

# The MIT Faculty Newsletter

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## Special Edition

This issue of the *Faculty Newsletter* is devoted to responses to the *Reports of the Committees on the Status of Women*, as invited by Faculty Chair Steve Graves and the Editorial Committee for this issue. Only the Overview is included here; the complete reports can be found on the Web at: <http://web.mit.edu/faculty/reports/>.

A *Faculty Newsletter* Electronic Bulletin Board will be created for additional responses, and will be updated daily. Please submit commentary via e-mail to: [fnl@mit.edu](mailto:fnl@mit.edu).

## **The Status of Women Faculty at MIT: An Overview of Reports from the Schools of Architecture and Planning; Engineering; Humanities, Arts, and Social Sciences; and the Sloan School of Management**

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### **Abstract**

A study completed several years ago in the School of Science found that tenured women faculty often experienced marginalization, and with it, inequities in terms of resources for research and compensation. Inequities can be difficult to detect in the absence of a systematic study. To ensure the equitable treatment of women faculty, Provost Bob Brown asked that studies similar to that in the School of Science be performed in the other Schools of MIT. Committees on the Status of Women Faculty, appointed by the Deans, analyzed data and conducted interviews, and prepared reports on their findings. Edited versions of these *Reports* follow this overview. Strikingly, the studies reveal that the issues that can negatively impact the professional lives of women faculty are similar in different Schools and similar to those identified in Science. They include marginalization, which can sometimes be accompanied by inequities; the small number of women faculty in many departments; and the greater difficulty of balancing family and work for women faculty. Despite generic similarities, specific manifestations of these problems differ among Schools, and even in different departments within a School. Identification of the specific concerns of women faculty has led to prompt corrective actions. It has also led to new policies to facilitate institutional change to prevent such problems from arising in the future. The collaboration of tenured women faculty with the higher administration has substantially improved the professional lives of many women faculty. If sustained, this interaction should ultimately impact the continued under-representation of women, particularly in many fields of science and engineering. Similar efforts may also help to address the almost complete absence of women of color from the MIT faculty.

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## From The Faculty Chair

# Women and MIT: Role of the Department Head

Jacquelyn C. Yanch

*The trouble is the Institute provides the carrots, but it leaves discretion with individual departments.*

Interviewee, *Report of the School of Architecture and Planning*, p. 55

Now that the President and Provost have openly and enthusiastically mandated the creation of an equitable and hospitable environment for women faculty at MIT, the bulk of the responsibility for changing the climate now rests with the 26 men and 5 women who head the Institute's departments/divisions/sections. These are the individuals who have the biggest influence on the kind of experience a woman has at MIT.

Clearly the department head has a major influence on the tangibles: the allocation of laboratory and office space, the teaching load, participation on committees, and annual salary raises. Data about the tangibles are fairly easily obtained and inequities are simple to rectify once uncovered. That's the easy part. The more difficult task is to address the intangibles that, added together, create the overall departmental environment. It is the department head's responsibility to make that environment one within which a woman feels her contributions are valued equally with those of her male colleagues; an environment where a woman feels that she is a full participant in the department, not an on-looker.

The startling quantitative and qualitative data presented in the *Reports of the Committees on the Status of Women Faculty* point to a situation for women that is the result of discrimination and biases held by decades of previous department heads. I believe, for the most part, that this discrimination was inadvertent and subconscious, and thus changing the overall environment is going to be a challenging task.

By action and example the department heads set the stage for their entire department. They must, by their actions, demonstrate to their entire faculty that support of women in the department is expected. Here are some examples of actions department heads can take that can make a difference.

- Make sure important decisions are made through the regular committee structure (since the unofficial power structure is so heavily male-dominated) and make sure that women are represented on the important committees.

- Make it your business to know the specific research area of your women faculty. (It can't be that onerous, there aren't that many of them.) Make a point of asking why Professor so-and-so is not a part of a particular student's doctoral committee when the student's area of research is so clearly related to hers.

- Set an example for the faculty at large by scheduling meetings only during normal (?) working hours or by asking why meetings set by others in the department are scheduled at 6:00 p.m. or 8:00 a.m. Make it clear, by actions such as these, that you fully expect your faculty to have family obligations and that you don't expect MIT to always come first in the ever-present conflict between MIT and family/life.

- Communicate, on a regular basis, information about the new Institute family support policies. Even more important is the need to show support for the women and men who use these policies. Make it clear by your own example that resentment of faculty who participate in these policies will not be tolerated.

- Don't wait until one of your women faculty threatens to leave or receives outside offers to make it clear to her that you honestly value her contributions to the department. Everyone wants to know

their efforts are appreciated (especially if making the effort has meant family sacrifices).

- Don't assume that just because you have supervised female graduate students, or perhaps raised daughters, that this makes you sensitive to subtle and subconscious discrimination against women, or that this renders you pro-active enough in terms of making the environment more hospitable for women.

- If a woman in your department comes with a request for resources, put extra effort into trying to get them for her. If you think that by putting this advice into action department heads will be pandering to women professors, remember that the Institute's history of discrimination has created a somewhat hostile environment. Your extra efforts on her behalf may help to level the playing field. And they certainly will go a long way toward making her feel valued by you, her boss. If you worry that you will be neglecting the needs of the junior men on the faculty, give them the same treatment, and they will also feel more valued.

- Re-read those portions of the *Reports* where women faculty have described their experience at MIT, and where examples are given which illustrate the things that, bit by bit, sum to generate a working environment that is neither supportive nor equitable for women.

Generation of a positive climate is primarily the responsibility of the department head. However, it is the responsibility of the deans and the provost to provide guidance to the department heads so that they can make the necessary changes to the climate for women faculty, and to monitor the situation to ensure that positive changes are, in fact, being made over time.✦

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## The Status of Women Faculty: An Overview of Reports

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### Introduction

In March 1999 an article in *The MIT Faculty Newsletter* reported the results of a study on the status of women faculty in the School of Science. An important finding was that many tenured women faculty experienced professional marginalization. Often marginalization was accompanied by inequities, with women faculty receiving lower salaries, less space, and fewer resources for their research than male colleagues, and by exclusion from important decision making roles in their departments. The report highlighted the small number of women faculty (15 tenured women vs. 197 tenured men in 1994) and the fact that, contrary to popular belief, the percentage of women faculty had remained unchanged for at least 10, and probably 20 years.

University reports can go unheeded and gather dust, but the Report on the Status of Women Faculty in Science was widely quoted in the media and had far reaching consequences, both inside and outside MIT. Within MIT, President Vest set a goal of achieving gender equity in the future, and he commissioned the Provost to ensure that this was the case. Together, with input from women faculty, Provost Brown and President Vest also established a Council on Faculty Diversity to identify fundamental issues underlying marginalization and the continued under-representation of both women and minorities on the faculty, and to try to devise institutional solutions for these problems.

Outside MIT, the Study on the Status of Women Faculty in Science resonated widely with professional women. The problems identified in the MIT report proved to be essentially universal for professional women in the U.S. Further, the problem had frequently been ignored

or misunderstood. President Vest held a conference of nine university Presidents to discuss these issues, and the Presidents made a commitment to address gender bias at their own schools.

An important observation from the Science Report was that marginalization and the inequities that result from it can be difficult to identify in individual cases at the department level. Careful study is needed to identify problems since these can differ from field to field, department to department, and even individual to individual. In addition, a mechanism is needed to correct inequities as soon as they are identified. In light of these findings, Provost Bob Brown chose to establish committees in each of the Schools of MIT to carry out analyses similar to that in Science and to make corrections of inequities when they were documented. The Dean of each School appointed a committee of female and male faculty, and selected a woman faculty chair in consultation with the tenured women in the School. The reports of these Committees have been completed, presented to the Deans and School Councils, to the Academic Council, and to the faculty. Summaries of the reports are published here.

We are very grateful to the Ford Foundation and The Atlantic Philanthropies for their support of these efforts over the past two years.

### Findings of the Reports: Generic Issues, Specific Manifestations

Not surprisingly, the Committees found that most female and male faculty fully appreciate the many advantages of a faculty position at MIT, with its access to exceptional students, colleagues, and resources for research. Nonetheless, across many departments and probably in all Schools, the experiences of male and female faculty differ, with women

more frequently reporting negative experiences. The most striking finding from the four new reports is that many of the issues that differentially affect the professional lives of women faculty are shared in all five Schools of MIT. This might not have been readily apparent in the absence of these detailed studies.

Generic issues that differentially impact the professional lives of female vs. male faculty are: marginalization; isolation resulting from small numbers of women faculty; residual effects of past inequities, particularly around salary and access to resources; and greater family responsibilities. Marginalization accumulates from a series of repeated instances of disadvantage which compound over an academic career.

### 1. Specific manifestations of marginalization and the inequities that can arise from it

Marginalization can take many forms and can occur for complex reasons. Marginalization has cumulative and deleterious effects on a faculty member's productivity. It leads to professional exclusion, a sense of being under-valued, and accumulated inequities from unequal levels of compensation and unequal access to resources. Marginalization and the inequities that accompany it are more likely to occur in Schools and departments with the fewest women faculty.

### *Examples of marginalization in different Schools*

In Engineering, the School with the lowest percentage of women faculty, the report found that exclusion from professional activities, and sometimes near-invisibility of women faculty were common, although not universal issues. For example, women faculty in different departments report being excluded from

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participation in group grants. And some report not being invited to serve on the Ph.D thesis committees of the students of male colleagues. While a single incident is inconsequential, repeated over time these exclusions can have important consequences, since some of these interactions generate new ideas for further collaboration, can result in research that leads to group research grants, and can generate outside professional opportunities important to a career in some fields of engineering. Some of us were present the day the Dean of Engineering, Tom Magnanti, learned of these inexplicable, to him incomprehensible exclusions of women faculty. He was almost unable to grasp that this had routinely happened to women whom he himself knew to be highly respected members of their departments. He instantly understood, though, the severely negative professional consequences of this exclusion. Interestingly, in Science, exclusion from group grants was also identified as part of the pattern of marginalization, but exclusion from Ph.D committees was not reported. In contrast, space was not reported as an issue for women faculty in Engineering at the present time, but it had been a very significant issue for some women faculty in Science. In the Sloan School of Management, a startling manifestation of the consequences of marginalization was discovered when interviews with senior women faculty and a matched group of men were independently coded on a number of dimensions of experience. Among 60 possible comparisons there was no single case where the woman reported a better experience than did her matched male pair. And there were 40 comparisons where the man's reported experience was more positive than that of his matched pair.

