

NSAWS at Harvard University
Saturday April 22, 2000 - 9:30 -10:30 AM

I would like to acknowledge the people who planned this event, particularly Elizabeth Chao. I applaud your outstanding leadership in organizing such an interesting meeting. Thank you for inviting me.

INTRODUCTION

My advice to all the undergraduates and graduate students here today is very simple, Become a scientist! Or, if you must, an engineer!

There has never been a better time to be a scientist or engineer. I would urge everyone with the talent and love of these fields to charge ahead at full speed. Your generation will make extraordinary discoveries, including many that will impact society in profound ways. When you become a scientist not only do you get to indulge in the most exciting occupation that I have yet discovered, but the world really needs you.

As for women, including minority women, my advice is no different to you than it would be to your male classmates. If you love science and engineering - just go for it! I really believe that there are few barriers now that prevent brilliant college-age women from obtaining a superb education in science and engineering, and from going on to a superb career.

However, I would be less than honest, and indeed I would not be speaking here today, if I did not agree with many of yesterday's speakers that despite my enthusiasm, the playing field is not yet entirely level for men and women who enter the scientific and engineering fields in college today.

The probability that a man and a woman will achieve at the highest levels in these professions is not yet equal. It is less likely that a woman will become a professor of science or engineering at Harvard than a man. It is less likely if you are a woman scientist that you will become the chair of a science department at MIT, or that you will be the President of Cal Tech, or *even* I suspect, the CEO of Hewlett Packard.

However, before you flee the room and this profession, let me remind you of the sobering fact that this statement would hold just as true for most other lines of work you might flee to. Only recently did I finally face up to the painful fact that my chances of becoming the President of the United States are zero. Contrary to what I was told when I was growing up, they have been zero from the day I was born. If you are born female in America, or born to most minority groups, I believe your chances are zero. Even our great representative government is not yet representative.

As far as I can see, there are few professions in our country whose top echelons could be called co-ed, fully integrated, or simply merit-based.

Women and many minorities have come a long way, but they haven't made it to the top. Nor will the barriers that prevent women from reaching the top fall any time soon without assistance.

The good news is that if the men who are in power today decided to level the playing field, and if the highest ranking women in their institutions decided to help them, by the time those of you who are undergraduates today decided to join the faculty at Harvard, the playing field *could* be level.

What I would like to talk about today is what I believe we must do to bring this about. However, before I come to my recommendations, I would like to describe the series of events that lead me to this optimistic conclusion.

Five years ago I became involved in a fascinating study at MIT that looked into the lives of tenured women faculty in our prestigious School of Science. This study was conducted by the tenured women faculty in collaboration with a few high level, hence male, administrators, and with the support of the President of MIT. We learned a lot about the playing field at the top of science, about what keeps women from the top, and what might be done to fix this problem.

We began this study believing we were dealing with the problems of a tiny group of rather off beat women engaged in an esoteric activity within a single institution. But last year, after we published a brief article describing our study, we learned that we were in fact dealing with a widespread if not universal problem in the workplace. Not only that, we were among the last to figure this out.

I am going to tell you a brief personal account of how I came to be involved in this study at MIT, then tell you what we found and where I believe it can lead us.

LEARNING ABOUT THE PROBLEM

I joined the faculty at MIT 26 years ago as an assistant professor. I thought that civil rights and affirmative action had solved gender discrimination and that I would never encounter it in my career. I did not actually know what it was. I thought that the only reason there were so few women on the science faculty was because women had children and remained their primary care-takers, and men who did this type of science worked 6-7 days a week. So, it seemed obvious. You couldn't do two full time jobs at once. End of report.

Over the next 15 years, I found out I was wrong. I found out that gender discrimination still exists in science at the highest levels. I found this surprising fact out by watching how other women faculty were treated. At first, it was the few women who were older than me. I assumed they had been caught in the tail end of gender discrimination before civil rights and affirmative action had kicked in, which I fortunately had escaped. But then, strangely, after some years, it was women faculty who were younger than I who were treated differently, and it was this that opened my eyes. Finally, after 15 years, I knew with certainty that men and women of equal ability and even of equal scientific

accomplishment were not treated equally, not valued and respected equally. It was extremely demoralizing and seriously impacted the quality of my professional life.

