Excellence, Not Gender Parity, Should Be Priority for STEM Faculty

By Carrie Lukas

Position Paper No. 609 ■ August 2008
# Table of Contents

Executive Summary.................................................................1

Introduction..................................................................................2

Women’s Representation in Academia and Elsewhere.......................4

Reasons Why There Are Fewer Women than Men in STEM Faculties........7

Increasing the Number of Women in STEM Faculties..........................16

Conclusion: Redefining the Problem and Solution...............................24

Endnotes....................................................................................25
Executive Summary

Women have made tremendous progress in academia, but they remain a minority of faculty, particularly in science, technology, engineering, and mathematics (STEM) departments. Policymakers and feminist organizations have focused attention on this issue, used taxpayer dollars for programs designed to increase the number of women faculty members, and contemplated more aggressive government oversight to prod colleges and universities to take action to achieve greater gender balance in STEM departments.

Yet it is unlikely that institutional discrimination is the primary cause of the discrepancy between the number of men and women in STEM faculties. Research suggests that women's greater challenge in balancing work pressures (particularly related to the tenure process) with their desire to have and raise children, as well as individual interests, play central roles in generating this outcome.

Additionally, some of the measures advocated by those who want more “balance” in STEM faculties could have adverse, unintended consequences, including undermining the position of women within faculties and creating reverse sexism; as hiring policies blatantly favor women over their male peers. Some have suggested that the government should use Title IX as a mechanism to increase female representation in STEM faculties, just as Title IX has been used to increase the portion of women among college athletes. Yet this suggestion ignores the significant problems with Title IX’s application to athletics, including the active elimination of men’s athletic opportunities in the name of “proportionality.” It also fails to appreciate the real barriers to changing the makeup of faculties without explicit discrimination against men.

College and universities should consider if current policies are conducive to attracting the best women and men to engage in important research and teach the next generation. They should work to create a supportive environment that encourages both women and men to fulfill their potential and, to the extent possible, provide flexibility so that those who also have family or other responsibilities can continue to contribute to the important work of the institution. However, in doing so, their goal should be to generate the best, most productive academic departments, not to achieve a politically correct gender balance.
Women’s lower rate of participation in science, technology, engineering, and mathematics (STEM) fields has created consternation among politicians, academics, and much of the media. A paper released by the Independent Women’s Forum in May 2008, “Studying Women and Science: Why Women’s Lower Rate of Participation in Science, Technology, Engineering, and Mathematics Courses Isn’t a Problem for the Government to Solve,” explored potential explanations for this difference among the student population.

That paper made the case that many factors contribute to this discrepancy, including innate differences between men and women. It is not simply that more men have high aptitude in these areas. Differences in aptitudes have other effects: for example, the fact that women who are highly skilled in STEM disciplines tend to also have high aptitudes in other areas means they can more easily and more often opt to pursue other fields. Also, women and men may be just as capable of learning a subject matter, but our public school system may typically fail to teach these subjects in a manner tailored to women’s strengths. Differences in temperament and interest also likely play a role in course selection.

While arguing that individual institutions should seek to minimize artificial barriers (such as lingering discrimination or stereotypes, to the extent they exist) that may discourage women from pursuing STEM, that paper highlighted potential problems with government attempts to encourage or pressure universities to achieve a more politically correct “balance” in these subjects; if different participation rates are the outcome of true differences between men’s and women’s interests and aptitudes, then attempts to steer them elsewhere will be counterproductive and reduce individual fulfillment.

That paper focused solely on students’ participation rates in STEM disciplines. Yet the differences in representation among the faculty are even more pronounced. Female students have made significant gains in STEM classrooms, but gains in STEM faculties have been slower, especially among the most prestigious positions, such as tenured professorships.

It is worth considering potential causes of the relative lack of women in STEM faculties. If the women who choose to participate in STEM careers are being discouraged, discriminated against, or marginalized, then these individuals are being unfairly denied the opportunity to pursue their goals and achieve self-fulfillment. It would also be a loss for society, since these women would represent a resource that was not being fully utilized in terms of creating important research and educating the next generation of scientists. Furthermore, many argue that increasing the number of women who serve as professors in STEM disciplines will serve as role models for young women, and may, in turn, increase the number of female STEM students.
Yet while it is important and desirable to make sure that women, like men, are welcomed into the STEM arena and are given equal opportunity to pursue faculty positions, there is danger in government intervention into academia that attempts to manufacture a given outcome, such as artificially increasing the number of women in STEM departments. The threat of government action against universities that do not achieve some designated level of female representation could encourage universities to choose faculty based on their sex, instead of their merits, which could erode the quality of teaching and research in that institution. Such a program could also tarnish the achievements of those women who do obtain prestigious positions, since some may assume that they were benefiting from government policy and pressure, rather than from their own merits.

This paper seeks to examine some of the factors that may contribute to the lack of women among STEM faculties. While innate aptitude may contribute to there being fewer women than men in STEM faculties, since it was a central topic in the May 2008 paper, this issue will not be explored further here. In particular, while differences in aptitude contribute to women’s engagement in STEM disciplines, it alone cannot explain why the progress among faculty has been so much slower than it has been among students.

This paper considers how the representation of women has progressed in these subjects, explores some of the issues surrounding tenure, and compares the situations women face in STEM disciplines to other academic disciplines and professions. It looks at the case made by proponents of greater government oversight and intervention into academia, that discrimination is the root cause of this difference, and considers the benefits and drawbacks of reforms to attempt to increase female representation in STEM faculties.
Women’s Representation in Academia and Elsewhere

The number of women teaching at colleges and universities around the country has increased considerably in recent decades. For example, as of 2003, about one in four full-time professors at four-year colleges and universities were women, compared to less than one in ten in 1972. In 2003, women constituted 43 percent of all college faculty, though they were disproportionately represented among part-time faculty (48 percent compared to 39 percent of full-time positions) and at two-year schools.

