

# **The Science Glass Ceiling: Academic Women Scientists and their Struggle to Succeed**

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Building Diversity in Higher Education

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*The M.I.T. professors who studied the treatment of female faculty members included (from left): Sylvia Ceyer, Paola Rizzoli, Penny Chisholm, Nancy Hopkins, Leigh Royden, JoAnne Stubbe, and Mary-Lou Pardue.*

## Women at MIT Create a Movement for Female Academics

Their report changes their careers and prompts  
other universities to look anew at gender bias: A16

# Statement by Leaders at MIT Meeting on 1/29/01

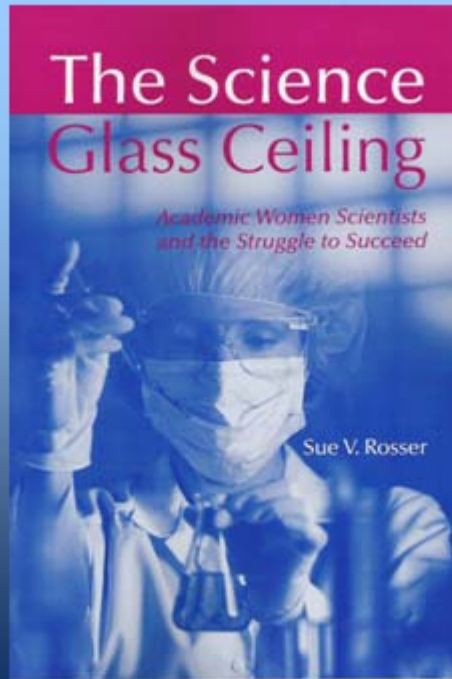
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“Institutions of higher education have an obligation, both for themselves and for the nation, to fully develop and utilize all the creative talent available,” the leaders said in a unanimous statement. “We recognize that barriers still exist” for women faculty.

They agreed to:

- Analyze the salaries and proportion of other university resources provided to women faculty
- Work toward a faculty that reflects the diversity of the student body
- Reconvene in about a year “to share the specific initiatives we have undertaken to achieve these objectives”
- “Recognize that this challenge will require significant review of, and potentially significant change in, the procedures within each university, and within the scientific and engineering establishments as a whole.”

(Campbell, 2001, p.1)



- E-mail questionnaire responses from 450 women scientists and engineers
- 40 in-depth interviews
- POWRE and CBL awardees

# Total Responses to Question 1

Question 1: What are the most significant issues/challenges/opportunities facing women scientists today as they plan their careers?