But the good news was that I was the exception. Although I had a terribly difficult life at MIT, I did not believe that the same things that were happening to these other women were happening to me. I attributed the problems I had to each specific event. Each incident was either my fault or the fault of some difficult person I had run into. I was a little surprised at how many difficult people I ran into.

You might have thought that when I was told I was underpaid and MIT raised my salary and that of my female faculty colleagues by about 20%, that that would have opened my eyes. But not at all. I thought it was my own fault for not asking. After all, I was focused on science, not crass things like money.

Looking back, I have to conclude that my failure to understand what was happening was due to denial. Denial is a wonderful thing. I recommend it! Beginning about 8 years ago, a series of events occurred that were to strip away my denial.

About 9 years ago I began to change my research direction and I needed some resources from the University - some additional lab space, some basic equipment. These were very modest resources that everyone else already had - including starting assistant professors, while I was a full professor. I found that I could not get what I needed. One day, a woman who washed glassware for the labs in our building said to me, "Nancy, how come these men have so much and you have so little." The difference was that obvious. My struggles continued for several years. They took 50-90% of my time and energy every day. Finally there was a last straw event. The one that finally opened even my eyes.

The day that it dawns on you that you did not escape, that you have been the object of gender discrimination, is devastating. In fact I knew that I could not go on working in this science that I love so much. I realized I had spent my life in a profession where most men never really take a woman scientist completely seriously, or see her as an equal, as someone no different professionally from themselves. It was paralyzingly depressing.

Fortunately, my depression was short lived. And then a wonderful thing happened. I got mad! I mean really mad. I resolved to try to fix my problems.

I decided I would work my way up through the university until I obtained a better and fairer working environment in which to do my science. For some time I got no where. When I told my administrators that I was unfairly treated, they looked at me with lack of comprehension. At first the only progress I made was to acquire that dreaded label that has been used for so long to keep women in their place - "a difficult woman". But I knew it wasn't true. It didn't take long before I had worked my way right up to the President of MIT. So I sat down and wrote him a letter: "Dear President, There is discrimination in your empire here. Its a disgrace and you really ought to fix it."

The letter was a little strong, so I thought I'd better show it to another woman faculty member and ask her to delete anything too offensive. I picked out a woman of impeccable scientific credentials. Someone I did not know well but admired from afar for her success. She was also politically astute and tough minded. It was very hard for me to talk to her about this. We all grow up believing that if you are good enough, you can make it to the top on your own. If you complained of discrimination, it meant you weren't good enough. I had come to realize that this is not true - that achieving at the highest levels is far more complex than that. But I thought I was the only person who had figured this out, and that she would think badly of me.

We were sitting in Rebecca's cafe in Kendall Square. I watched as she read my letter. I waited for her to grimace and reveal that she thought this Hopkins woman is committing professional suicide. But that was not what happened. She read the letter slowly and carefully and her expression never changed. When she got to the bottom of the letter she laid it down on the table between us and said:

"I'd like to sign this letter and I think we should go and see the President. I have believed for a long time that tenured women faculty are not treated equally here."

And that was it. The world had just changed forever. Everything that was to happen at MIT was the result of her remark. If this incredibly successful woman felt the same way, it was true. It wasn't me. I was not alone. It was true.

Well to make a very long story short, we looked at each other and said, "Wait a minute. You don't suppose there could be more?"

POLLING THE WOMEN FACULTY AND APPROACHING THE ADMINISTRATION

Rather than send my letter to the President, we decided to poll the rest of the tenured woman faculty in the School of Science. That was when we made a surprising discovery. In 1994, there were only 15 tenured women faculty in the six departments of Science at MIT vs 194 tenured men! (See Table 1 and Figure 1) It made our job easy.

In fact, since there were so few, we added two more tenured women faculty with primary appointments in engineering and secondary appointments in science and then we conducted our poll.