As shown in Figure One, across disciplines, women account for a larger proportion of associate and assistant professors than full professorships. In part, it is not surprising that there are fewer women in faculty positions, since for many years women were a minority of students. Yet women have made significant strides in representation among the student population. As shown in Figure Two, women are a much smaller proportion of faculty than they are of students in all disciplines, but particularly in STEM departments.

However, it is important to note the progress that has been made across the board in terms of women entering faculties. As shown in Figure Three, progress has been made in all disciplines. Furthermore, it is not just in STEM disciplines that women remain a minority of faculty. For example, just one in three professors of history are women, which is a lower portion than in biology and health sciences.

In the 15 years between 1988 and 2003, the percentage of female faculty grew from 37 percent to 52 percent in humanities, and from 22 percent to 31 percent in natural sciences. While women remain less than a third of faculty in natural sciences, it is interesting to note that the rate of growth in natural sciences was faster than in humanities (a 44 percent increase over the 15 years compared to 37 percent). As shown in Figure Four, the disciplines of engineering and computer science have witnessed the greatest rates of growth.

It is not just in academia, or in STEM departments in particular, that women are underrepresented at the top. Women’s progress at the student level, and in the mid and lower ranks of most professions, has been much quicker than it has been at reaching the most prestigious positions.

Women today earn more than 40 percent of medical degrees but are only about 4 percent of surgeons. Women earn nearly half of law degrees, but make up less than 17 percent of partners in large law firms. Women earn 40 percent of master’s in business administration, but are still underrepresented among top executives. Only 12 of the Fortune 500 companies are run by women. Even in a woman-friendly industry like publishing, only about 18 percent of top executives are women.

Much has been written about the many factors that contribute to the lack of women at the top of most prestigious professions. Among the most commonly cited factors are women’s disproportionate assumption of family responsibilities, which leads women to take more time out of the workforce, spend less time in the office when working, travel and relocate...
cations, as well as women’s different interests and aptitudes. The role that discrimination plays in women’s careers is a topic of considerable debate. While it is worth considering traits peculiar to STEM professions that contribute to the low number of professors, it is likely that many of the same factors that affect women’s representation across professions also have a major impact on STEM faculties.

**Figure 1: Percentage of Women Faculty by Rank, FY 2002**

![Graph showing percentage of women faculty by rank, FY 2002.](source)

Source: “Women’s Participation in the Sciences Has Increased, but Agencies Need to Do More to Ensure Compliance with Title IX,” General Accounting Office, GAO-04-639, July 2004, p. 22.

**Figure 2: Percentage of Women in Select Disciplines**

![Graph showing percentage of women in select disciplines.](source)

Source: 2004 National Study of Postsecondary Faculty, National Center for Education Statistics.
Figure 3: Percent of Faculty That Were Women by Discipline

Source: 2004 National Study of Postsecondary Faculty, National Center for Education Statistics.

Figure 4: Rate of Increase in Faculty Positions between 1993 and 2003

Source: 2004 National Study of Postsecondary Faculty, National Center for Education Statistics.
Reasons Why There Are Fewer Women than Men in STEM Faculties

Many factors likely contribute to the fact that fewer women than men work in faculties of STEM disciplines. Other than innate ability, the most discussed factors are the role of family pressures, discrimination, and differing interest. This section explores these subjects and considers their role in generating this outcome.

Tenure and Family Pressures

The dearth of women at the top of many prestigious industries could be taken as evidence that sexism infects all professions and has prevented women from assuming their rightful positions of power. Yet it may also suggest that something else impedes women’s professional progress across many careers. As Mary Ann Mason and Eve Mason Ekman write in *Mothers on the Fast Track: How a New Generation Can Balance Family and Careers*, one of the key challenges facing professional women is that the years that tend to be most critical in terms of professional achievement are also the years when women are most likely to be giving birth and raising young children:

The decade between thirty to forty is when women today make the hardest choices: whether to seek a fast track position after securing their degree, whether to have a child; whether to stay on the fast track after having a child or to leave the race and find a less competitive role. They face new and formidable challenges, and there are rarely second chances if they opt out.11

This is certainly true for women in academia where the practice of “tenure” creates unique challenges for aspiring professors. Those attempting to earn a tenured position typically have only a limited time period during which they must demonstrate their ability to produce important research, become published, teach students, and prove themselves worthy of the appointment.

There is a reason why there are such high expectations for one who is seeking tenure: once an academic is given “tenure” he or she has lifetime employment, or a contractual right not to be fired without cause. A central purpose of tenure is to guarantee academic freedom and to encourage robust, innovative, academic exploration. Tenured professors need not fear for their jobs, so they can speak freely about their findings and explore areas that might not be the most popular or financially advantageous for the university. Yet the lifetime guarantee of employment also creates the potential for abuse: tenured professors could greatly reduce their productivity or dedication to teaching, since there are fewer incentives to excel. Therefore, universities only give tenure to those who have demonstrated the highest levels of productivity and work ethic.
Most commonly, individuals have only a few years during which they can serve as assistant or junior professors. After that period, universities conduct an extensive review of the candidates’ performance, including their research production, publishing history, and teaching service. If they do not receive tenure, they typically no longer have a job with that institution.

The stresses associated with that intense, high stakes process, discourage many women from seeking a tenure track position. The General Accounting Office (GAO), for example, investigated causes of the different rates of participation between men and women in STEM disciplines, and concluded that the perceived incompatibility of the tenure system and motherhood played a central role:

During our site visits, women faculty told us that juggling family life with a tenure track faculty position was extremely challenging. Some women told us that they felt discouraged from pursuing a tenure track university position because the biological clock and tenure clock tend to tick simultaneously. Some faculty members told us that they felt they had to put off having children until they achieved tenure or entirely give up the goal of having children, choices that men faculty do not necessarily have to make. Others we spoke with commented that they observed the long hours and difficult work of professors at research universities in the sciences and felt they could not perform well while also devoting time to family responsibilities.12

Importantly, the GAO’s investigation revealed that these pressures affected not only women already in faculties, but female PhD students considering career plans:

Women PhD students we interviewed revealed that very few would seek tenure track positions at research institutions. Most said that they would rather become faculty at small colleges or scientists at a laboratory where they thought work pressures would be less intense and they could maintain a more healthy balance between work and family life.13

Other research confirms that this challenge discourages women from pursuing tenure track faculty careers. The American Association of University Professors reported on research that shows how during graduate school, women’s interest in pursuing careers in academia falls. These women cite the challenge of balancing work and family as a reason for their dwindling interest.14

While there are likely many causes of women’s under-representation in STEM professions, clearly the perceived conflict between achieving tenure and success in the academic world and family life plays a major role in this outcome.