In the School of Architecture and Planning, a number of women faculty reported feeling a lack of influence in important decision-making. Some male faculty, on the other hand, reported great influence and inclusion in decision-making. Although women faculty have been appointed as members or chairs of important committees, it appears that some important departmental decisions are not made within these committees, but are made outside of the committee structure.

These examples show the importance of the stories women faculty tell about their experiences in different fields. Only the aggregation of individual stories will point the way to better understanding as well as to concrete ways to improve the situation of faculty women, and undoubtedly of some male faculty as well.

### ***The under-valuing of women and of certain fields of research***

As the report from the School of Humanities, Arts, and Social Sciences (SHASS) suggests, not only women, but entire fields can be under-valued in the male-dominated culture of science and engineering. Thus, in Humanities at MIT, both female and male faculty in fields without graduate programs often feel under-valued relative to those in the social sciences. These humanistic fields have a higher percentage of women faculty and lower salary scales for both men and women. As one male faculty in Humanities commented, "We're all women here." This difference in fields extends to the Sloan School of Management as well, where faculty in areas that are more quantitative are more highly paid and feel more central than those who rely on interpretative analyses of field-based data. The latter include most of the senior women. In

Architecture and Planning, too, many women are in fields with lower compensation. The issue also arises in Engineering, where women often work in inter-disciplinary areas and nontraditional niches. This choice may contribute to their isolation and make it easier for men to undervalue their work since there may be no colleagues to collaborate with and few who can comprehensively evaluate them.

### ***Women faculty can often earn less than male colleagues***

As expected from national studies conducted over decades, and from the School of Science report, three of the four new Reports document lower salaries for women faculty in the past. In Engineering many of these were corrected some years ago, although a few additional corrections were made by Dean Magnanti in response to the Report. In Sloan, at the time the data were analyzed, women faculty salaries were lower than those of male faculty when controlled for field, rank, and past experience. But Dean Schmalensee has recently taken steps to bring men and women to parity on average. In Architecture some significant disparities were corrected through the work of the Committee and Dean Mitchell. Only the SHASS Committee failed to find evidence of lower pay for women faculty; however, the committee obtained salary data for only one year, precluding the possibility of detecting past underpayments and corrections. Department Heads and Deans probably often correct the lower salaries of women faculty, since a common finding in all Schools (except SHASS, see above) is sudden unexplained raises to women faculty, presumably resulting from previous underpayment. Though very

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important, such jumps do not make up for past unequal contributions to pension benefits. Furthermore, it has been noted that with time, women's salaries often fall behind again.

Now that we better understand the marginalization of women faculty, it is easier to see why the compensation system so frequently results in women faculty earning less than men. Salaries, it seems, are primarily driven by the market and respond most robustly to outside offers. In this market-driven system, therefore, obtaining a high salary requires that women faculty 1) know how the system works, 2) obtain outside offers as frequently as men, 3) be as willing and capable of moving to another location as male colleagues, 4) obtain an equally robust response to an outside offer from their Department Head or Dean. Marginalization and exclusion from knowledge, the lower probability of having a spouse willing to follow you to a new location, and under-valuation in the eyes of those who make offers and those who respond to outside offers, make this long standing problem more comprehensible, indeed, make it almost predictable. Recently, in the School of Science, it is apparent that women faculty, particularly young single women, have learned to use outside offers, and thus, some now have among the highest salaries in the School. Similarly, women hired from outside in several Schools have high salaries. But for now, the Committees on women faculty are serving as an additional check on salaries, for both men and women. We are gradually coming to see that our compensation system may be both out of date and gendered: it worked well for a man with a movable wife, but is irrelevant for many two-career couples and most women. As noted above, in some Schools, entire departments and

fields are under-valued and all faculty have low salaries. This is not a gender equity issue, although it may reflect the feminization of these fields, particularly within the hard-science, male-dominated culture of MIT.

### 2. Small numbers of women faculty and the prospects for increasing the numbers

Only 16% of MIT faculty are women. This number is expected to be lower overall than many other universities since the percentage of women in science and engineering is lower than in other fields, and since nearly two-thirds of MIT's entire faculty are scientists or engineers. By School, comparable field, or by department, MIT appears to have the same or slightly more women faculty than comparable units of comparable universities.

Once again, in analyzing the numbers of women faculty, careful analysis of data has proven to be critical for identifying specific issues that need to be addressed. For example, in Engineering, the percentage of women hired in the last 10 years is roughly equal to the percentage of women Ph.Ds produced in the U.S. However, the Engineering Report documents that most of these hires occurred in half the departments, particularly Civil Engineering, Chemical Engineering, and Material Science and Engineering. In contrast, Electrical Engineering and Mechanical Engineering made virtually no progress in hiring and retaining women over a decade. Between 1990 and 1998 Electrical Engineering hired 28 men and 0 women. This was not for lack of trying. Four offers were made to women, but none accepted. This stunning finding reflects a trend in the School: the acceptance rate for women of job offers to join the Engineering faculty was lower

than that of men. Furthermore, engineering will occasionally hire its own best Ph.Ds, but the proportion of male MIT-trained Ph.Ds hired was twice that of MIT-trained women hired. Clearly, only by identifying these very specific issues, department by department, can one begin to address them.

In Architecture and Planning, the proportion of women faculty is high relative to other Schools. But in relation to the much higher proportion of graduate students in the School, they could be doing much better. The School has been very successful in recent years in increasing the numbers of women faculty to very high levels, especially by hiring senior women from without. However, at the same time, there have been problems promoting junior women to tenure from within. These important findings point to areas that require further analysis and understanding, and the need for long term commitment in order to truly impact the number of women over time.

Even in SHASS, the number of women faculty is equal to men in only a few fields of Humanities. While there they are 50-50, in fact in these fields the fraction of women Ph.Ds is even higher. So while the 50-50 mix is highly desirable, even this may be an under-representation of the fraction of trained women Ph.Ds in the pool. Interestingly, in Science, the number of women faculty has increased by about 50% since its study was conducted. However, most of the increase occurred at that time, and some of it has been eroded by the departure of 4 tenured women. In Science, as opposed to Engineering, the acceptance rate of job offers for men and women over the past decade has been close to equal. The difficulty has been in making offers at a steady pace over a long period of time.

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The important information about numbers collected in these reports points to a critical need for a more detailed study of the number of women available in each field, the numbers who apply for faculty positions, the number interviewed, offers made, and acceptance rates over time. This detailed pipeline study is essential for the important next step, which is to determine where the missing women go, and why. As discussed below, the issue of increasing the number of women faculty is being addressed by the Provost, the Deans, and the Council on Faculty Diversity.

### ***Women of color are the most under-represented faculty***

Although none of the Reports deal specifically with the issue of the diversity of women faculty this omission in itself reflects a harsh reality: there are almost no women of color on the MIT faculty. Nationally, women of color are all but invisible. Their numbers are hidden in both the numbers of women and in the numbers of under-represented minorities, but they are almost never seen as a group in their own right. National statistics of top universities show that these women exist in single numbers at best. At a recent conference held at MIT on minority women scientists and engineers in the academy, organized by Professor Evelyn Hammonds (STS, Director, Center for the Study of Diversity in Science, Technology, and Medicine), members of the audience were able to identify – by name – all the women in the top 50 departments of Science and Engineering in the United States! This under-representation applies to African American, Hispanic, and Native American women, and to a non-official minority group of women, those of Asian origin.

### **3. Family-work issues for women faculty, and increasingly for male faculty**

Not surprisingly, women faculty often remark on the greater responsibilities that women shoulder for family care, including care of both children and aging parents. This issue, also central to the findings of the Science Report, is similar for women in all Schools, although the best solutions can be very different depending on the field, stage of career, and nature of the responsibility. Further, as in most universities, many fewer of the women faculty are married or have children. Related to this is the fact that the benefit structure is still geared to a male earner with a family, and some of the needs of women faculty are not being met. In some departments male faculty also cited family-work issues as being of very great concern. This is increasingly true of junior male faculty. These issues are currently being addressed by changes to institutional processes.

### **Progress for Women Faculty at MIT: Quick Fixes and Long Term Solutions**

From these Reports, as from the Science Report, we learned that female faculty can have different, often less positive professional experiences than their male colleagues. Painstaking data gathering by faculty and administrators deep within the institution, including collecting the important stories of female faculty, have helped to make this issue visible and thus make it possible to address it. The MIT administration has made two types of responses to the Science report and to these four new reports as well: quick fixes to specific inequities, and efforts at long term solutions including institutional change.

### **1. The Committees on the Status of Women Faculty will continue to monitor equity**

When inequities are documented now by the Committees on women faculty, they are usually promptly addressed by the Deans. The importance of this cannot be over-estimated, since the studies reveal the extreme frustration and discouragement that can result from a feeling that there may be inequities in the system. Furthermore, realizing that inequities will probably continue to arise and impact the productivity and quality of life for women faculty, the Provost and President have requested that the Committees on women faculty remain in place and continue to monitor equity, including annual reviews of primary salary data by Committee chairs. However, as President Vest had noted earlier, important though this is, “fixing inequities is the easy part” of the solution. The more difficult part is to understand the reasons inequities arise, the reasons for marginalization and for the small number of women faculty and to address these.

In recognition of these complex problems, President Vest and Provost Brown, in consultation with tenured women faculty, established a Council on Faculty Diversity in the fall of 2000. This administrative mechanism allows faculty with knowledge of an important issue to work hand in hand with administrators who have both a deep knowledge of institutional process and the power to impact it rapidly. The first Council on Faculty diversity has been Co-Chaired by Provost Bob Brown, Professor Nancy Hopkins (who was Chair of the first Committee on Women Faculty in Science) and Professor Phillip Clay (previously Associate Provost, now Chancellor of MIT. Clay has

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recently been replaced by Professor Wesley Harris.) In her capacity as Co-Chair of the Council, Professor Hopkins sits on the Academic Council, the highest committee of academic administration at MIT. She is one of two women faculty on the Council, twice the number of women faculty to ever sit there at one time. In addition to Professor Hopkins and Professor Alice Gast (Vice President for Research and Associate Provost), the Council includes four women in positions of administrative leadership (three vice presidents and the director of libraries).

### **2. The Council on Faculty Diversity examines institutional process in light of the findings of the Committees on the Status of Women Faculty**

The Reports from all five Committees on women faculty make clear that the small numbers of faculty in many departments, and the greater demands of family are two areas of extreme concern for women faculty. In recognition of this, the Council on Faculty Diversity has specifically addressed these two issues.