At the top of my list were two of the most outstanding scientists at MIT. I had read about these women in the papers because they were always winning prizes for their research. But when I approached them the response was the same. Do you have anything I could sign, they both said? I have seen it all, experienced it all. I used to sit in my room at night and cry one told me. It was amazing. I was dumbfounded. And overjoyed. I was not alone.

In the end, 16 of the 17 women decided to join forces. One woman said she had never seen or experienced these problems and she did not sign on. Of the others, about 10 had nearly identical views of the situation. One said she had not personally experienced these things but signed on in solidarity with the other women. Several women said they had experienced these things in the past, were OK at present, but knew others weren't. One woman said her life had been terribly difficult, she wasn't sure if it was this, but she had to do something or quit, so she signed on. But above all, the majority of the women signed on because of their students. Some had been told by their students - I don't want to be like you. "Who could blame them," one said, "Neither do I!"

Now I can't say this enough times about what happened at MIT. The *power was in the group*. It is not easy to get the attention of a powerful institution and ask them to take on a very difficult and unpopular issue. It was the solidarity of these remarkable women that made it work.

The women wrote a letter to the Dean of Science saying that there was subtle, unintentional discrimination against women faculty. They asked the Dean to establish a Committee that could look into this matter, help to document it so that the administration could understand it and then be better able to address it. They asked that the committee look at data and see if the women's' perception of unfairness was grounded. The whole idea was to establish a collaborative effort between the women and the administration to look into and fix this problem, to improve the lives of the tenured women faculty. Furthermore, we wanted to operate in secrecy.

A committee was established. It consisted of a tenured woman from every department and three men who were or had been department heads. The men proved to be terribly important members of our committee.

What the committee did was to interview the tenured women faculty, the untenured women faculty, and the department chairmen - the six men who chair the six departments that make up the School of Science. The Committee also collected data pertaining to the distribution of resources for research, and rewards and compensations, inclusion on important committees, etc. for men vs women. Together, the women, with men from the administration, and the Dean, looked at all this information. The process took two years and resulted in a report of about 150 pages. What did the committee find?

WHAT THE COMMITTEE LEARNED

From interviews the following picture emerged: We found out that young women faculty today, just like generations of women before them, come to MIT believing that civil rights and affirmative action solved gender discrimination long ago. They believe it will not impact their careers. However, they believe that the greater demands of family that usually fall to women rather than men will impact their careers. Today, young women do not have to make the choice that many of the women of my generation had to make. Most young women today fully expect to have children and most of our junior women faculty do have children. However, these young women, who are successfully

doing it all, told us that they believe that the difficulty of performing a faculty job in science while trying to balance family will keep the number of women who want to do this job small. In short, the playing field is not level for men and women in this regard.

Next, we learned that as women progress through their careers on the faculty, some time after tenure, they begin to see that their careers are beginning to diverge from those of their male colleagues. The women begin to feel *marginalized* from important activities and decision making processes within their departments. 'Marginalization' was the word that came to summarize best the experience of the lives of the tenured women faculty in science at MIT. The women were on the whole very successful, but they were achieving their success at a high price. What was striking was that as the women aged they seemed to be working harder and harder for their success, while the men seemed to be working less, taking on more and succeeding at it. The women became increasingly dissatisfied with their lives as this marginalization increased and as they worked harder to achieve the same level of success. What was wrong?

What we learned from examining the data was that indeed, along with marginalization goes a very real exclusion from aspects of career that are needed to make it possible, or at least easier, to succeed in science, and certainly to make the job enjoyable. Marginalization was often accompanied by less. Less salary, less space, fewer resources for research, less inclusion in important departmental or scientific endeavors, exclusion from group grants, essentially complete exclusion from important decision making roles. The women were left out, omitted, invisible, and the problem appeared to get worse as the women progressed in their careers.