**Discrimination**

While there are many debates about the factors that contribute to different participation rates of men and women, the core question is really the extent of discrimination’s
impact. Yet this blanket term “discrimination” invites confusion, since it can mean many different things.

This section considers different aspects of what is commonly referred to as discrimination. The first subject will be referred to as classic discrimination: outmoded views and unfair treatment that marginalize women because of the fact that they are women. The second subject will be women’s roles: this will explore the charge that women often take on different duties, such as more administrative roles, than men, even when they hold the same titles and the same jobs. The third issue is institutional systems with disparate impact. The previous section discussed the challenge women have in balancing work and family responsibilities; this section will explore further if the institutional structures that create some of those challenges are, in themselves, a form of discrimination.

Classic Discrimination

The current focus on women’s under-representation in STEM faculties largely began in 1995. At that time, the Massachusetts Institute for Technology (MIT) created a committee to explore the issue of women’s treatment in STEM departments in response to a complaint by a female professor. In the ensuing years, the committee released reports offering the following conclusion:

[M]any tenured women faculty feel marginalized and excluded from a significant role in their departments. Marginalization increases as women progress through their careers at MIT. Examination of data revealed that marginalization was often accompanied by differences in salary, space, awards, resources and response to outside offers between men and women faculty with women receiving less despite professional accomplishments equal to those of their male colleagues.15

This finding, that women faculty members at MIT were subject to discrimination that impeded the progress of their careers, was echoed by the media.16 As a result of the MIT report, senior women faculty members (some of whom were the report’s authors) received salary increases, more money for their research, and increased laboratory space and support.17

But did this study really prove that there is rampant sexism that results in women receiving less pay and support for the same work? An analysis of the MIT study by Professor Judith S. Kleinfeld argued that it failed to prove that discrimination played a role in MIT’s faculty, and that the report’s conclusions lacked basic scientific grounding. For example, organizations such as the Statistical Assessment Services (STATS) (which is dedicated to examining the use and misuse of science in the media), reported that the MIT committee refused to provide data when it was requested.18 Professor Kleinfeld was similarly unable to obtain the data on differences in the allocation of laboratory space that supposedly provided evidence of discrimination.19

Professor Kleinfeld also noted the peculiar nature of a study in which those who were affected by the research findings were the ones conducting the research and drawing
inferences from the data. She explained, “The senior women at MIT were judge and jury of
their own complaint.”\(^2\) Professor Kleinfeld summarized the reports’ failures:

The MIT report presents no objective evidence whatsoever to support claims of
gender discrimination in laboratory space, salary, research funds, and other
resources. ...The “universal problem” of gender discrimination trumpeted in the
MIT Study boils down to the subjective perceptions of senior women (not the jun-
ior women) in only three of the six departments at MIT’s School of Science. Even
these perceptions—evidence of nothing but personal feelings—were not counted
and measured according to accepted scientific standards in the social sciences.\(^2\)

This lack of evidence does not mean that there is no discrimination on campus, as
Professor Kleinfeld notes, but it does mean that caution is warranted in accepting headlines
about politically charged issues like sexism on campus.\(^2\)

The GAO report offered a more balanced perspective on the role of discrimination in
the different outcomes of men and women in STEM faculties. In interviewing female facul-
ty and students, they heard reports of lingering bias and progress:

During our site visits, some women faculty and students told
us that the climate in some academic departments was
changing for the better over time, as older men faculty, who
were unused to working with women, retire. On the other
hand, in other departments, women students reported that
fellow men students were hostile to women and made it very
uncomfortable for women to pursue their studies. Students
and faculty we talked with reported that deans, department
chairs, and other officials were attempting to bring about
positive change for women on their campuses, but that
progress would be slow.\(^3\)

Some studies continue to point to cultural tendencies that impede progress. For exam-
ple, a report by the American Association of University Professors highlighted problems
casted in the way colleges and universities identify applicants for faculty positions; particu-
larly those on the tenure track. Professors often seek out applicants by asking colleagues for
referrals, and one department chair reported that women’s names were often simply not
thought of until a request was made specifically for women, at which point the college was
able to provide qualified women candidates that had previously been overlooked.\(^4\)

A report written by the National Science Foundation argued that discrimination was a
central factor in the dearth of women in STEM faculties, but focused not on explicit discrim-
ination, which they acknowledge is overwhelmingly condemned, but “subtle, implicit, or
unexamined bias,” that can lead to “unconscious and subtle forms of discrimination.”\(^5\)

It is important for universities to consider their environment to ensure that it is inclu-
sive, and encourages men and women alike to excel. However, when considering the extent

It is important for universities to consider their environment to ensure that it is inclusive,
and encourages men and women alike to excel. However, when considering the extent
of discrimination’s impact, it is also important to recognize that different participation rates are not, in themselves, evidence of discrimination.

As shown in Figure Five, even at the remaining six all-women colleges of the famed “seven sisters,” women often constitute less than half of the faculty. Four of the six colleges have a majority of male full-time, tenure track faculty. While the portion of female faculty at these colleges is higher than at universities generally, it is interesting to note that in physics, for example, none of the six colleges had a majority of female tenure or tenure track faculty members, and at Wellesley, Mt. Holyoke, and Bryn Mawr, less than one-third of the physics departments were women. It seems improbable that institutional sexism is at the root of this outcome at these colleges. It suggests that even in a work environment free of sexism and dedicated to inclusive outreach processes, that women will likely remain a minority in many departments. Factors other than classic discrimination must contribute to this outcome.