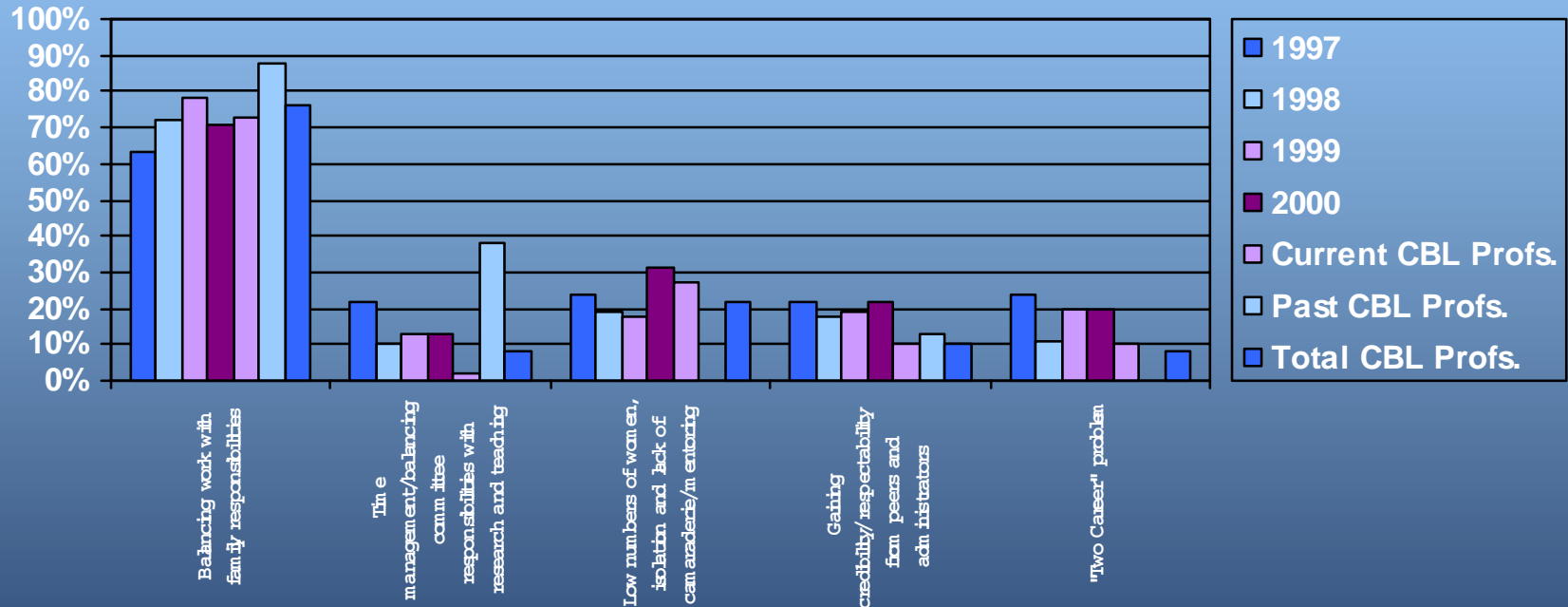


Table 3. Total Responses to Question 1

**Question 1: What are the most significant issues/challenges/opportunities facing women scientists today as they plan their careers?**

Categories	1997		1998		1999		2000	
	% of responses		% of responses		% of responses		% of responses	
1 Balancing work with family responsibilities (children, elderly relatives, etc.)	62.7	(42/67)	72.3	(86/119)	77.6	(76/98)	71.4	(75/105)
2 Time management/balancing committee responsibilities with research and teaching	22.4	(15/67)	10.1	(12/119)	13.3	(13/98)	13.3	(14/105)
3 Low numbers of women, isolation and lack of camaraderie/mentoring	23.9	(16/67)	18.5	(22/119)	18.4	(18/98)	30.5	(33/105)
4 Gaining credibility/respectability from peers and administrators	22.4	(15/67)	17.6	(21/119)	19.4	(19/98)	21.9	(23/105)
5 "Two career" problem (balance with spouse's career)	23.9	(16/67)	10.9	(13/119)	20.4	(20/98)	20.0	(21/105)
6 Lack of funding/inability to get funding	7.5	(5/67)	4.2	(5/119)	10.2	(10/98)	8.6	(9/105)
7 Job restrictions (location, salaries, etc.)	9.0	(6/67)	9.2	(11/119)	7.1	(7/98)	5.7	(6/105)
8 Networking	6.0	(4/67)	<1	(1/119)	0	(0/98)	4.8	(5/105)
9 Affirmative action backlash/discrimination	6.0	(4/67)	15.1	(18/119)	14.3	(14/98)	12.4	(13/105)
10 Positive: active recruitment of women/more opportunities	6.0	(4/67)	10.1	(12/119)	9.2	(9/98)	14.3	(15/105)
11 Establishing independence	3.0	(2/67)	0	(0/119)	6.1	(6/98)	2.9	(3/105)
12 Negative social images	3.0	(2/67)	3.4	(4/119)	2.0	(2/98)	<1	(1/105)
13 Trouble gaining access to nonacademic positions	1.5	(1/67)	1.7	(2/119)	1.0	(1/98)	1.9	(2/105)
14 Sexual harassment	1.5	(1/67)	<1	(1/119)	2.0	(2/98)	1.9	(2/105)
15 No answer	0	(0/67)	<1	(1/119)	1.0	(1/98)	1.9	(2/105)
16 Cut-throat competition	--	--	--	--	1.0	(1/98)	1.9	(2/105)

Dr. Sue V. Rosser  
Dean, Ivan Allen College

Table 4. Categorization of Question 1 across Year of Award

<b>Question 1: What are the most significant issues/challenges/opportunities facing women scientists today as they plan their careers?</b>					
<b>Categories</b>	<b>Response numbers<sup>b</sup></b>	<b>Means of responses</b>			
		<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
A Pressures women face in balancing career and family	1, 5, 7	31.9%	30.8%	35.0%	32.4%
B <sup>a</sup> Problems faced by women because of their low numbers and stereotypes held by others regarding gender	3, 4, 8, 10, 12	12.3%	10.1%	9.8%	14.5%
C <sup>a</sup> Issues faced by both men and women scientists and engineers in the current environment of tight resources, which may pose particular difficulties for women	2, 6, 16	10.0%	4.8%	8.2%	7.9%
D More overt discrimination and harassment	9, 11, 13, 14	3.0%	4.4%	5.8%	4.8%

<sup>a</sup>The alphabetic designation for categories B and C have been exchanged, compared with earlier papers (Rosser and Zieseniss, 2000) to present descending response percentages.