Some people ask how you can make such conclusions from such a small number of women. The answer is very simple. The same way that all important decisions are made in universities, but with far more data and a far more systematic and open process, where men and women came together to examine the data. In universities many important decisions - who gets a high salary, who gets space, who gets resources etc. are made in a very private manner. These decisions are certainly not made by statistical surveys. They are professional judgments and many of them, in top universities, are made by a single man sitting in a room alone making decisions on the basis of criteria that are often known only to himself. In contrast, the committee made judgments based on nine people sitting in attendance and reviewing more data than is normally ever drawn together to look at these matters, and then having the Dean review it all. These were professional judgments, like most such judgments in universities, but with a great deal of data including proof of merit. The conclusions were powerful and compelling because the patterns that emerged were so clear to professional people deeply knowledgeable about the institution and the professions who understood the importance of this type of exclusion. It was the coming together of the women that made the patterns emerge. It was the striking similarity across departments and fields and changing administrations that told the story.

When a single woman complains to a single administrator, he usually finds it impossible to see her individual story as anything more than that - her specific problem, an anecdote. But together the stories formed a clear pattern and the data supported it. The nature of the reason for the unhappiness of the women faculty was clear.

Then what happened?_Once the discrepancies and problems were documented, MIT moved swiftly to fix things. Fixes were specific, not across-the-board corrections. They were based on the merits of each situation. Corrections included lab space, renovation funds, equipment money, inclusion on important committees - most critically on search committees. The Dean moved to hire more women.

As a result of what had happened, the women were far happier and they went back to their labs and their classrooms. And there the matter might have rested. The women had operated entirely within the system, and just as confidentially. They had just wanted to fix the problem and go back to work. But that was not to be.

THE POWER OF THE PRESS

Last year the chair of the MIT faculty was a woman, Lotte Bailyn, a professor from the Sloan School at MIT. She wanted us to write a report so that the whole faculty could learn about this initiative in Science because she knew that it was not limited to science but was a more general problem.

We drafted an article for the Faculty News Letter at MIT. It was not a report but an article describing what had happened. We asked the President of MIT and the Dean to write comments to accompany the report. I believe it was their comments that proved to be so powerful. The President wrote:

I have always believed that contemporary gender discrimination within universities is part reality and part perception. True, but I now understand that reality is by far the greater part of the balance.

Now by a small accident, I found myself one afternoon sitting and chatting with a delightful young woman from the Boston Globe and a few days later, another from the NYTimes, and telling them about these events. Suddenly, our story appeared on the front pages of these newspapers. And that was when we made an amazing discovery. We were not alone!

The problems of 15 tenured women faculty at MIT were not due to anything unusual about MIT, or about these particular women. These problems were widespread if not universal. They were not even limited to universities or to science. They could be found in business, medicine, law, the arts. They were, it seems, societal problems.

How do we know? Because for one year we have been buried by women writing to us and saying, "Same here, Same here. Will you come and help us to get the attention of *our* administration." We learned that the only thing that was somewhat unusual about MIT was that the President and Dean had been willing to support the women and to publicly say, "It's true." That MIT was unusual in this regard is supported by the fact that the Globe and NYTimes put the story on the front page and by the fact that a few weeks later I was invited to the White House. President and Mrs. Clinton and Labor Secretary Herman

praised MIT and the women faculty for how they had addressed this problem, and said that MIT should be a model for the nation!

Fortunately, of course, some places do not have this problem. Harvard, for example, announced that they don't have this problem but they were glad MIT is fixing it! Here is the headline from the Harvard Crimson (Figure 2). On page two the Crimson notes that only 9 of 164 tenured faculty in Science at Harvard are women, but they know it is "not the result of discrimination in the University." There's also a quote from a woman at MIT, that pesky Hopkins, saying, I think "they're in denial."

WHAT DOES THE FUTURE HOLD FOR YOU?

Well, I began by telling you to become scientists. But after what I've just told you, you might be having second thoughts. What does the future hold for women scientists if gender bias still exists in our profession? if the playing field is not yet level?

Let me begin with MIT. First, let me say that the women faculty at MIT are on the whole very optimistic - cautiously so perhaps - but none the less, very optimistic. The solidarity of the women faculty has continued and spread across the institution, and the support of the President and Provost is simply superb. With these two components in place, we know we have a very good chance to improve things for women faculty.