**Figure 5: Percentage of Female Professors at Select All-Women’s Colleges**

![Figure 5: Percentage of Female Professors at Select All-Women’s Colleges](image)

Source: Information received from universities or their websites.

**Women’s Roles**

Another aspect of discussions about discrimination is the charge that women take on—or are tasked with—different roles that tend to be undervalued by institutions. In academia, primarily this means that women disproportionately assume teaching responsibilities and administrative duties more often than male faculty members.

For example, when studying evidence of discrimination, the GAO found that factors like different job responsibilities explained much of the gap in salary between male and female professors:

[A] recent study found that just over 91 percent of the discrepancy between men’s and women’s faculty salaries could be explained by differences in experience,
work patterns, seniority, and education levels. Our review of the faculty data found that women science faculty compared with men faculty: more often taught at their primary responsibility; less often conducted research as their primary responsibility; less often held a first professional degree or PhD; more often worked part-time; more often had less experience; more often were younger; and more often were native U.S. citizens.”26

While these factors undermine the charge that classic discrimination is the primary cause of outcomes like representation among tenured faculty or salary differentials, some make the case that these differences are themselves a result of discrimination.

For example, the study of women faculty members at the University of California at Irvine found that many resent the disproportionate share of administrative duties assigned to women: “However defined, service was complained about by a majority of women; everyone commented that women do far more than their share of the service and suggested that this work is uniformly lower status, and not rewarded or appreciated by the system.”27

As will be explored further in an upcoming section, women tend to express a greater interest in working with people as a central part of their job than men do. These divergent interests, not pure discrimination, are likely a central cause of the assumption of different roles.

Researchers have also identified potential sexist behavior in the value placed on positions, or how positions are viewed by the faculty generally, depending on the sex of the office holder. For example, the study of faculty at the University of California at Irvine identified a dynamic which it dubbed “gender devaluation”:

Women were delighted about the increase in female chairs, deans, or central administrators; some considered that these increases signaled genuine improvement. Too often, however, a woman’s holding of this position would devalue or minimize it somewhat, casting it into the service mode, not the power mode. We heard this comment so frequently across all disciplines that we finally named it gender devaluation. Gender devaluation refers to the subtle process by which administrative positions lose their aura of status, power, and authority when held by women.28

Colleges and universities ought to consider if they properly value the important roles that teaching and mentoring play in processes like tenure review. Ultimately, the market process should reward schools that properly value teaching, since students will be more likely to attend schools committed to education. It is also important to note that affirmative action efforts that encourage universities to hire women because they are women, over male candidates, can contribute to this phenomenon, since colleagues may come to question if their female counterparts have earned their position on their own merits or due to reverse discrimination. The drawbacks of such programs will be explored further in a following section.
Institutional Systems with Disparate Impact

As discussed in a previous section, the timing of the tenure process and women’s reproductive reality create some unavoidable challenges. Yet many wonder if common institutional structures make the challenge of balancing work and family life more difficult than it has to be, and argue that these practices constitute de facto discrimination because of their disparate impact on women.

One report that identified women’s tendency to self-select out of the faculty applicant pool as a key factor contributing to women’s under-representation in faculties, also highlighted how family-work issues are central to women’s career decisions: “In a recent survey of American female scientists and engineers, respondents overwhelmingly named balancing work and family responsibilities as the most significant challenge facing female scientists as they plan their careers.”

The authors of the National Science Foundation’s report describe “institutional constraints” complicating the path for women seeking tenure:

In addition to bias, systemic constraints and expectations built into academic institutions have impeded the careers of women scientists and engineers. The traditional scientific or engineering career presumes the model of an out-of-date male life course. It is predicated on the assumption that the faculty member will have an unlimited commitment to his or her academic career throughout his or her working life. Attention to other serious obligations, such as family, is taken to imply lack of dedication to one’s career. Historically, that career model depended on a faculty member having a wife to take care of all other aspects of life, including the household, family, and community. The model still fits some men but is increasingly unsuitable for both men and women who need or want to participate in other activities important to them and their communities.

This is a common complaint among those frustrated by women’s lack of progress in achieving parity in prestigious fields and in obtaining positions of power. The authors lament that the “burden of family, household, and community care generally falls more heavily on women than on men” and “women scientists and engineers often experience intense conflict between their family and professional roles.”

The time pressure of tenure makes exercising available leave policies difficult for women, who may fear that their overall image as a productive faculty member will be tarnished. The tenure process itself creates unique challenges for women because it is largely subjective, and arguably, can be characterized as a political process. Letters of recommendation can be used to bolster a tenure candidate’s case, which makes networking opportunities (often more difficult for women to take advantage of than men due to family responsibilities) instrumental to success.
Of course, it is not just women scientists and engineers who feel the conflict between work and family: just about all women with families who also have challenging careers face difficult decisions and struggle with their desires both to devote time to their families and to their careers. Yet colleges and universities should examine the tenure process and policies related to supporting those with family responsibilities, to ensure that they do not create unnecessary barriers and obstacles to women’s advancement.

**Women’s Interests**

The Independent Women’s Forum’s May 2008 study examined some evidence of how innate differences in interest and temperament may contribute to different rates of interest in STEM disciplines among men and women. Different levels of competitiveness and women’s greater desire to work with people, as opposed to in a more solitary environment, were highlighted as important differences that affect their focus while students, and during their careers.

More studies have been done that directly look at men’s and women’s decisions about whether to enter STEM disciplines. For example, one economist from the University of Kansas, who was curious if the National Science Foundation’s funding of mentoring programs, awareness raising workshops, and institutional change efforts in the name of combating gender discrimination, were likely to bear fruit, attempted to identify root causes of the differences in men’s and women’s representation in scientific fields. Professor Joshua Rosenbloom surveyed hundreds of professionals in information technology (a career in which women are under-represented), and other professions with a larger portion of women. He concluded that work-family pressures could not explain the differences, since similar challenges existed throughout professions. The main difference he identified was different interests, or what men and women value in their work:

Rosenbloom and his colleagues used a standard personality-inventory test to measure people’s preferences for different kinds of work. In general, Rosenbloom’s study found, men and women who enjoyed the explicit manipulation of tools or machines were more likely to choose IT careers—and it was mostly men who scored high in this area. Meanwhile, people who enjoyed working with others were less likely to choose IT careers. Women, on average, were more likely to score high in this arena.

