PRACTICES IMPROVE THE QUALITY OF THE EDUCATIONAL ENVIRONMENT, ENHANCE THE EFFECTIVENESS OF FACULTY AS TEACHERS AND MENTORS, AND ENRICH SCHOLARSHIP

- Moving toward equity will improve the health of the academy as a whole. The NAS report makes this case with respect to the sciences, but the fundamental point applies across the board:

The United States can no longer afford the underperformance of our academic institutions in attracting the best and brightest minds to the science and engineering enterprise. Nor can it afford to devalue the contributions of some members of that workforce through gender inequities and discrimination. It is essential that our academic institutions promote the educational and professional success of all people without regard for sex, race, or ethnicity...” (2007: S-5). In an increasingly global environment, “identifying the best, brightest and most innovative science and





engineering talent will be crucial if the nation's industries and the nation itself are to maintain their competitive edge" (2007: 1-1).

The skills needed in today's increasingly global economy can only be developed through exposure to widely diverse people, cultures, ideas, and viewpoints; a more diverse student population and professoriate is critical to educating citizens who have the ability to respond to diverse people, cultures, ideas, and viewpoints.

- Many of the changes that make a difference for women and minorities will improve the work environment for a broad cross-section of colleagues. It is not only women who experience work-life conflicts or members of underrepresented minorities who are disadvantaged by the isolation, poor communication, and insularity of an inhospitable institutional culture. Transparency in hiring, promotion, and evaluation creates a better working environment for all members of the academy.
- Narrowly defined criteria of excellence prevent some of the most interesting and brightest of potential colleagues from ever entering particularly inequitable fields, and can promote workplace segregation that marginalizes the contributions of women and minority scholars.

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## ONLINE RESOURCES

### ADVANCE

[research.cs.vt.edu/advance/index.htm](http://research.cs.vt.edu/advance/index.htm)

The National Science Foundation hosts a web portal with links to all the institution-specific projects it has sponsored under the Program for the Advancement of Women in Academic Science and Engineering Careers. Many of the recipient websites provide useful tools for assessing gender equity (workplace environment as well as representation), and descriptions of programs for changing patterns of recruitment, retention, and advancement of women in the sciences that have been instituted with ADVANCE support. Although their focus is on the "STEM" disciplines (science, technology, engineering, medicine), the training programs and strategies for bringing about institutional change that they have developed are often much more widely applicable. Especially useful are the following:

**University of Michigan**

[sitemaker.umich.edu/advance/home](http://sitemaker.umich.edu/advance/home)

**Georgia Institute of Technology**

[www.advance.gatech.edu/](http://www.advance.gatech.edu/)

**Hunter College, The Gender Equity Project**

[www.hunter.cuny.edu/genderequity/](http://www.hunter.cuny.edu/genderequity/)

### AMERICAN ASSOCIATION OF COLLEGES AND UNIVERSITIES: WOMEN'S MULTICULTURAL ALLIANCES

[www.aacu.org/ocwww/index.cfm](http://www.aacu.org/ocwww/index.cfm)

The AACU has recently published a special issue of its on-line journal, On Campus With Women, on "Women's Multicultural Alliances: Why They Matter." This issue includes discussion of the importance of building alliances between women in the academic setting, articles on intercultural communication and collaboration, and women's leadership, as well as links to recommended reading and other women's institutes.

### AMERICAN ASSOCIATION OF COLLEGES AND UNIVERSITIES: DIVERSITY WEB

[www.diversityweb.org](http://www.diversityweb.org)

Diversity Web is also sponsored by the Association of American Colleges and Universities. It provides access to their journals, Diversity Digest and On Campus With Women, as well as a useful catalogue of "diversity innovations" in institutional leadership, staff and faculty development, curriculum change and student development.

### AMERICAN ASSOCIATION OF UNIVERSITY PROFESSORS FACULTY GENDER EQUITY INDICATORS 2006

[www.aaup.org/AAUP/pubsres/research/geneq2006.htm](http://www.aaup.org/AAUP/pubsres/research/geneq2006.htm)

The AAUP report by West and Curtis is available on their website. It provides an assessment of four measures of gender equity for faculty based on data drawn from over 1,400 colleges and universities across the country.