#### ***Policies to address family-work issues***

A Subcommittee on Quality of Life, chaired by Professor Lotte Bailyn (Sloan), with input from faculty across the Institute, developed three new policies for family leaves for the birth or adoption of a child, and for care of a family member or partner. These policies have been approved by the Deans and by the Academic Council and have been put into place in the current year. Their use and effect over time will be monitored by faculty who

will report to the Council on Faculty Diversity, thus setting up a monitored experiment.

#### ***Small numbers of women faculty: Hiring policies, pipeline***

To address the under-representation of women, and also minorities, on the faculty, Provost Brown worked with the Deans to develop guidelines for hiring practices. Each School was asked to develop protocols that could be used by search committees and that would ensure that tenured women and minority faculty play a part in all searches. In addition, some Deans have adopted the policy of reviewing all searches themselves and sending back those in which potential women or minority faculty candidates were not seriously considered. To assist these new programs, Professor Gibson (Chair of the Engineering Committee on women faculty) has prepared a Handbook on Faculty Search Procedures modeled after one developed by Dean of Engineering Denice Denton, U. of Washington. The Council on Faculty Diversity is also in the process of developing new approaches to analyzing and stimulating the pipeline, both for women, including women of color, and for minority males, but this work is still at an early stage.

### **3. Women faculty in the administration**

A striking finding from the Science report was that no woman professor had ever been a Department Head, or Center or Lab director in Science in the history of MIT. In fact, there were no women in the administration of either Science or Engineering at

the time of the study. This lack of access to knowledge of the system is a serious source of problems. The absence of women from such knowledge and positions of power is also found in some departments of other Schools as the new Reports reveal. Today, six women faculty from Science have roles in the academic administration (see Update from Dean Silbey for the School of Science) including women Heads of two labs in Physics and a Director of the highly prestigious Whitehead Institute, and three women have line positions in the administration in Engineering, while four others have non-line positions with substantial administrative responsibilities. In addition, Professor Terry Knight (Chair of the Committee on women faculty in Architecture) was recently appointed Associate Dean of the School of Architecture and Planning. These appointments have already had a significant impact by dramatically increasing women faculty knowledge of the system, as well as further increasing awareness among male administrators of the problems women faculty can experience. In addition, these women are beginning to impact institutional processes to make them more effective for a diverse faculty.

### **4. A collaboration of committed administrators and committed women faculty is responsible for the progress at MIT**

Many women faculty have been amazed by the progress and changes in their own professional lives at

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MIT as a result of the work described in this Overview and in the Reports that follow. If one were to ask what was the most important factor in change to date, it would have to be the Reports that documented the problems and led to the engagement of administrators in solving them. This could not have occurred without two key components: a significant number of tenured women faculty who worked closely together and were willing to commit an enormous amount of their time to this issue, and a higher administration that, given the knowledge of the problems the women faculty provided, made a long term commitment to work with the women faculty to address the issues. Initially the Dean of Science fixed problems for women faculty on a case by case basis. But today, the Provost, and also Deans, work closely with women faculty within the administration to address these problems on behalf of the institution. This is a profound change, probably the most important to occur for some decades.

### 5. Why MIT? “Engineers solve problems”

When the Science Report was published, many people expressed surprise that analysis of what in the end is really a societal problem should come from a School of science and engineering. However, this may in fact be key to MIT’s approach to gender equity. In a conversation with Provost Brown, in which one woman expressed her concerns about whether these complex problems were really fixable, the Provost, an

Engineer by profession, seemed quite taken aback. “This is MIT,” he replied. “We’re engineers. Engineers solve problems.” Indeed, it may be the can-do, entrepreneurial, even upstart confidence of the engineer that explains in part both Vest’s and Brown’s commitment to this difficult issue. A confident belief that data-gathering, analysis, design of goals and development of metrics can solve most problems may give MIT the courage to try to change societal problems as elusive even as gender bias.

### The Future: Will we be monitoring equity forever?

But will it work, this engineers’ approach to gender equity? Despite the enormous progress we have made at MIT, there is still a long way to go. While the findings of these Reports and the administrative mechanisms they have generated can ensure equity for women faculty, it will remain hard to solve the marginalization of women. Many women faculty are still unlikely to have many female colleagues during their entire professional lives, given the slow rate of faculty turnover and the small numbers of women faculty still being hired in some fields. These women will remain at risk to be marginalized since no matter how many policies one enacts, in the end, consciousness raising of the entire faculty will be needed to solve this problem. But would even that be enough to increase the numbers of women faculty, and solve the family-work issue?

### *Do we need to change the rules of the game?*

As we have seen with salaries and with the numbers of women faculty, once the concrete data are available, committed administrators can make a difference. But lasting equity cannot depend only on the good will of department heads and deans. So, despite the important progress MIT has made, there are still underlying causes that have not been uncovered. There still is very little awareness at MIT, or elsewhere, of the gendered nature of academic rules: how criteria of evaluation, timing expectations, conventions of authorship – to name a few – help men more than women. Nor is there awareness that reputations are constructed, and cumulate from slight advantages that favor men, and slight inequities that disadvantage women. Lasting equity requires rethinking these institutional rules, which evolved for a different demographic group, in order to ensure that they do not systematically disadvantage women, or men in dual career partnerships. MIT has successfully used the experience of the women faculty in the School of Science to ensure that women in all the schools are treated fairly, and that everyone understands the rules. What still needs doing, and what eventually will be necessary in order to achieve lasting gender equity, is to question and rethink the nature of the rules themselves. ♣

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# Women and MIT: Some History

Millie Dresselhaus

**T**hank you for this opportunity to comment on the *Reports of the Committees on the Status of Women Faculty* at MIT. The first report on women faculty in the School of Science was a watershed report for professional women in the United States pursuing serious careers and scholarly research. The impact of this report has gone far beyond MIT, beyond the U.S., reaching women around the world in many professional callings and reaching many young women students with serious professional aspirations. The subsequent reports from the other MIT Schools confirm the resolve of the MIT administration in support of all of its faculty.

From the beginning, MIT did not deny women the opportunity to enroll for undergraduate and graduate degree programs. In the post World War II era, when almost all universities enforced nepotism rules in their hiring practices, MIT did not. It is for this reason that right after completion of my post-doctoral studies at Cornell University that I first joined the MIT community in 1960 as a research staff member at the MIT Lincoln Laboratory, and Lincoln Laboratory also hired my husband, Gene, at the same time. In that era, women felt privileged to have an opportunity to do science at the cutting edge, and equal

opportunity was far from our thoughts.

From my earliest years at MIT, when women undergraduates were only about 4% of the student body and women faculty were less than 1%, I remember being involved in a study that led to equal academic admissions criteria for women and men undergraduates late in the Howard Johnson administration. Shortly after Jerry Wiesner became president of MIT in 1971, he asked me to help improve the academic environment for women students. Under the guidance of President Wiesner, who had a great interest in promoting equal educational opportunities for all students, the committee study process for recommending and implementing reforms for women students and staff developed. The Wiesner approach was to identify issues requiring attention, to appoint a task force to study the issue in a scholarly way, collecting and analyzing pertinent data, and finally writing a report, with the same care and thoughtfulness as “one would use to write a research paper in a physics journal,” to paraphrase his words on guidance to me. It was my judgment in the early 1970s that with due diligence we might be able to achieve in my lifetime a critical mass for women at MIT (which I argued to be ~15% women)

in every academic department, and once this was achieved, I believed that women would experience equal academic opportunities at MIT. By his personal actions, Jerry Wiesner showed the importance of active leadership from the top administration to increase the opportunities for women students, staff, and faculty, and in the implementation of his policies he depended on the active involvement of senior women faculty in moving the programs forward. Through this approach, the percentage of women undergraduates reached a critical mass level in almost every academic department early in the Paul Gray administration. At that point I felt comfortable about the prospects for women to pursue academic pursuits at MIT, and I directed my attention to more general science policy issues at the national level.

It was more than 10 years later, under the leadership of Nancy Hopkins, that we learned that critical mass, though important, was far from the whole story in gaining equity for women at MIT. We are all indebted to Nancy for her leadership and courage in showing us the right way to proceed and to the MIT administration for their proactive support of this approach.✦

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# Situation Improving in EECS

John Guttag

Twenty years ago EECS had 108 faculty members, three of whom were women. Today, the department has 111 faculty members, 10 of whom are women. This represents progress, but not enough. Approximately 15% of the doctoral graduates in the fields represented by our department are women, yet women represent only 9% of our faculty.

It is not that we have been unable to find qualified women candidates. From 1985 to 2001, slightly more than 15% of the faculty offers made by EECS were to women. However, during this period the offer acceptance rate for men was 79%, whereas that for women was only 47%. The nadir was between 1991 and 1998, when 100% of the offers made to women candidates were turned down. Each rejection came with its own story, but a consistent contributory factor was that the limited supply of women aspiring to faculty positions in computer science and electrical

engineering created an extremely competitive market.

The good news is that the situation is improving. Over the last three years, 57% percent of the women to whom we made offers accepted (the acceptance rate for men was essentially unchanged). Moreover, an increasingly large percentage of women doctoral candidates in EE and CS seem to be interested in academic careers. I expect that for at least the next few years the percentage of our offers made to women will be somewhat greater than the percentage of women in the pool of new doctorates in the field. I also expect to be more successful in recruiting those women to whom we make offers.

I would be remiss if I did not note that a number of women faculty members play important leadership roles in EECS. Women faculty members have consistently served on our faculty search committees. One of the two associate department heads is a woman. A quarter of the

departmental committee that votes on promotions is composed of women. Each of these women has earned the respect of their colleagues and exercises leadership by virtue of her talent, not her gender.

The job of a faculty member in EECS is not an easy one. The demands are great and the expectations of accomplishment high. Balancing work and family life can be stressful for men as well as for women. However, women do typically bear a disproportionate share of the burden of raising children. This does not mean that we should expect women to have less productive faculty careers than men. It does mean that some women will, at least for periods of time, have different constraints than their male peers. Our department appreciates this, and will do whatever it can to continue to offer a welcoming and supportive environment for women faculty at all stages of their careers.♣

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# Rebuilding the "MIT Faculty Club"

Wesley L. Harris

It is spring! Again we have made the transition from confinement to openness. We are in a sort of pass over from cold to warmth, from darkness to light. In what sense does the *Reports of the Committees on the Status of Women Faculty* represent a transition from confinement to openness or a pass over from darkness to light or a passage from danger to safety? Many, I suppose. Exactly how many depends on the reader. Some believe that the "MIT faculty club" is quite complex, nested, interrelated-cellular, dynamic, and built on solid ground. Even a one-dimensional review of the *Reports* would confirm the nature of this complexity. As an engineer committed to deciphering complex systems, I am most appreciative of the light that the *Reports* have revealed to all. Some of the

"club" nesting is corrupted; some of the cells are empty; some of the motion is singular and pointless; essential elements in the foundation are in need of repair. As a humanitarian, I am even more appreciative of the effectiveness of the *Reports* in revealing what should be the *irreducible elements* of a sustaining "club": (a) mutual respect and trust among members, and (b) good will to and for all members.