The study of faculty at the University of California also noted that women’s desire to contribute to society may help drive them away from academia:

Women may also be drawn to careers outside of academia that are perceived to offer more opportunities for socially meaningful science. Although in this survey, similar numbers of men and women felt that “benefiting society” and having a “practical application” of their research were important for career satisfaction, more than twice as many women than men expressed interest in working for
nongovernmental organizations. Such careers may be perceived as having the dual advantage of being socially meaningful and more family friendly (whether or not this is actually the case).  

Similarly, an audit of the University of California revealed that women were hired in proportion (or in greater proportion) to the percentage of women in the applicant pool. However, “in all cases, the number of women in the applicant pool was only a fraction of the number receiving Ph.D.’s in that field.” The audit further concluded that there was “no evidence of overt discrimination.” This information led researchers to suggest that a primary cause of the lack of women in STEM faculties is that “women are self-selecting out of the applicant pool. …With a depleted selection of applicants, it is difficult for any institution to achieve gender parity.”

Women’s and men’s differing interests may be a central cause of this phenomenon. This longitudinal study of mathematically precocious youth found that different interests play a critical, determinative role in men’s and women’s outcomes:

The theory of work adjustment (TWA) is useful in conceptualizing talent identification and development and bridging interconnections among educational, counseling, and industrial psychology. The lens of TWA can clarify how some sex differences emerge in educational settings and the world of work. For example, in the [Study of Mathematically Precocious Youth] cohorts, although more mathematically precocious males than females entered math-science careers, this does not necessarily imply a loss of talent because the women secured a similar proportion of advanced degrees and high-level careers in areas more correspondent with the multidimensionality of their ability-preference pattern (e.g., administration, law, medicine, and the social sciences).

One conclusion of this study was that these mathematically gifted men and women were equally likely to feel fulfilled by their careers and life choices:

By their mid-30s, the men and women appeared to be happy with their life choices and viewed themselves as equally successful (and objective measures support these subjective impressions). Given the ever-increasing importance of quantitative and scientific reasoning skills in modern culture, when mathematically gifted individuals choose to pursue careers outside engineering and the physical sciences, it should be seen as a contribution to society, not a loss of talent.

This is important information to consider. For if interest is truly at the root of difference in men’s and women’s rate of participation in STEM disciplines, and in academia in particular, then efforts to steer more women into these areas may be counterproductive and lead to lower levels of human fulfillment.
Increasing the Number of Women in STEM Faculties

There are many proposals for how to build the number of women in departments. This section reviews the promise and problems of many of those ideas to mitigate the effects of discrimination, and the institutional challenges for women, particularly as they relate to women with children.

Title IX

Many policymakers and advocates for women have suggested that Title IX could be the key to changing the makeup of STEM faculties to include more women. For example, at the Congressional hearing in October 2007, Dr. Gretchen Ritter, director of the Center for Women and Gender Studies, The University of Texas at Austin, testified:

Another way to increase the impact of these efforts is through Title IX enforcement. …What this might mean in practice and whether such compliance reviews are being conducted is not entirely clear. …To support equal academic opportunities for these young women, we ought to use the leverage of federal education funding to mandate Title IX compliance within the faculty of our research universities.39

Similarly, Senator Ron Wyden (D-OR) envisioned a radically altered academia due to the use of Title IX in the classroom:

Athletics are certainly where we’ve seen the most progress under Title IX. Before Title IX, one in 17 girls in school played sports. Now it’s one in 2.5 or 40 percent. Imagine if those same changes could be seen in math, science, and engineering from the 20 percent of science undergraduates who are women today, to 40 percent or even 50 percent. From the six percent of engineering professors who are women today, to 40 percent. The potential of Title IX is enormous. … Title IX should be a guiding principle in hiring, tenure, scholarships, and lab space for all scholars.40

Yet policymakers and the public should be cautious about replicating the Title IX enforcement regime that has been used in college athletics for academic departments.

A Brief History of Title IX

Title IX of the Education Amendments of 1972 prohibits discrimination on the basis of sex in educational programs or activities in all entities that receive federal funds—given
that essentially all postsecondary schools receive federal funds (for example, by accepting students using federal financial aid), Title IX applies to the entire college and university system.\textsuperscript{41} Title IX applies to all aspects of education; however, thus far, the law has been primarily associated with college athletics.

Records of the debate surrounding the law’s creation show that Congress did not intend to create a quota system through Title IX. Yet the policy interpretation and implementation of the law have created a climate that encourages institutions to embrace the mentality of the quota system.

Schools have two options to try to make the numbers work: they can either try to increase female participation or reduce the number of male athletes. Many have struggled to attract greater female participation. When Brown University was faced with a Title IX lawsuit, there were more than 80 positions on female varsity teams that were unfilled—had students occupied those spots, Brown’s participation rate gap would have been nearly erased. Yet that didn’t matter when it came to complying with Title IX.\textsuperscript{42} Many universities across the country have taken the other route and attempted to reach parity by cutting men’s athletic teams. In total, thousands of men’s teams have been cut, decimating many collegiate sports, including men’s gymnastics and wrestling.\textsuperscript{43}

The Problems with Applying Title IX to Faculties

The history of Title IX in leading to the elimination of men’s sports should give pause to proponents of its aggressive application to faculties. There are also additional reasons why the current Title IX regime’s application to the academic arena is likely to create numerous problems.