<sup>b</sup>Given the responses from all four years, after receiving faculty comments at various presentations of this research, and after working with the data, we exchanged two questions from both category B and D to better reflect the response groupings. Specifically, responses 10 and 12 (considered in category D in Rosser and Zieseniss, 2000) were moved to category B. Similarly, responses 11 and 13 (included in category B in Rosser and Zieseniss, 2000) were placed into category D.

# Category A: Pressures women face in balancing career and family

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At the risk of stereotyping, I think that women generally struggle more with the daily pull of raising a family or caring for elderly parents, and this obviously puts additional demands on their time.

(2000 respondent 63)

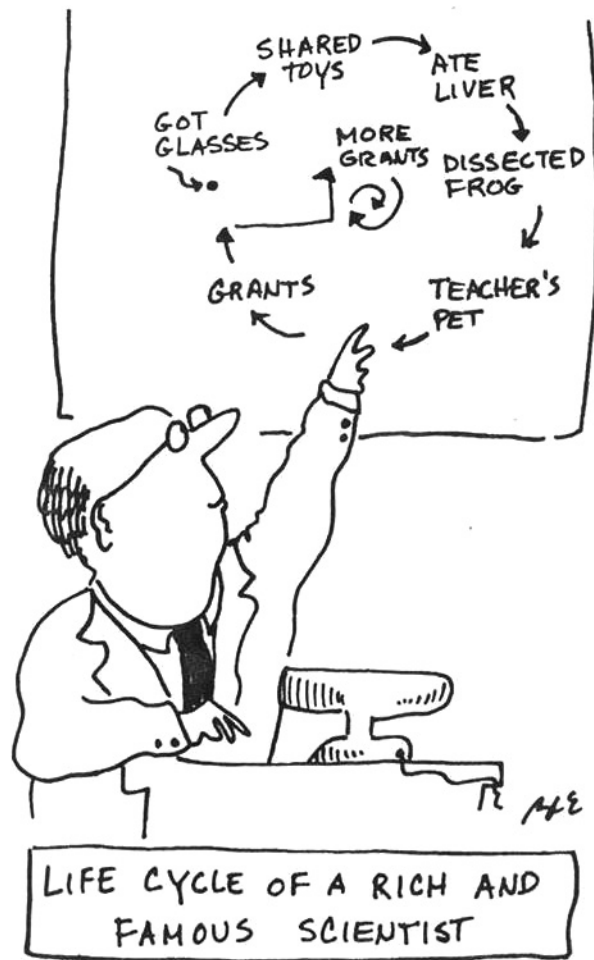
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# Category A: Pressures women face in balancing career and family

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At the risk of stereotyping, I think that women generally struggle more with the daily pull of raising a family or caring for elderly parents, and this obviously puts additional demands on their time. This is true for younger women, who may struggle over the timing of having and raising children, particularly in light of a ticking tenure clock, but also for more senior women, who may be called upon to help aging parents (their own or in-laws). Invariably they manage, but not without guilt.

(2000 respondent 63)



# Category A: Pressures women face in balancing career and family

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Managing dual career families (particularly dual academic careers). Often women take the lesser position in such a situation. Ph.D. women are often married to Ph.D. men. Most Ph.D. men are not married to Ph.D. women.

(2000 respondent 16)

# Category B: Problems because of low numbers and stereotypes

The biggest challenge that women face in planning a career in science is not being taken seriously. Often women have to go farther, work harder and accomplish more in order to be recognized.



(2000 respondent 21)

# Category B: Problems because of low numbers and stereotypes

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In my field, (concrete technology) women are so poorly represented that being female certainly creates more notice for you and your work, particularly when presenting at conferences. This can be beneficial, as recognition of your research by your peers is important for gaining tenure; it can also add to the already large amount of pressure on new faculty.