Accepting the complexity of the "club," understanding the human and structural issues identified in the *Reports*, followed by a viable plan of action to rebuild the "club" can be a daunting challenge. I will *assume* that the MIT administration and the MIT faculty leadership will develop a viable plan for engagement. However, starting now and continuing into the distant future, each of us as individual members

of the "club" and as members of groups within the "club" must act daily to foster mutual respect and trust and to actually extend good will to and for all. These irreducible elements constitute the initial and boundary conditions both necessary and sufficient for a civilized, plausible solution to rebuilding the "club" that will be sustainable in the future. Independent of the elegance and detail of a viable plan, it will not succeed exclusive of the irreducible elements.

Finally, there is a bit of a *caveat emptor* associated with the *Reports*. Namely, minority faculty persons are *members* of the "club." Are we to be extended and to extend the same irreducible elements? If so, when?♣

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## A Proud Day for MIT

John Hildebidle

The *Globe* headline deftly linked MIT and "gender bias." But the first line seemed like some sardonic joke – "It was a proud time for the Massachusetts Institute of Technology."

The "proud time" was in fact the roll-call of MIT associates in the most recent round of Nobelists. The report of the committees charged to evaluate the position of women in each of the five schools of the Institute seemed only to verify what many had long suspected (and what the School of Science had formally and fully acknowledged, some months ago) – like most of the rest of the known universe, the Institute discriminates against women. But that hits especially hard in a place which insists it is a total meritocracy. The implication seemed inescapable: intentionally or thoughtlessly, bad deeds had been done, for a long, long time.

A shameful day? Let me argue the opposite, from two perspectives. "Hello, my name is John, and I'm an alcoholic." We all know the AA drill – and its analog in every contemporary 12-step program. In that sense, to admit the problem (all the more so since, as the committee reports argued again and again, *invisibility* is a crucial element in the problem) is a necessary first step, in and of itself.

Before I venture to my second angle of consideration, I should perhaps admit my own biases. I was raised in a staunchly Calvinist tradition – in which public confession is a recurrent and serious action. The time was when congregants were expected to stand up, in full view and hearing of their neighbors, and admit to sins of omission and commission.

Which is what MIT has now done, and even in its own favored language, numbers.

Knowing that NPR and *The New York Times* and *The Boston Globe* and probably *Scientific American* and *The Chronicle of Higher Education* would quickly run with the story, the Institute, lead by the top echelon of its administration – aloud, and in writing! – confessed a long career of sin.

Not that the report is perfect, by any means – at most it pays lip service to the "race card," as we are wont to call it in these post-OJ days. But still it is an open and wide-ranging self-assessment.

I call that a proud day, indeed. Not, by any stretch of the imagination, the final step, nor even a long journey toward it. Now the frank discussion, and the truly hard work, can begin.♣

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# Random Faculty Dinner Discussion Devoted to Reports on Gender

Jay Keyser

Dear Colleagues,

For the past 16 years I have hosted the MIT Random Faculty Dinners, an event first suggested by Joel Moses at a 1985 meeting of the Faculty Policy Committee. After I had hosted six years of dinners, Bob Fogelson suggested that perhaps I should devote a portion of the evening to a general discussion of MIT-related issues. Bob reasoned that with a random sample of faculty coming together – undoubtedly for the first and last time – the dinners offered an invaluable opportunity for faculty to discuss Institute issues unencumbered by departmental or sectional considerations.

At the most recent Random Faculty Dinner held on 21 March 2002 the topic was the *Reports of the Committees on the Status of Women Faculty* released Monday, March 18, 2002.

Approximately 25 faculty were present, only two of whom were women. (One had to leave before the discussion got underway.) The discussion lasted 45 minutes. It has been my custom to summarize these discussions in a memorandum to the Provost, President, Chancellor, and Chair of the Faculty for their information. The Chair of the Faculty, Stephen Graves, thought it might be useful to share, through the medium of the *Faculty Newsletter*, my summary of the March discussion. I am more than glad to do so.

\* \* \* \* \*

The discussion was wide-ranging and thoughtful. The tone was decidedly friendly and sympathetic. Even at points of disagreement, the disagreements were couched in respectful collegiality. One faculty member observed that because the data contained in the reports were

presented in such a thoughtful, clear, and accessible fashion, the conclusions could not be ignored and something tangible needed to be done.

Four points emerged as central:

- **Tenure Timetables.** A major problem with academic careers for women at MIT and very likely elsewhere is the mismatch between the tenure-earning timetable and the timetable for starting a family. These timetables roughly coincide and place particular burdens on the woman. One faculty member present noted that this disparity shows up in the fact that the percentage of women faculty who have children is significantly lower than for men on the faculty. Starting and raising a family and getting tenure are major life tasks. To do them at the same time, especially when the burden falls unevenly on one partner, is a major stumbling block to academic well-being.

- **The two-body problem.** In families where both members are professionals and there is an academic job for just one, finding employment for the other is something that MIT simply does not do well, at least when compared to other institutions. Other institutions see this as an advantage they have when trying to attract faculty away from MIT or in trying to get faculty to choose them over MIT. Several faculty members recounted instances where qualified faculty of both genders were lost because this problem was not something the relevant department or school felt at home with. Someone else noted that dealing with the two-body problem is not part of the MIT culture.

(**Note to faculty.** Subsequent to our dinner, I was talking with Laura Avakian, vice president for Human Resources, who tells me her office

would be happy to meet with spouses or partners of interviewing faculty to discuss job possibilities at MIT and/or help them network with other employers in the Boston area. The person to contact is Wendy Williams, staffing manager, at 253-4265 or wendyw@mit.edu. She's located in office 207B, Building E19.)

- **Availability of child care.** One faculty member spoke of his indirect experience with an extensive child care program in another country. He said that the available program went a long way toward dealing with the child-bearing/rearing and tenure-earning timing mismatch. The thrust of his point was that child care done appropriately enables women to be both mothers and academics since their children are on campus, close by, easily visited in ways that still allow for fruitful careers.

- **Marginalization.** There was general agreement that were one to ask if women faculty feel themselves to be a part of MIT the way men do, the answer would certainly be no. It was suggested that a concerted effort to place women in leadership positions at MIT would go a long way toward changing the culture. Someone pointed out that while some women are section heads, there are currently no women department heads at MIT.

As I said, it was a thoughtful and collegial discussion. My impression is that, if this random sample is at all representative, efforts to redress imbalances will be met with approval by the faculty.

Best,

Jay

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# The More Things Change . . . ?

Vera Kistiakowsky

When I read *The Boston Globe* article about the *Reports of the Committees on the Status of Women Faculty* my immediate reaction was that it was presenting the same problems that activist women academics discussed in the 70s. Now that I have read the *Reports*, I know that I was partially correct; the issues raised remain substantially the same. However, I was also wrong, because the *Reports* present a picture of considerable change. The most striking difference is that there are now enough women on the MIT faculty that clear patterns of problems emerge, and they can no longer be dismissed as scattered individual difficulties.

Attempts to increase the participation of women on the faculty began in the Wiesner presidency. The first wing of McCormick had been completed, the number of new women undergraduates was no longer restricted to 15 per year, and with sex-blind admission their numbers at MIT were climbing. Wiesner told the department heads that there should also be an increase in the number of women on the faculty. In some departments this allowed their members to push for the appointment of women they thought qualified, sometimes successfully. Other departments remained captive to their

prejudices. I was one of the women who was made a faculty member during this period, becoming the fifth woman full professor at MIT.

At the end of the 60s and during the 70s women were active at MIT. Women undergraduates worked to increase their number, and women staff and support staff met to consider their problems. The women faculty formed groups to urge recruitment and to try to support the junior women faculty in their careers at MIT. Federally mandated Affirmative Action came into force, and more departments hired women faculty, while others insisted there were none to hire. The newly appointed women sometimes encountered overt resentment as well as the problems discussed in the *Reports*, and many left.

But the numbers did go up. When I wrote an article for *Physics Today* at the end of the 70s, I was able to report that although only 2.7% of the professors in the top 10 U.S. physics departments were women, 7 of those 11 women were at MIT forming 7% of our department [1]. Then the increases slowed and in some cases stopped. This year's *MIT Bulletin* lists five women in the Physics Department, although due to its decrease in size they still constitute 7%. However,

departments which once claimed that there were no women suitable for their faculty, now have one or more.

Another thing that has changed is the language of the discourse. The kind of negative remarks that were made to me when I chaired the first APS Committee on Women in Physics in 1971-72 [2] were no longer common in the 80s, and a comment in the *Reports* indicates that they have been silenced at MIT.

The very good news is that there is a new generation of women academics, like Nancy Hopkins, who are willing to push for solutions to the enduring problems, and that men in positions of authority, like Bob Birgeneau, are willing to support them. And, finally, now that all the *Reports* are in, that the top levels of the administration, from President Vest down, are putting suggested remedies into action.♣

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1 Vera Kistiakowsky, "Women in physics; unnecessary, injurious and out of place?", *Physics Today* (February, 1980); reprinted in "History of Physics", (Spencer R. Weart and Melba Phillips, editors), 149 (American Institute of Physics, New York, NY 1985).

2 *Ibid.*

# Changing the Culture at MIT

Thomas A. Kochan

The *Reports of the Committees on the Status of Women Faculty* demonstrate the power of combining grass roots activism with top-level leadership support and commitment to change. An important key to the success of these efforts is that they adopted a change strategy consistent with the MIT culture. They were research and data driven.