For example, there are important differences between academics and the athletic arena, which would make it difficult for universities to comply with Title IX’s proportionality requirement. For instance, in athletics, it is common for men and women to be assigned to different teams. Because of this accepted discrimination, schools have the ability to create women-only teams to boost the number of female athletes. This practice obviously entails costs (which is why schools often take the easier route of eliminating male teams), but it is a clear path to achieving proportionality. It would be more difficult if all athletic teams were mixed-sex, since creating new teams could exacerbate the discrepancy.

Changing the make-up of university faculties would be more difficult, since the sizes of departments are essentially fixed and turn-over is rare. Professor Nancy Hopkins of MIT (who initiated the complaints that led to the original MIT committee and report on discrimination within MIT’s STEM departments) highlights the challenge universities face; even as she makes the case that hiring women should be a priority:

[F]aculty turnover is about 5% a year at MIT, so the number of hires required to maintain faculty size is small: for example, a department of 40 will hire about two (usually junior) faculty a year, about half of whom will later get tenure. Faculty searches are conducted by a committee appointed within the department,
and each search process is independent of any other. Even if the applicant pool were 50% women PhDs, the hiring of a man in any one search would be unremarkable and statistically insignificant. In fact, even to notice that women are not being hired in numbers equal to their availability requires oversight over a period of time, and at a level above, the individual search committee’s perspective or mandate. Even today, in some fields of science, only 10, 20, 30, or 40% of PhDs go to women. For a department of 40, these numbers translate to hiring rates of only 1, 2, 3, or 4 women every five years, assuming no leakage from the pipeline. Given that the number of women one might expect to hire is too small to be significant annually, and in some fields too small to be significant over even longer periods of time, one can see how a department might suddenly realize that it had not increased its number of women faculty in a decade.44

This reality suggests that even if men and women were equally interested and qualified for faculty positions, a fair process would lead to very small changes in faculty composition.

The aggressive use of Title IX may pressure schools to hire women even when they are less qualified than men, in order to at least move toward a more “proportional” faculty.

The aggressive use of Title IX may pressure schools to hire women even when they are less qualified than men, in order to at least move toward a more “proportional” faculty.

Reports from those implementing and overseeing National Science Foundation programs intended to boost the number of female faculty illustrate how this dynamic could occur. In congressional testimony, a representative from the University of Maryland-Baltimore County, explained how the university had successfully increased women’s representation among STEM faculty: “Since the ADVANCE Program at UMBC, the number of female tenure-track faculty has increased 48% from fall 2003 (N=29) to fall 2007 (N=43) compared to a 4% increase in male tenure-track faculty (fall 2003 N=137, fall 2007 N=142).”45

Similarly, a National Science Foundation representative testified about the success of similar efforts in Hunter College in New York: “In the case of ADVANCE at Hunter College in New York, women accounted for only 27% of new hires in the natural sciences before the Gender Equity Project, but from 2003 to 2006, after significant institutional change, women accounted for 61% of new hires.”46

These examples are reported as evidence of success, yet they also raise questions. Were women really the best candidates for 14 of the 19 openings for STEM faculty positions at UMBC from 2003-2007? It is possible, of course, but it seems as likely that women were given an edge over their male counterparts. Someone looking at these statistics cannot help but question if some of these hires may have been less qualified than their peers. This perception can unjustly damage the reputation of all women faculty members.

The emphasis on this numbers game, and the push to boost female representation, raises questions about fairness. The National Science Foundation representative invites us to celebrate Hunter College’s report that 61% of new hires were women. Would it have been more
of a success from the “Gender Equity Project” perspective had all the new hires been women? At what point do such efforts become reverse discrimination?

These questions highlight the difficulty of creating programs or government policies that contain the implicit threat of sanction in changing faculty departments without unfairly discriminating against male candidates and undermining the reputation of female faculty members.

Female faculty members are aware of the dangers that such affirmative action programs pose for the schools and their own professional reputations. For example, a female professor from Florida State University responded to the article “Can Equality in Sports Be Repeated in the Lab?” by expressing her great concern about the potential of forcing universities to achieve a certain gender-balance or face punishment. She saw such an effort as undermining the legitimacy of the women who do focus on, and excel at, STEM disciplines. She writes:

Science…requires a high intellect, interest, opportunity, and a solid education. Lack of the latter two [has] restrained females of past generations, but the gender gap in education and opportunity is closing. Affirmative action may serve to broaden the pool of female scientists, but it will also weaken it—lower requirements naturally mean lower quality. As a result, the old preconception of male intellectual superiority will be reinforced, the status of women in science be reduced, and we will be back to the system that we are apparently fighting. I speak for many satisfied and successful (and therefore quieter) female scientists when I say, “Don’t marginalize us!”

Similarly, a professor from Columbia University who had already been contacted as a part of a government Title IX review, called her interview by government officials “a complete waste of time” and said that she wanted to tell her interviewer to “leave me alone, and let me get my work done.”

Institutional Change

The National Science Foundation has used millions of dollars to fund programs across the country with the intent of increasing the “representation and advancement” of women in academic science and engineering careers. As described in the May 2008 report, some of the programs that receive funding through the ADVANCE program undoubtedly provide value in terms of encouraging the recruitment and retention of valuable faculty. However, other grants and programs have dubious value. Taxpayer money is used to fund workshops, awareness building programs, and managerial training programs at universities with hundreds of millions of dollar endowments. If these efforts are truly in the interest of the university, its students, and faculties, then they could use their own resources to fund such programs.
However, these programs can also actually impede progress by distracting faculty—particularly women faculty members who are more likely to be involved in these programs—from research and activities that would enhance their career prospects.

For example, the study of faculty at the University of California at Irvine reported that several respondents noted that participation in gender-equity related activities distracted some of the best women faculty members:

Several women, speaking on the condition that they were not quoted directly, complained that the [National Science Foundation]-sponsored Advance took some of the best women on campus, women who really care about UCI as an institution, and asked them to serve as School Equity Advisors. As Equity Advisors, they had to sign off on all external hiring searches, to ensure that women and other minorities were adequately represented on the search committee and in the pool of candidates interviewed. While women agreed this was good for the schools, and acknowledged it may have helped avoid gender bias and cut down on the impact of the old boy network, they nonetheless complained that the effect on the women who did it was to take away from their research, which will hurt them when they come up for review next time.51

To the extent that these activities and workshops truly advance the institution, then it is important for universities to reward, not penalize, faculty members that make them possible. But it also suggests that universities should take care to engage only in programs that provide true value to the institution, not to create an image of political correctness. Federal government incentives or mandates for schools to engage in gender equity related activities also could turn out to be counterproductive for the program’s intended beneficiaries, in addition to being an inappropriate use of taxpayers’ money and federal power.