### AMERICAN ASSOCIATION OF UNIVERSITY WOMEN

[www.aauw.org](http://www.aauw.org)

The AAUW website is comprehensive, providing links to a wide range of research reports about women in the university setting, as well as community outreach and advocacy programs, fellowships and grants relevant for women in the academy.

### BERNICE SANDLER'S WEBSITE

[www.berniceandler.com/default.htm](http://www.berniceandler.com/default.htm)

The famed "Godmother of Title IX" discusses the history of the law, provides information about sexual harassment in the workplace, lists articles about the subtleties of employment discrimination, and discusses the importance of mentoring.

### THE CHRONICLE OF HIGHER EDUCATION: SPECIAL REPORT ON "WOMEN IN HIGHER EDUCATION"

[chronicle.com/weekly/v51/i15/15a00801.htm](http://chronicle.com/weekly/v51/i15/15a00801.htm)

Wilson's article includes several tables that emphasize the disjunction between the commitment to training women versus hiring them at elite institutions.

## COMMISSION ON THE ADVANCEMENT OF WOMEN AND MINORITIES IN SCIENCE, ENGINEERING AND TECHNOLOGY DEVELOPMENT (CAWMSET)

[www.nsf.gov/od/cawmset](http://www.nsf.gov/od/cawmset)

The Commission's 2000 report, "Land of Plenty," is available for download. It recommends ways to improve the recruitment, retention, and representation of women and underrepresented minorities in science, engineering, and technology education and employment.

## DIVERSE ISSUES IN HIGHER EDUCATION

[www.diverseeducation.com](http://www.diverseeducation.com)

This website is an important resource for anyone interested in diversity issues in universities and colleges; it provides current statistics, news, special reports, and excerpts from articles published in their journal.

## EQUAL RIGHTS ADVOCATES: LEGAL ADVOCACY AND POLICY PROJECTS

[www.equalrights.org/professional/prof\\_main.asp](http://www.equalrights.org/professional/prof_main.asp)

The projects sponsored by the ERA include the Higher Education Legal Advocacy Project; their aim was to "dismantle the barriers that prevent the full and equal participation of women in higher education." Although this particular project ended in December 2004, the ERA website is a valuable resource for anyone interested in the legal dimensions of gender equity. It offers a listing of important civil rights cases, fact sheets, a variety of publications, and access to a "Law Library" of briefings and legal definitions relevant to legal advocacy for "equal rights and economic opportunities for women and girls."

## NATIONAL ASSOCIATION FOR MULTI-CULTURAL EDUCATION

[www.nameorg.org](http://www.nameorg.org)

NAME promotes educational equity and social justice, with an emphasis on multicultural education in all formats. On their website readers will find the NAME definition of multicultural education, as well as links to position papers, resolutions, press releases, and resources for diversity education sponsored by other organizations.

## NATIONAL ANALYSIS OF DIVERSITY IN SCIENCE AND ENGINEERING FACULTIES AT RESEARCH UNIVERSITIES

[cheminfo.ou.edu/~djn/diversity/top50.html](http://cheminfo.ou.edu/~djn/diversity/top50.html)

This site provides access to Donna Nelson's diversity surveys of tenured and tenure track faculty in the sciences and engineering at 50 top ranked universities in the U.S.

## NATIONAL CENTER FOR EDUCATIONAL STATISTICS, INSTITUTE OF EDUCATIONAL SCIENCES

[nces.ed.gov/programs/quarterly/vol\\_5/5\\_3/4\\_3.asp](http://nces.ed.gov/programs/quarterly/vol_5/5_3/4_3.asp)

Sponsored by the National Department of Education, this website provides an overview of and access to all the research done by the NCES, including a comprehensive set of links to their reports on post-secondary education. Their on-line journal, Education Statistics Quarterly, includes a number of articles (searchable by topic) on the participation of women and minorities in post-secondary education.