As the Provost's introduction to the reports says, the easy work required to address the problems identified has been done. Salaries have been adjusted where inequities were found and formal policies now offer options for women and men to take time off, including time off the tenure clock, to attend to family needs. But there is still much to be done. The hard work of sustaining the momentum of change remains. This will require changing the *culture* of MIT to encourage *use* of these policies without fear of being viewed as a less committed or a less competent scholar. It also will require continuous efforts to overcome the subtle forms of marginalization women in the different Schools report experiencing. Finally, it will require proactive efforts at the department and group levels to make

significant progress in recruiting and promoting women across all disciplines. At MIT, the power on these issues lies mainly at the level of the department. Department heads need to be held strictly accountable for making measurable progress toward these ends.

The momentum and progress in addressing the role of women faculty needs to be matched with an equally strong effort to increase the number of under-represented minority faculty. Despite strong support and resources from the President and Provost, progress is slow or non-existent in this area. Instilling commitment to this goal and rigor into the practices and efforts of each department and search committee are both essential to making progress in this area.

We also need to turn our attention to the racial composition of the staff and administration. A soon to be released review of diversity in these ranks will show we have made very little progress in this area over the past decade. This is not an acceptable record for an employer that is as visible and attractive as MIT, both nationally and locally. Perhaps, drawing on the experiences

of the women faculty, similar grass roots activist groups need to be created among the administrative staff that work in tandem with Institute leaders to ask what needs to be done to achieve a more balanced representation in these positions.

Finally, each of us regardless of our race or gender, has to take personal responsibility and do our part to make MIT a place that attracts, retains, and learns from the full range of people in society MIT aspires to teach, influence, and lead. My fellow members of the Committee on Campus Race Relations invite you to join us in continuing to work toward these ends. We applaud the steps taken to face and to address the visible and subtle inequities experienced by women faculty. We are proud to work at an institution committed to this ideal for all individuals and groups and especially one that encourages use of grass roots activism, data-based discourse, and creative problem solving to address these issues. Let's keep up the momentum these studies have begun.♣

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# On Women in the ME Department

John H. Lienhard V

It's tempting to view our department's gender gap as a numbers game, but it's really a failure of our mission in education and research. We fail in our education of young women by providing them with too few role models of women as engineers. We fail in our education of young men by providing too few models of collaboration between male and female engineers. We are missing the diversity of problem-solving styles that more women might add—perhaps a stronger atmosphere of collaboration and a less confrontational style of doing our work. Women in larger numbers might also inspire new attitudes about research directions. Moreover, women's participation in the workforce is large and growing, a trend that must be mirrored in our programs if we are to be relevant to the world outside.

The numbers, of course, describe our situation clearly. Our department has 31% women in its undergraduate program and 14% women in its graduate program [1]. The total number of women has been essentially constant over the past decade, although the percentages have risen slightly owing to a decline in the number of men. The graduate figure masks progressive attrition, however, as roughly 20% of our SM students are women, while just 5-10% of Ph.D students are. The attrition continues into the professorial ranks, where we now have only one tenured woman faculty member and one untenured woman in a department of 60 faculty positions.

What is an "appropriate number" of women? The biological standard would be a bit over 50% or 30 women faculty. If we simply matched our undergraduate population, then the figure would be 19 women. Were we to match the percentage of women who received Ph.Ds in mechanical engineering in 1999 nationwide [2], women would amount to 11.1% of the faculty for a total of about 7. If we matched the percentage at the 36 top engineering schools, women would be 8.5% of our faculty – and 19% of our

untenured faculty [3]. The fraction of women in the Ph.D level engineering labor force in 1997 was about 7% [4], and, while the ME profession does worse in this regard, our own number-one-ranked department has some responsibility for the national situation. Our department can clearly do much better.

We do not know why so many women drop out of our profession at each stage of the career path. We speculate endlessly. We collect anecdotes from some women, which we then generalize to other women. Effective solutions will need to be based upon factual premises, but until the causes are clearly understood, we must act to treat the symptoms and attempt more fundamental change using some reasonable hypotheses.

One such hypothesis is that both the low number of women on our faculty and the small number of women pursuing Ph.D degrees are symptoms of a larger cultural problem in science and engineering. This problem has to do with the type of working environment we present, the perceived quality of academic life, and our accommodation of broad work-and-family issues. Abundant evidence supports this hypothesis [5-11]. This cultural problem is not unique to MIT; however, the numbers suggest that it is stronger in MIT's ME department than in a number of other engineering and science departments.

We are taking two lines of attack on our problem. One track comprises direct efforts to raise the number of women here. The other track is to identify how our working environment may negatively affect women.

## Strategies Aimed at Attracting More Women

The woman faculty headcount is a very direct measure of our progress, and our department is working hard to identify outstanding women to join our faculty. The other part of the equation is to raise the number of women into our graduate program, especially at the Ph.D. level.

In the area of faculty searches, we have formed a standing faculty hiring committee with oversight responsibility for the ad hoc committees that are looking in any particular field. This committee includes women and minority faculty, and the Department Head is also a member of this committee. This committee monitors the outreach efforts of the ad hoc committees, reviews the files of all women and minority applicants in parallel to the ad hoc committees, and maintains a database of potential faculty candidates (including both women and men).

Oversight is really too strong a word for the standing committee, however. Our ad hoc committees are making remarkable efforts – perhaps as never before – to find women candidates. We have six searches running this semester, and together they have interviewed as many women as all the searches in ME during the past five years. The results are impressive: the one search to finish at this point recommended two women; and the other continuing searches have turned up additional outstanding women. And these women are rising to the top owing to their technical abilities alone; gender was not a determinant in making the selection.

## Strategies Aimed at the Working Environment

Our working environment is a social organization developed by men. In the past, we have not focused on understanding the impact of that organization on the participation of women in ME. While this problem has many dimensions, some of which can only be addressed at the Institute level (tenure and child bearing or junior faculty housing, for example), some items on our department's agenda are the following.

*Mentoring:* The hiring of a new faculty member must be followed through by cultivation. We have now instituted a formal mentoring system, which we hope will help our young faculty reach their full potential. This is a strong departure from

*(Continued on next page)*



## On Women in the ME Department

John H. Lienhard V

past practices, in which one sometimes sensed that “figuring it out for yourself” was a sign of high ability. This mentoring system is gender blind.

*Inclusion:* Last year, I asked a group of women professors from other schools what they viewed as the barriers to women faculty. Their foremost concern, unanimously, was that they are often left out of the loop about developments in their departments and about the evaluation processes that affect them. I have heard the same comments from women in the MIT ME Department, and many of the findings of the *Women in Engineering* report bear on this issue as well.

Beyond the “power issues” involved, as detailed in the *Women in Engineering* report, inclusion means developing a more collaborative atmosphere. If groups of faculty can act with authority on matters of common interest, women can be equal partners with their colleagues in decision-making and direction setting.

*Work and Family:* A major recommendation of the *Women in Science* report was to “change the presumption that women who have children cannot achieve equally with men or with women who do not have children.” This means accommodating family life and recognizing family commitments as a normal part of a successful faculty career.

Many women engineers seek to have both children and a career; often their partner also has a career. A 1998 study found that, in 60% of all two-parent families, both partners work [8]. Only 17% of all families conform to the model of a wage-earning father with a stay-at-home wife and children. Our students and our younger colleagues have different expectations in life than did their parents’ generation.

Indeed, a number of years ago an older professor sat me down and explained that it was not possible for my wife to work full time now that we

had children and that my career would suffer if she continued. He meant well – his views reflected his own family’s decisions – but one can easily imagine the impact of such attitudes on women in academia.

A number of our younger faculty now have families with two careers and kids, and we should ensure that our graduate students and our junior faculty are aware that, while having two careers and kids is not easy, those who choose to do so can do it successfully.

*Building Community:* Many women faculty, and many men, have expressed the view that our department is neither a friendly nor a supportive environment. Why is this particularly a “women” issue? Much anecdotal evidence suggests that women are less comfortable with unpleasant interpersonal interchanges than are men [6], and more than one woman on the MIT faculty has made this comment to the author. We are a large department with many competing interests, and such civility comes as more of a challenge to us than it might in a smaller group. The essence of a solution is to ensure mutual respect in our interactions and a sensitivity to one another’s personal circumstances.

Some of the issues, however, are deeper. A colleague once described his experience in getting tenure as “seven years of hazing.” Faculty who come through our tenure process have learned to be very self-reliant and very thick skinned. This translates into a climate in which sharp criticism is the norm. Moreover, many of us have come to view this type of toughness as an essential tool in maintaining our number-one standing among ME departments.

To close with something extreme, let me note that the problem of tenure-as-hazing and the problem of tenure-and-childbirth would both be solved by eliminating tenure!♣

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# The Sloan Glass: Half-Full or Half-Empty?

James Orlin

When I read the report from Sloan, my inclination is to attribute the tone to differences in outlook. Some people view a glass as 80% full. Some view a glass as 20% empty. The report seems to be on the side of 20% empty. The negative tone of the report has important implications, because the negative statistics seems to be all that the outside world notices. (This ironically leads to both praise and criticism.) Outside papers do not mention progress at Sloan or at MIT. At best, they may mention that other places have the same problems.

The first striking statistic is the change in women senior faculty since 1990. In 1990, Sloan had one woman on the senior faculty and 33 men. Of the faculty tenured at Sloan since that time, 18% have been women, which is slightly lower than the rate (23%) at which women have been hired as junior faculty. Had one more woman received tenure, the percentages would have been very close to being the same. This strikes me as remarkable progress. Yet the report writes

“Even after accounting for age distribution of full professors, there is still evidence that the proportion of women declines after one moves up the career ladder.” It makes no comment concerning progress.

The report then comments on salary. Again, the report focuses on the few inequities that exist. (The report does add, parenthetically, that there was some improvement in 2001, but ignores the incredible improvement from 1990 to 2000 compared to the previous decades, with much of the improvement over the past few years.)

The report then comments on promotion. It finds that the promotion rates are comparable for men and women over the past decade, and notes that women typically take two years longer to get promoted to full professor. The tenure issue reflects amazing progress for women. Perhaps the full promotion delay reflects some issues to be resolved, but it does not seem overly serious, especially since associate professors choose their own timing as to when to come up for promotion, and no

faculty member has been turned down in promotion to full professor over the past decade. Nevertheless, in his statement about the report, Dean Schmalensee refers to this time delay for women coming up for promotion as “the most disturbing quantitative result” of the report. It seems to me that if the most disturbing quantitative result of the report is that women delay promotion to full professorship by two years, then we have made very good progress indeed over the past decade.