Alleviating the Pressure for those with Families

Universities have limited ability to change the composition of their faculty fairly by using affirmative action hiring programs and sensitivity/awareness-raising seminars. But many hope that changing institutional policies to provide greater flexibility within the career path, and to reduce pressure on faculty members with children, can improve the climate for women and encourage more to pursue tenure track positions.

For example, at a Congressional hearing in October 2007, witnesses almost all discussed the unique challenges that family pressures create for women during the tenure process and in the competitive world of academic research, and recommended universities take measures to alleviate these pressures.

Common recommendations made to alleviate the family-workforce challenge include: adjusting the tenure clock and/or reducing teaching duties for those with family needs; providing on-site child care; greater financial support for those who have children for expenses related to childcare and travel related to conferences and other work-related activities; and more flexible work schedules. 52
It is certainly worth considering how universities can alleviate the pressure created by the tenure process and a desire to build a family. The tenure timetable undoubtedly drives away some women (and men) who would be excellent researchers and professors, who would be just as productive as their counterparts.

However, analysis of many of the proposals that are designed to ease the pressure on those starting families, highlights the difficulty of constructing institutional systems that will not have a disparate impact on women. For example, some women are uncomfortable taking advantage of the flexibility that is available (such as extending the tenure clock) because of the perception that they are less dedicated to their careers. Other universities, likely in an effort to reduce any ill-effects on women, make leave options available to new men as well as women. The GAO highlights some of the problems that arise from this practice:

Some professors we spoke with told us that often male professors do not play as large a role as women in caring for newborns and can use the extra year to add to their research and publication portfolios... Some faculty we spoke with pointed out that relief from teaching duties may benefit male faculty more than female faculty. In connection with the arrival of a child, to the extent that male faculty may have less involvement in caring for newborns, male faculty may use the extra time to do additional research or laboratory work.

Similarly, a study of parental leave policies in academia conducted by Charmaine Yoest of the University of Virginia, also noted the difficulty in crafting gender neutral policies that do not end up inadvertently benefiting men. This study highlights the remarks of administrators, who note the different ways that the leave benefits are used by men and women:

The second administrator reported: “Some are concerned that it’s not equitable for women, because women are usually the primary caretaker. Women who take the leave care for the child, but for men it’s an extra semester for research.” She then related the story of a man and a woman who were hired in the same department at the same time. They both later took parental leave. The woman was the primary caretaker, so she used the leave to take care of her child. The man’s wife did not work, so she took care of the child, and he got an extra semester for research.

The simple, and perhaps largely unavoidable problem, is that Mother Nature is not gender neutral. Women need time to recover from giving birth, often nurse their babies, and generally (whether due to biology or socialization) serve as primary caregivers for young children. It is difficult to create policies that do not discriminate against or advantage one sex over the other.

Whether it is through leave policies or changes to the tenure process that grant greater flexibility, universities should consider ways to make sure that individuals are not
permanently devalued or sidelined as a result of temporary impediments to work. However, it is also important to recognize that universities and education institutions, just like businesses, should be free to reward those who demonstrate the greatest commitment to their jobs and areas of study. And serious time commitments outside of work—whether that is family or another area of interest—generally detract from productivity.

When writing about how to overcome the relative paucity of women in STEM disciplines, Richard Zare of Stanford University wrote:

The greatest challenge is changing the perception that what constitutes a successfully academic career in STEM. Many have the impression that unless someone is pursuing academic activities with maniacal fanaticism, the person is not performing to expectation. ...We must dispel the notion that working day and night equates to productivity.56

Yet while it certainly wouldn’t make sense to have a reward system that encourages busywork or simple on-the-clock face time, it is reasonable to assume that those who are able to dedicate more time to their jobs will, generally, produce more, and therefore deserve to be rewarded for this additional work. Athletes competing for the Olympics are not rewarded for the amount of time they spend in training, and certainly there are instances when overtraining becomes counterproductive, but it would be a surprising finding indeed if more training was not generally associated with more competitive success.

Those able to dedicate more time to their jobs will reach higher levels of success than those whose time is divided between work and other responsibilities, regardless of whether those responsibilities are family, hobbies, religious activities, athletics or something else entirely.

This simple conclusion seems to frustrate many gender warriors, since women still overwhelmingly take on a disproportionate share of responsibility for childrearing and other family responsibilities. Yet they should be optimistic that there are increasingly more options for women, and new ways for balancing work and family, that can at least mitigate some of the effects of these greater family responsibilities.

A growing number of corporations are seeking ways to retain female talent, and are offering women additional job flexibility, particularly when they have young children. For example, the National Science Foundation’s Beyond Bias report highlights the success of the multinational corporation, Deloitte and Touche, in integrating flexible options into their workforce and providing avenues for those who take time out of work to maintain relationships and re-enter their careers, which has led to an increase in the number of women in that company’s leadership.57 Similarly, Booz Allen Hamilton has been consistently rated as one of the best places for women to work. A Booz Allen Hamilton executive described the company’s attitude toward making work arrangements work for employees: “Women at our company have been asking for flexibility—not only in work arrangements but in choices, too. We’ve revamped our paid-time-off structure for greater flexibility. We’ve created a new part-time career model, and we’ve introduced a series of initiatives aimed at increasing representation of women in the pipeline. We’re committed to finding ways to say yes.”58
Similarly, universities can, and should, make efforts to change policies that create unnecessary barriers for women (and men) with family responsibilities. However, they will never be able to change the fundamental human challenge that we have only limited time, and have to choose how to spend it. A just employment system will always reward those who are able to contribute more, and often that will mean that those who are able to dedicate more of their time directly to their employment responsibilities will prosper.
Conclusion: Redefining the Problem and Solution

Susan Pinker, author of *The Sexual Paradox: Men, Women and the Real Gender Gap* reached the somewhat surprising conclusion that in countries where women have the least constraints and greatest freedom to choose their careers, there is the largest difference between men’s and women’s occupations. Some may suggest that it is only in these countries that they have the luxury of exercising sexism, but it seems more likely that this outcome is testimony to men’s and women’s natural inclinations, and that attempts to change this outcome could, in fact, reduce overall satisfaction.