Following a set of guidelines written by Professor Molly Potter, who chaired the Committee in the School of Science after me, equity review committees have been established in all five Schools of MIT. These Committees, which again consist of tenured female and male faculty, are interviewing faculty and are reviewing data pertaining to the equitable distribution of resources and compensations for men and women faculty. But we know that that alone is not going to be sufficient. As President Vest has said, this is the easy part. Now that we know that inequities can develop inadvertently, we can take the steps needed to prevent many of them, but how do we fix the underlying attitudes that produce these inequities? The unconscious gender bias that is held - by both men *and* women - and that leads so consistently to the under valuation of women and to their exclusion? Can this far more difficult problem be fixed?

Summing up the problem

Lets stop and go back once more to summarize what we learned. Women who work in science have known for a very long time what the problem is - why the pipeline leaks. We know. We have known forever. (Well, some of us, like our speaker Helen Davies, have known forever.) The problem is two-fold: 1) gender bias that results in a professionally damaging exclusion and can take much of the fun out of science for many women, and 2) greater family responsibilities. How can institutions fix these two admittedly very hard problems?

Gender Bias

Institutional responsibility. While the ultimate solution to eradicating gender bias may lie in increasing awareness among both men and women, that is a slow process

and by itself it is *not* sufficient. You must change the institutions while, at the same time, working to raise awareness. Hearts and minds will ultimately follow. So I propose that:

- The top administration of the institution must make it clear that women will be included in the administrative structure, in decision making roles, from the bottom to the top of the institution.
- Equity committees with full access to the data are needed, and they must involve women - selected by the women faculty as a group - as well as powerful male faculty and administrators. We must guarantee equity.
- An understanding of the reality of the marginalization of women and minorities must be part of the job description for any academic administrator today. Making your department #1 will remain the top priority of administrators at Harvard and MIT, but these individuals must understand that top means including men, women, and minorities, since otherwise, by definition, they have failed. Men - and women - who do not understand this issue or do not believe that it is important are not cut out for administration in an era where our student body is so diverse, and they should seek alternative employment.
- Women - and men - who work with the administration to fix this problem can no longer do this as uncompensated work. The administration must show that it values the outcome by compensating these experts as other high level administrators are compensated. This can no longer be volunteer work, or the message will be clear that we don't really want to fix this problem after all.

Family Issues

What about the second issue? the family issues that young women told us are unequal for men and women. We all know - have know forever - that these jobs were designed in another era for a man with a full time wife at home. Many men no longer fit this description and almost no woman ever has.

I used to see this as a biological problem. I was wrong. Young women made me realize that 1) this is not a biological problem, but an institutional and societal problem, and 2) even rather minor readjustments would help a lot. We must take this problem on and help young women to solve it. They can not solve it alone without our help. This whole issue has been pushed under the rug for decades. We must stop telling women they can do what no man was ever asked to do. Instead we must redesign these jobs to both maintain the standard of excellence, to make the playing field level, and to allow both men and women - not to mention children - to have a family life.

How would we do this? I certainly do not have the answers today, but I believe this is a national issue of great importance. Within our own profession I can imagine some of the following, just to get started: There should be day care in every laboratory building. Day care should be a line item on a grant. The whole funding system is currently far too time consuming - for everyone. We need to simplify it and streamline it. We may need to further restructure the job - both annually and over a life time - so that we can make work-

places equally accessible for a diverse faculty. These are institutional decisions, not biological ones. We must stay focused on the key parts of the job - performing outstanding research, outstanding teaching. We must keep that but change some of the rest. If we do this, make a co-ed, fully integrated faculty, we will make significant improvements in everyone's lives. I believe we can do it without compromising quality - indeed I believe it is essential to *improving* quality.

The top administration of our universities, of our government agencies, of the academies, in collaboration with leading women scientists, can address these problems and make science what it can and should be.

SUMMARY

When civil rights and affirmative action opened the doors of the universities and let women in, probably no one could have predicted these problems, and they certainly couldn't have produced solutions ahead of time. It took women going through the system, plus a few good men in power with the courage to listen to the women, to begin to bring about much needed changes. Now we know what the problems are we have no excuses. I believe that with effort and commitment we can change things so that by the time *you* come to take that job at Harvard, you will be able to have a family, win the Nobel prize, and experience all the joy that a life in science can bring.

Thank you.