While I may view the glass as 80% full in terms of substantial progress, I also view the remaining 20% as important. Most significantly, the report emphasizes (quite correctly) that women faculty do not have as positive an experience at Sloan as do men faculty. The reasons for this may be complex and subtle (and sometimes not so subtle), but they are worth exploring. Moreover, Sloan should strive to make the experience of being a faculty member a positive one for both women and men. ♣

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# Progress Report

Ruth Perry

MIT has been co-ed longer than most institutions of higher learning in the U.S., since 1876, in fact, when it opened the first Women's laboratory in chemistry. (Ellen Swallow Richards was admitted as a special student in chemistry in 1870.) Indeed, the Cheney room was established to provide overnight accommodations for female students who were working around the clock and couldn't leave campus to get home to bed in the middle of the night. Nevertheless, for 140 years MIT has been dominantly male: its personnel, its student body, its faculty, its architecture, its administrative structures, its hierarchies, its ethos, its organization, its rhetoric, its traditions.

That is why the *Reports of the Committees on the Status of Women Faculty*, published last week from all five schools, are so revolutionary. From the process generating the methods of investigation to the publicity about the findings, no other study of gender bias conducted at the university level has been so thoroughgoing, so democratic, so respectful of the experiences of all women, or so well publicized. No other institution of higher learning has had the nerve to conduct such a study honestly and openly.

By empowering senior women in each school to investigate gender equity, the administration ensured that each study would be conducted by those who knew what to look for, where to look for it, and who would be able to recognize what they saw. In my school, SHASS, the senior women had many meetings to decide, in the first place, whether or not such a study was worth doing; what data we wanted and how to gather it; and finally, how the committee was to be constituted and who should head it. In the School of Architecture and Planning, for example, there were so few senior women at the time (6), that all of them were invited to be on the committee. But in our school, with its grand total of 30 senior women, the committee was elected.

Predictably, gender bias manifested itself differently in each of the five Schools of the Institute. In Science and Engineering, women were excluded from participation in group grants and from graduate students' thesis committees. In Sloan, women were promoted to full professor more slowly than men, with resulting salary differentials. In SHASS, which has the highest percentage of women faculty at the Institute, these greater numbers seem to have had the adverse effect of depressing overall salary levels (even below levels for those fields at peer institutions) and lowering the School's prestige. Even at that, the proportion of women in the School is far less than in the pool of Ph.Ds in the fields we represent.

These material conditions have been and will continue to be rectified. But the maleness of MIT, and the way women feel marginalized by its internal processes and its hierarchies, its way of doing business, is another matter. The top-down administrative style at MIT, with its ad hoc rather than codified systems, leaves a lot of freedom for the entrepreneurial-at-heart but does not foster community among faculty members. At the faculty meeting on March 18, the head of a unit in SHASS remarked that she thought that too much power was vested in heads at MIT, because they make both budgetary decisions *and* carry forward promotion and tenure cases. Can you think of a single male head at MIT who would lament this concentration of power?

Twenty years ago, senior women at MIT argued that we needed to socialize our female graduate students to be more like men so that they would succeed better in the workplace. But today the senior women are asserting that our Institute needs to make room for people from other traditions of socialization, with other repertoires of social behaviors, other vocabularies, and other life experiences. Women do not make very good men (and vice versa) – nor should they have to. But because men are more comfortable with

other men, because they understand one another better than they do women, they exclude women socially and professionally from the working networks of the Institute. Men know how to read the body language, the verbal cues, the social positioning, the sizing-up rituals of other men better than they know how to read these same cues for women. They bond and identify with other men more easily than with women. When women across the Institute say that they feel isolated in their departments; that they feel marginalized and unappreciated; that their male colleagues do not treat them respectfully; that they feel silent pressure not to speak out at meetings; that they feel excluded from conversations that have obviously taken place outside of committee rooms – whether on the squash court, the locker room, or the men's bathrooms; that their comments in meetings are ignored or interrupted or suffered but quickly dismissed; that their contributions to the Institute or to their respective fields are not recognized here; that they do not know what resources are available to faculty or even who to ask about them; that there is a locker room atmosphere at MIT that they are always up against; that they have to second-guess their male colleagues, to watch for clues as to what decisions have been taken; that they feel fundamentally that they are not full members of MIT – these are signs of gender bias as it plays out in the administrative structure and organizational style of our institution.

Hiring more women, including women of color – changing the race and gender demographics of the place – will help. Placing women in administrative leadership positions will help. Recognizing women's special contributions to the Institute will help. But the good will of our male colleagues as they notice the ways in which maleness is privileged at MIT and then try to open the institution up more to women – that will help most of all. ♣

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# Cumulative Effects of Apparently Small Events

Mary Rowe

The 2002 *Reports of the Committees on the Status of Women Faculty* tell us “Generic issues that differentially impact the professional lives of female vs male faculty are: marginalization . . . isolation . . . residual effects of past inequities . . . and greater family responsibilities.”

My experience affirms these reports. I have been an ombudsperson for almost 30 years, listening to hundreds of men and women a year. I have also read most of the reports written about people of color and white women at MIT during these years, as well as literature on what happens to people who are “different” in any traditional setting. The findings of the gender equity reports are robust. Several reports about different cohorts of women and men at MIT (faculty, students, alums) have concluded that women and men seem randomly, equally able – but women on the average report paying a higher “price” for equal achievement. It could of course be the case that some people who are “different,” in a traditional environment, just make

hard work of the path to success. But I have seen so much evidence for the potential for marginalization that I believe in it.

By the end of my first year here, in 1973, I had come to the hypothesis that subtle discrimination is the principal scaffolding for unequal opportunity in the U.S., at least in decent and honorable institutions where egregious racism and sexism are now rare. The scaffolding, as I see it, is mainly composed of apparently small events, “micro-inequities,” ephemeral, hard to prove, often completely unintentional, often unrecognized. We see these small events if people are treated differently – as may happen with Caucasians in traditional Asian milieux and brown-skinned persons in white groups. We see micro-inequities with respect to religion, sexual orientation, color, ethnic dress, age, race and gender – for example, where schedules do not easily accommodate family responsibilities or prayers throughout the day.

Micro-inequities are especially problematic because they are focused

on one spot – and are focused on an element of identity that cannot be changed. (As one drop of water would ordinarily do no damage, continuous drops in the same place may be destructive.) I think micro events can do damage both by weakening opportunities for the person of difference and by making that person less self-confident. And these effects are often cumulative. Over the years I have sketched out dozens of hypotheses about how minutiae, taken together, can maintain barriers, and why small injuries and oversights may do differential damage to white women and to people of color at MIT. (You are welcome to these hypotheses if you are interested.)

Many people think it helps to talk about marginalization, for each person to reflect about what we can do for ourselves and for others – and for each of us to strive for top achievement on our chosen path, however gritty the way. Plainly it also helps for us to make these efforts together, as in the *Reports* of 2002. ♣  
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# MIT Does It Differently

Susan Slyomovics

Along with my colleagues I was honored to be present listening to reports from MIT's five schools on the status of women faculty. At our faculty meeting on March 18, 2002 to report on gender inequities, committee chairs and speakers addressed the difficulties of quantifying that most elusive qualitative entity, "the alienation and marginalization" of women and minority faculty.

What is the role of School Council in the experience of women and minority faculty at MIT? Indeed, what is School Council? A perusal of MIT's *Policies and Procedures* and the MIT directory yields no document written specifically about School Council and little information more allusive than this: "The Institute regards tenure as important to ensuring academic freedom in teaching, research, and extramural activity. A department and School make a career commitment when the award of tenure is recommended. The Institute as a whole, acting through the Academic Council and the Corporation, joins in this commitment when tenure is awarded" (3.2 Tenure Process, *MIT Policies and Procedures*). E-mail correspondence from Dean Philip Khoury of SHASS enumerates our School Council's activities and documents, all of which provide a chart of organizational procedures and particular actions, but no statement about School Council's role, the history and composition of its membership, the presence and consequences of its power:

"SHASS Council is directly involved in promotion and tenure of regular faculty and in the appointment and renewal process for advanced non-faculty teaching staff, in particular adjunct professors and senior lecturers. Council is also directly involved in the design of

the School's faculty leave plan and in all major matters related to the HASS component of MIT's General Institute Requirement and the HASS-Communications-Intensive component of the new Communications Requirement. SHASS Council, of course, has specific documents that explain the promotion and tenure process and faculty leave policy, including family leaves, in the School, and it has generated documents that address specific HASS curriculum issues, including the HASS component of the new Communications Requirement."

Dean Robert Silbey of the School of Science notes: "From what I have learned talking to the other Deans, each school does things a bit differently. But the primary function of Science Council is to hear promotion and tenure cases. We rarely meet as a body on any other issue. We have a one-day retreat every year that focuses on some basic issue – hiring, budget, student support, etc."

A survey of some 200 faculty governance documents on the Internet depicts university tenure-and-appointment committees that are ad hoc or permanent with members elected by faculty vote or appointed by a dean or president, and each institution describes the norm of a separate and independently created body. MIT's procedures for awarding tenure appear to be different, and unique, precisely at the point where School Council enters the MIT process. Consider tenure, promotion and appointment in SHASS. A candidate (internal or external) is recommended by a department, vetted through "blind letters" usually within a comparative list of candidates and approved to go forward to School Council, a body consisting mainly of department heads and our School

Dean. MIT department heads wield great power: we control, for example, space allocation, committee assignments, budgets, and we rank our faculty to determine relative salary increases, all factors that may determine whether women and minority faculty members become equal participants at the Institute. If that weren't enough, we heads also constitute a School's tenure-and-appointments committee.

Does MIT's School Council system of department heads contribute to MIT's excellence or does it facilitate the self-replication of white male professors? How does one counter a departmental head who announces at School Council that he is gender-blind, but somehow finds only one qualified senior woman faculty member for his large and nationally renowned department? Does MIT's high percentage of hiring its own Ph.Ds perpetuate inequities? Will revamping the process matter? As a senior woman colleague at a peer institution comments: "Probably ALL of these systems can allow the guys to reproduce themselves. In MIT's case it's the heads, in ours it can happen at several levels, take your choice. Here, there are multiple levels of checks and balances. Of course, this just gives more than one opportunity to shoot a female candidate down." Certainly, MIT is not a democracy, no university is. The actual role of department heads at School Council may (or may not) be advisory. Perhaps in matters concerning tenure and promotion, a department head proposes, and each dean disposes. To what purpose does MIT encourage the anomalous concentration of power in the hands of department heads?♣

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# Learning from the Student Admissions Process

Arthur C. Smith

I spoke at the faculty meeting [March 18] after the reports on the experience of women faculty had been presented and I pointed out that if we wish to achieve our (modest) goals for the number of women faculty, we would have to appoint women at a substantially higher rate than we have been used to. I also exhorted the Institute to set some ambitious goals and get on with it. This *Faculty Newsletter* gives me the opportunity to elaborate a bit on those comments and to add a few more.