The American Association of University Professors laments that “model analysis found that without any change in current hiring and retention trends, women would never make up more than 34 percent of full-time tenure-track faculty at the university—with that progress requiring 40 years to achieve.” Yet their alarm at this statistic begs the question—what portion do they believe women ought to be? The presumption that justice requires that men and women both hold 50 percent of tenured professorships in STEM disciplines is arbitrary.

Universities and policymakers should be cautious about efforts that seek to increase artificially the number of women in faculties. The measures advocated by those who want more “balance” in STEM faculties could have adverse, unintended consequences, including undermining the position of women within faculties and creating reverse sexism; as hiring policies blatantly favor women over their male peers. Policymakers should not seek to impose the Title IX enforcement policies that have been used in athletics, resulting in the elimination of scores of men’s athletic teams, on academia.

Universities should take action to prevent discrimination or to address sexist behavior where it exists. Colleges and universities should consider if current policies are conducive to attracting the best women and men to engage in important research and teach the next generation. They should work to create a supportive environment that encourages both women and men to fulfill their potential and, to the extent possible, provide flexibility so that those who also have family or other responsibilities can continue to contribute to the important work of the institution. Furthermore, to the extent that the tenure process unnecessarily discourages qualified women (and men) from pursuing careers in academia, it is in universities’ interests to consider changes to that system and find alternative career structures. However, their efforts should be aimed at creating the best academic departments irrespective of sex; not to reach some politically correct “proportionality” threshold.
Endnotes

2. Martha S. West and John W. Curtis, p. 5.
5. Mary Ann Mason and Eve Mason Ekman, p. 34.
6. National Center for Education Statistics, p. 82, Table 31.
7. Mary Ann Mason and Eve Mason Ekman, p. 27.
8. National Center for Education Statistics, p. 82, Table 31.
10. Mary Ann Mason and Eve Mason Ekman, p. 25.
13. Ibid.
23. “Women’s Participation in the Sciences Has Increased, but Agencies Need to Do More to Ensure Compliance with Title IX,” p. 24.

26. “Women’s Participation in the Sciences Has Increased, but Agencies Need to Do More to Ensure Compliance with Title IX,” p. 21


31. Ibid.


35. Anna L. W. Sears, p. 170.

36. Ibid.


38. Ibid.

39. Dr. Gretchen Ritter, Testimony before the Subcommittee on Research and Science Education, Committee on Science and Technology, U.S. House of Representative, October 17, 2007, p. 16.


41. “Women’s Participation in the Sciences Has Increased, but Agencies Need to Do More to Ensure Compliance with Title IX,” p. 4.


44. MIT Faculty Newsletter, March/April 2006, p. 21.


46. Kathie L. Olsen, Ph.D., National Science Foundation, Testimony before the
Excellence, Not Gender Parity, Should Be Priority for STEM Faculty

Subcommittee on Research and Science Education, Committee on Science and Technology, U.S. House of Representative, October 17, 2007, p. 3.


50. For example, The University of Colorado at Boulder received more than $3.5 million as an “Institutional Transformation Award” from the National Science Foundation for its “Leadership Education for Advancement Program” (LEAP). According to the abstract on the National Science Foundation’s website, LEAP endeavors to improve “the level of managerial and leadership skills possessed by the faculty” to help “reduce the stresses commonly associated with achieving tenure” and ultimately to “accelerate the promotion rate of women faculty by increasing retention rates and making their environment more supportive.” The University of Colorado at Boulder has an endowment estimated at $720 million.


52. For example, see “Women’s Participation in the Sciences Has Increased, but Agencies Need to Do More to Ensure Compliance with Title IX,” pp. 25-27; or National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, pp. 207-210, 221.

53. “Women’s Participation in the Sciences Has Increased, but Agencies Need to Do More to Ensure Compliance with Title IX,” p. 25.

54. “Women’s Participation in the Sciences Has Increased, but Agencies Need to Do More to Ensure Compliance with Title IX,” p. 26.


57. National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, p. 200.


About the Author
Carrie Lukas is the vice president for policy and economics at the Independent Women’s Forum. She is the author of *The Politically Incorrect Guide to Women, Sex, and Feminism* and a contributor to National Review Online.

About IWF
Founded in 1992, the Independent Women’s Forum is a non-partisan, 501(c)(3) non-profit educational institution. IWF focuses on issues of concern to women, men, and families. Its mission is to rebuild civil society by advancing economic liberty, personal responsibility, and political freedom. IWF fosters greater respect for limited government, equality under the law, property rights, free markets, strong families, and a powerful and effective national defense and foreign policy. IWF is home to some of the nation’s most influential scholars—women who are committed to promoting and defending economic opportunity and political freedom.

Board of Directors
Heather R. Higgins, Chairman
Mary E. Arnold
Yvonne S. Boyce
The Honorable Carol T. Crawford
Jennifer Ashworth Dinh
Mary Beth Jarvis
Randy Kendrick
Lawrence Kudlow
Joanne T. Medero

Directors Emeritae
The Honorable Lynne V. Cheney
Midge Decter
Kimberly O. Dennis
The Honorable Wendy Gramm
Elizabeth Lurie
Kate O’Beirne
The Honorable Louise V. Oliver
Nancy Mitchell Pfotenhauer
Sally C. Pipes
The Honorable R. Gaull Silberman (Chairman Emerita)