## NATIONAL SCIENCE FOUNDATION, COMMITTEE ON EQUAL OPPORTUNITIES IN SCIENCE AND ENGINEERING (CEOSE)

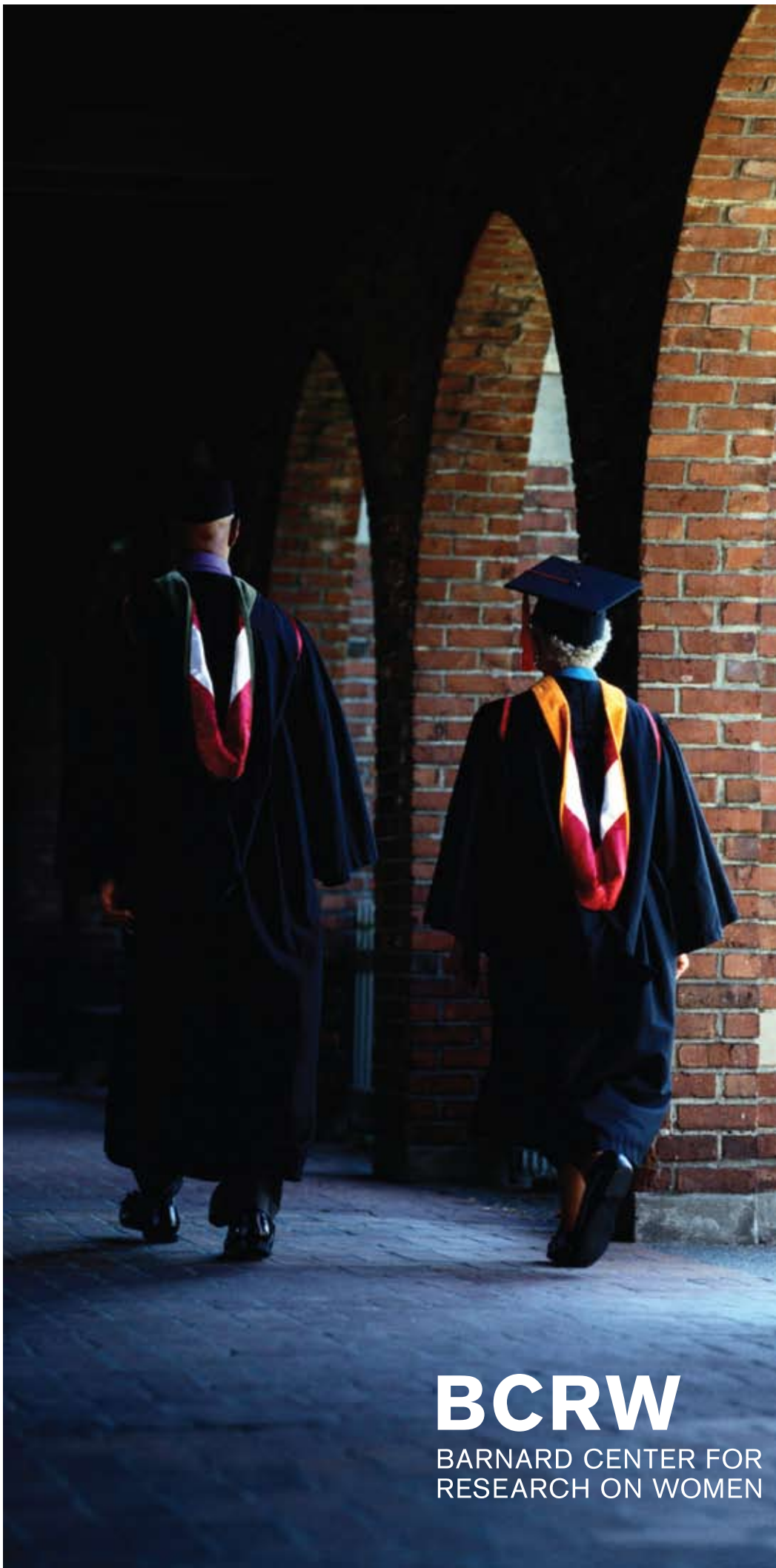
[www.nsf.gov/od/oia/activities/ceose](http://www.nsf.gov/od/oia/activities/ceose)

CEOSE is a congressionally mandated advisory committee that sponsors public annual meetings as well as symposia on special topics, and prepares biennial reports for Congress. All their reports and details of their meetings are available on this website.

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