I have had a good deal of experience with admission of students – (I’ve served on CUAFA twice, looked at undergraduate admissions policies and results fairly carefully as chair of the faculty and as dean for Student Affairs, and managed the graduate admissions process in a large department for over 25 years.) That experience guides my comments, although I realize that the analogy between admissions and faculty hiring is not perfect.

I would note that our success in changing the composition of the undergraduate population was aided by the fact that the population turns over at a rate of 25% per year.

Faculty turnover is much slower, perhaps 5% per year, and as a consequence, to achieve a significant change in a decade, we will have to hire at a rate substantially above the steady state rate that would maintain a given distribution. I leave it to those who like to do such things to do the

numbers, but I expect that the provost, deans, and department heads have evaluated specific models for the various segments of the Institute and it could be useful to share those broadly with the faculty.

If we substantially increase the rate at which we hire women faculty (while keeping the overall rate fixed) that will raise some faculty concerns. In my experience with admissions, there are two recurring reactions to proposals for such a change. One is “The pool is limited – only 20% of the Ph.Ds in our field are women. So we shouldn’t try to hire at a rate of 50%.” Percentages often mislead – we are not hiring the whole field, only a few women a year. A statement more like “There are several hundred women Ph.Ds in our field and we only need to hire three this year.” would be more useful. There is a pool-based limitation – how many of the qualified women are applying for our positions? We need to work on that and on the related problem of why our offers are not accepted.

The other common reaction is “Let’s increase the numbers but we must be sure not to sacrifice quality.” My admissions experience suggests that this concern can be overdone.

When we were not increasing the numbers of undergraduate women, those women we had admitted were statistically outperforming the men academically in measures like the fraction who graduated and their grade

average at graduation. That suggests that we were not being sufficiently ambitious in our pursuit of change. I also know that, at the graduate level, while we only admit excellent applicants, not all of the students who come are successful. It is hard to measure quality at the time of admission or employment, and excessive concern about maintaining quality can be a substantial impediment to progress.

One of the strengths of MIT is that we have been very successful by selecting able young faculty and giving them the opportunity to grow and flourish. The administration has been extremely effective in providing resources to the faculty and the senior faculty have provided an atmosphere in which young faculty can achieve. I think this aspect of the Institute is more important in determining the quality of our faculty than any ability to judge talent at the outset. If I am correct in this assessment, then the perceptions of our women faculty that they have less access to resources and receive less attention from their senior colleagues become even more disturbing.

Finally, it seems to me that achieving the sort of change that is being considered requires a commitment to change on the part of those responsible for selecting new faculty – that’s us. Let’s get on with it.♣

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# Digits of Pi: Barriers and Enablers for Women in Engineering

Sheila Widnall

**T**his is a short form of a speech I have given at several Universities. It has been published in the NAE Bridge. I've always wanted to share it with my faculty colleagues.

In a seminar with faculty colleagues last week, we were discussing the information content of a string of numbers – OK so it was a slow day. The assertion was made that the quantity of information equaled the number of bits in the string, unless you knew that, for example, the string was the digits of Pi. Then the information quantity became essentially one. The assertion was made that all MIT freshmen knew Pi out to some outrageously large number of digits. I remarked that this seems to me like a “guy” sort of thing and I doubted that the women at MIT knew Pi out to some large number of digits.

This got me thinking whether there are other “guy” sort of things, totally irrelevant to the contributions that engineers make to our society that operate to keep women out of engineering. These “guy” things may also be real barriers in the minds of some male faculty and these faculty may unconsciously, or even consciously, tell women that women don't belong in engineering.

If women don't belong in engineering, then engineering, as a profession is irrelevant to the needs of our society. If engineering doesn't make welcome space for them, then engineering will become marginalized as other fields expand their turf

to seek out and make a place for women.

So let me give you:

## Sheila Widnall's top ten reasons why women are important to the profession of engineering

**10.** Women are a major force in our society. We are self conscious about our role and determined to be heard.

**9.** Women are 50% of the consumers of products in our society and make over 50% of the purchasing decisions.

**8.** Who today would choose a profession that did not have a significant percentage of women?

**7.** Women are integrators. We are experts at parallel processing, at handling many things at once. Women are comfortable in fuzzy situations.

**6.** Women are team builders. Women inherently practice what is now understood as an effective management style.

**5.** Engineering should be/could be the twenty-first century foundation for all of the professions.

**4.** Women are 50% of our intellectual resource. Without women, engineering will need to access, say, the upper 20% of our talent to fill its human requirements. With women, it will be able to access, say, the upper 10%.

**3.** Women are a major force in the professions of law, medicine, the media, politics, and business.

**2.** Women are active in technology. Often they have simply bypassed engineering on their way to successful careers in technology.

**1.** Women are committed to the important values of our times, protecting the environment, product safety, education, and have the political skill to be effective in resolving these issues. They will do this with or without engineering. Women are going to be a huge force in the solution of human problems.

It seems to me that women are an essential part of the new imperative for the engineering profession if we are to be central to the solution of human problems.

## The top ten reasons that women don't go into engineering

**10.** The image of that guy in high school that all of the teachers encouraged to study engineering.

**9.** Poorly taught freshman physics. Linear thinking.

**8.** Concerned that they won't get a date to the prom if they get the highest math score.

**7.** Lack of encouragement from parents and high school teachers.

**6.** Guys who worked on cars and computers or faculty who think they did.

**5.** Lack of encouragement from faculty; survival of the fittest mentality. “I treat everyone badly”; constant use of masculine pronouns describing engineers.

**4.** Lack of women faculty or obvious mistreatment of women faculty by colleagues and departments.

**3.** Bias in the math SATs.

**2.** Lack of visible role models and other women students in engineering.

*(Continued on next page)*

## Digits of Pi: Barriers/Enablers for Women in Engineering

*Widnall, from preceding page*

1. Lack of connection between engineering and the problems of our society. Lack of understanding what engineers do.

These issues of language and expectations, behavior and self-esteem are still with us. Until we face them squarely, I doubt that women students will feel comfortable in engineering classrooms. I believe that all women faculty have challenges to their authority in ways that would never happen to a man. Students will call a female professor Mrs. and a male professor Professor.

At MIT, we have shepherded a revolution in the participation of women in engineering. Women are the majority in three of our eight engineering courses. Anyone who has taught in this environment would report that it has improved the educational climate for everyone, including women graduate students and women faculty.

### Ten top reasons why women are not welcome in engineering

10. We had a woman student/faculty member/engineer once and it didn't work out.

9. Women will get married.

8. If we hire a woman, the government will take over and restrict our options.

7. If you criticize a woman, she will cry.

6. Women can't take a joke.

5. Women can't go to offsite locations.

4. If we admit more women, they will suffer discrimination in the workplace and will not be able to

contribute financially as alumni. [I kid you not: That is an actual quote.]

3. There are no women interested in engineering.

2. Women make me feel uncomfortable.

1. I want to mentor, support, advise, evaluate people who look like me.

So how do we increase the number of women students and make our profession a leader in tackling tough societal problems? What do we need?

### My list of the ten effectors

10. Effective TV and print material for high school and junior high girls about career choices.

9. Engineering courses designed to evoke and reward different learning styles.

8. Faculty who realize that having women in the class improves the education for everyone.

7. Mentors who seek out women for encouragement.

6. Role models: examples of successful women in a variety of fields who are treated with dignity and respect.

5. Appreciation and rewards for diverse problem solving skills.

4. Visibility for the accomplishments of engineering that are seen as central to important problems facing our society.

3. Internships and other industrial opportunities.

2. Re-examination of admission and evaluation criteria.

1. Effective and committed leadership from faculty and senior administration.

However, we do have a good bit of housecleaning to do. We must recognize that women are differentially affected by a hostile climate. Treat a male student badly and he will think you're a jerk. Treat a female student badly and she will think you have finally discovered that she doesn't belong in engineering. It's not easy being a pioneer. It's not easy having to prove every day that you belong. It's not easy being invisible or having your ideas credited to someone else.

What I want to see are engineering classrooms full of bright, young, enthusiastic students, both male and female in roughly equal proportions, who are excited about the challenge of applying scientific and engineering principles to the technical problems facing our society. They will connect with the important issues facing our society. Then I will know that the engineering profession has a future contribution to make to our society.

Coda: I sent out drafts of this speech to women engineering faculty at MIT and beyond and received many inputs and suggestions; many have been incorporated. Although I consider this piece to be more poetry than science, I was extremely gratified by a common reaction from women faculty: that they had been "heard." ❖

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# Gender Discrimination and Gender Bias: Different Sides of the Same Coin

Rosalind Williams

The publication of the *Reports of the Committees on the Status of Women Faculty* is a bittersweet occasion for the MIT community. Their evidence shows that throughout MIT's history, the talents and lives of many women here have been warped and wasted by gender discrimination. At the same time, the act of publication demonstrates that MIT's well-known capacity for creativity is accompanied by an even more important capacity: to reflect upon what we have created.

These *Reports* show a sophisticated level of self-reflection. As might be expected at MIT, they present compelling quantitative evidence. Somewhat less predictably, the *Reports* present with care and seriousness what is often dismissively called "anecdotal evidence." When women tell the same stories over and over again, these narrative patterns, when integrated and analyzed, also provide valid evidence of social and cultural patterns. For example, the Sloan School comparison of six paired male and female professors uses coding techniques to analyze interviews with striking results (in the nineteenth century, it might have been called a "felicific calculus"). Finally, the *Reports* convey a strong sense of history, by emphasizing repeatedly the social effects of cumulative actions over time. If anyone thinks the MIT community is stuck in clunky technocratic ways of examining complex social problems,

they should read these *Reports* and think again.

Yet, at the end of the Introduction, the four co-authors suggest that MIT has to become even more sophisticated in its approach to social and cultural complexity. While praising the "can-do, entrepreneurial, even upstart confidence of the engineer" that motivated these studies – a confidence based on the "belief that data-gathering, analysis, design of goals and development of metrics can solve most problems" – the co-authors give another turn to the cycle of self-reflection: "But will it work, this engineers' approach to gender equity?" They suggest that MIT still lacks sufficient awareness of "the gendered nature of academic rules" and conclude that "What still needs doing . . . is to question and rethink the nature of the rules themselves."

In my own reflections on the benefits and limits of the "can-do" approach, I have found it helpful to make a distinction between gender discrimination and gender bias. The *Reports* use these terms more or less interchangeably, but gender inequality encompasses two rather different problems. Discrimination involves obstacles to full participation in a human activity; bias involves the cultural identity of the activity. In a democratic Western society, it is relatively easy to get consensus on the proposition that discrimination is unfair – in this case, that women should have equal access to the professional rewards and opportunities

of engineering and science. It is harder to achieve consensus on the propositions that engineering and science are culturally defined as masculine activities, and that this inherent gender bias should be modified. Yet the gender bias of science and engineering, as they are presently practiced, is real, and it will continue to present obstacles to the full participation of women even if gender discrimination were to end tomorrow.

Gender bias in science and engineering leads to what is often described as the "pipeline problem." This unfortunate metaphor implies that the difficulty to be addressed is the tendency of women to "leak" out of a well-understood career track. When the problem is defined in this way, its obvious solution is to redouble efforts to retain women in that well-established career track.

That is not the problem. Women do not usually drop out of science and engineering, as they move on in life, because they are worried about getting a job or keeping a job or being paid a reasonable wage or otherwise being discriminated against. They drop out because the more they look at the world where they are heading, the less they want to go there. Why should they? Only half of the women faculty in the School of Engineering have children, while well over three-quarters of the men do. In a 1995 survey of MIT faculty, twice as many women faculty (67.4 %) reported extreme stress as did men (31.1 %).

(Continued on next page)

## Gender Discrimination and Gender Bias

*Williams, from preceding page*

The big problem at MIT today is not that women are excluded by men. The big problem is that women exclude themselves because, to use a phrase I hear from women all the time, “Who needs it?” They say – we say – “I want a life.” We want to make a difference in the world, but not if the cost is a lifetime of anxiety and loneliness.

So why not just let them walk, and reserve science and engineering for men and the few women willing to pay this price? Why is it important to have more women in science and engineering? If science and engineering are too strongly identified with one gender, one personality type, one race, one way of viewing the world, over time they will stagnate as they cumulatively exclude perspectives and talents. The ultimate

reason for diversity is not to let “different” people into an enterprise, but to improve the enterprise. In the case of science and engineering, this means ensuring that these activities involve the full range of human concerns, that they remain varied, that their latent possibilities are explored, that new problems are opened up, that new sources of creativity are brought to bear on human needs.

MIT is actively addressing gender discrimination in science and engineering. It will take even more time and effort to address the gender bias of science and engineering. The two are interconnected, of course. The cultural identity of science and engineering as masculine activities results from, and feeds back into, the overwhelming

prevalence of men in these activities up to the very recent past. Only when the numbers start changing, as quickly and dramatically as possible, will gender bias also begin to change. The “engineers’ approach” is a good start, but only a start. At MIT we are rightly proud of having our feet solidly on the ground. We must also be sure to keep our eye on the far horizon.♣

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**Ed. Note:** For most of the period 1995-2000 Rosalind Williams was the only woman faculty member on Academic Council. These remarks are drawn from her forthcoming book *Retooling: A Historian Confronts Technological Change* (The MIT Press, fall 2002).



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## Student Leaders Report

### Undergraduate Association

## **Faculty Gender Inequality: A Student Perspective**

**Jaime Devereaux**

Over the past three decades, MIT has made great efforts to increase the number of female undergraduates at the Institute. While this has dramatically changed the face of student life, the makeup of the faculty has not followed this same pattern, and this continued inequity has direct consequences for undergraduate education. I am a female student in engineering. I am a member of one of the first classes with a near 50/50 gender balance. My class was the first, and so far only, class to put a woman on the MIT seal of our Brass Rat. Yet I have never been taught by a woman from my own field of interest. Instead, I have relied upon male faculty mentors to inform my decisions regarding career choices. Since men and women in engineering fields typically face different sets of challenges, I found myself without the guidance of women like myself.

More importantly, the gender makeup of the faculty helps determine how both male and female students perceive academic and professional disciplines. This makeup informs the academic/social environment and creates both areas of the Institute that are welcoming to women and also those that intimidate female students. Often, these intimidating areas lack many women faculty for women students to turn to for support.

Until Academia creates environments that encourage women students to pursue degrees or faculty positions in certain fields, change will not occur. Change can occur, but not without active intervention. I am encouraged that MIT has begun to take these important steps at the faculty level, and I hope that MIT will be able to sustain them. I believe that doing so will be an encouraging sign for women students and this could lead to great change in gender inequalities within MIT and within industry.♣

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### Graduate Student Council

## **Increase in Female Graduate Students Would Set Trend**

**Dilan Seneviratne**

The issue of faculty diversity and specifically the issue of women faculty is currently being looked into at the institute level. I would like to present another factor that should be looked at.

This has to do with the number and (more importantly) the percentage of female graduate students in the various departments. Currently, only 27% of the graduate school is made up of female graduate students. This includes Masters and Ph.D students. The actual number for Ph.Ds will be even lower. This 27% value has been fairly constant over the past few years.

A larger female graduate student population will provide a larger pool of candidates applying for faculty positions. While the number of women faculty at MIT is not solely dependent on the percentage of MIT's graduate students that are female, this will, however, provide the lead to other institutions to follow suit. This will eventually result in more competition from women candidates for faculty positions.

One argument that has been floating around is that there simply aren't enough women applying for faculty positions. So why not start by increasing the pool of female graduate students? Once MIT sets the trend, other schools will follow suit. Before long, there will be a larger pool of women candidates. What this will do is increase the competition provided by the women candidates and hence increase the chances of a woman faculty being hired.

There is no reason why there has to be a gender inequity at the graduate school. At the undergraduate level MIT has done well in maintaining gender balance. Let's extend the same principle to the graduate level.♣

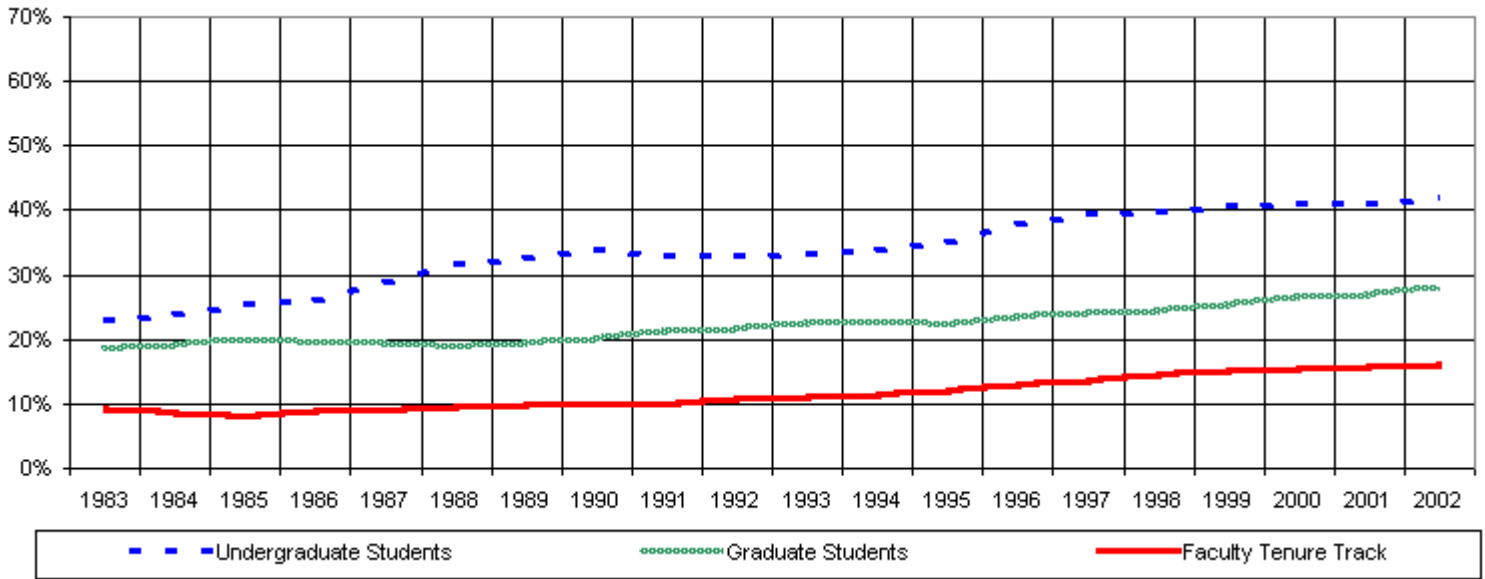
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# M.I.T. Numbers

## Percent Women at MIT

### by Major Category

#### 1983-2002\*



Gender	Primary	1983	1985	1987	1989	1991	1993	1995	1997	1999	2000	2001	2002
Female	Undergraduates	23%	26%	29%	33%	33%	33%	35%	39%	41%	41%	41%	42%
Male		77%	74%	71%	67%	67%	67%	65%	61%	59%	59%	59%	58%
	<b>Undergraduate Total</b>	<b>4,572</b>	<b>4,515</b>	<b>4,412</b>	<b>4,295</b>	<b>4,356</b>	<b>4,493</b>	<b>4,458</b>	<b>4,429</b>	<b>4,348</b>	<b>4,292</b>	<b>4,253</b>	<b>4,213</b>
Female	Graduate Students	19%	20%	20%	20%	21%	23%	22%	24%	26%	27%	27%	28%
Male		81%	80%	80%	80%	79%	77%	78%	76%	74%	73%	73%	72%
	<b>Graduate Total</b>	<b>4,349</b>	<b>4,603</b>	<b>4,837</b>	<b>4,682</b>	<b>4,791</b>	<b>4,902</b>	<b>4,965</b>	<b>5,263</b>	<b>5,241</b>	<b>5,369</b>	<b>5,566</b>	<b>5,667</b>
Female	Faculty Tenure Track	9%	8%	9%	10%	10%	11%	12%	14%	15%	15%	16%	16%
Male		91%	92%	91%	90%	90%	89%	88%	86%	85%	85%	84%	84%
	<b>Tenure Track Total</b>	<b>998</b>	<b>989</b>	<b>982</b>	<b>976</b>	<b>961</b>	<b>966</b>	<b>954</b>	<b>896</b>	<b>923</b>	<b>931</b>	<b>947</b>	<b>956</b>

\*Figures are from annual October headcount.

Source: Office of the Provost