(2000 respondent 70)

# Category C: Issues faced by all, with particular difficulties for women

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I have noticed some problems in particular institutions I have visited (or worked at) where women were scarce. As a single woman, I have sometimes been viewed as “available,” rather than as a professional co-worker. That can be really, really irritating. I assume that single men working in a location where male workers are scarce can face similar problems. In physics and astronomy, usually the women are more scarce.

(1997 respondent 26)

# Category C: Issues faced by all, with particular difficulties for women

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I still find the strong perception that women should be doing more teaching and service because of the expectation that women are more nurturing. Although research as a priority for women is given a lot of lip service, I've not seen a lot of support for it.

(2000 respondent 1)

# Category D: More overt discrimination and/or harassment

There are almost no women in my field, no senior women, and open harassment and discrimination are very well accepted and have never been discouraged in any instance I am aware of.



(1998 respondent 53)

# Category D: More overt discrimination and/or harassment

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I have often buffered the bad behavior of my colleagues - and over the years I have handled a number of sexual harassment or “hostile supervision” cases where a more senior person (all of them male) was behaving inappropriately toward a lower social status woman (or in rarer cases a gay man).

(1999 respondent 59)

# Category D: More overt discrimination and/or harassment

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The discrimination they continue to face in the workplace. We seem to be making virtually no gains in terms of rates at which women are granted tenure or promotion to full professor. The older I get, the more depressing these statistics become. Women's research is often marginalized. Women's approaches are not recognized. Men scientists want to judge women by "their" standard (i.e. the white male way of doing things!). Most men have no appreciation for the power and privilege of their whiteness and maleness.

(1999 respondent 70)

# 2001 ADVANCE Institutional Transformation Awards

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- The Georgia Institute of Technology
- Hunter College
- New Mexico State University
- University of California--Irvine
- University of Colorado—Boulder
- University of Michigan
- University of Washington
- University of Wisconsin—Madison
- University of Puerto Rico—Hamacao

# 2<sup>nd</sup> Round ADVANCE Awardee Institutions

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- Virginia Tech
- University of Alabama at Birmingham
- Case Western Reserve
- Kansas State
- University of Maryland—Baltimore County
- University of Montana
- University of Rhode Island
- University of Texas—El Paso
- Utah State
- Columbia University

# 3<sup>rd</sup> Round ADVANCE Institutions

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- Brown
- Cal Poly—Pomona
- Cornell
- Duke
- Iowa State
- Marshall University
- New Jersey Institute of Technology
- Rensselaer Polytechnic Institute
- Rice
- University of Arizona
- University of Illinois—Chicago
- University of Maryland—Eastern Shore
- University of North Carolina--Charlotte

# GT's ADVANCE Project Goals

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A network of termed professorships established to mentor women faculty

A series of leadership retreats with women faculty and senior institutional leaders

A series of family-friendly policies

Data gathering and interviews to develop MIT-like Report to chart equity progress

A formal tenure and promotion training process to remove subtle gender, racial, and other biases

# Issues for Senior Women

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- Population of AWIS Fellows--109
- 46 responses; 3 dead; 4 Congress people; 2 retired; 14 no or bad e-mail address
- 53.5 % of population reached responded to e-mail
- Asked same question(s) plus the following:
- **Do you think that senior women scientists and engineers face a different set of issues/challenges/opportunities than their junior colleagues? Please explain.**

# Different Issues for Senior Women

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- Yes, the glass executive ceiling. At the very top, only a few women get chosen and these because they have mentors and supporters—the extreme case being Condi Rice and her patron George W. Bush.

(Corporate CEO and former federal agency head, 2006)

# Different Issues for Senior Women

I think the issues are significantly different:

- Since at each opportunity, women are undervalued and men are over-valued, it is difficult for women to avoid sinking to an inferior status within their dept, and difficult for them to get the lab space and salary that would be equitable
- Over time, the accumulation of past inequities becomes a very difficult burden, and affects relationships with others and sense of self
- In addition to bias within your home institution, women do not gain the respect they deserve from their mostly male colleagues in their specific fields.

(Dean at Research I Institution, 2006)

# Different Issues for Senior Women

Yes, I believe that many senior women scientists and engineers feel what the report from MIT referred to as “marginalized.” They feel excluded from significant roles in decision-making whether in their departments in academe or in non-academic sectors. This “marginalization” was often accompanied by differences in salary, awards, resources, outside offers, etc. It comes down to senior women scientists and engineers receiving less despite having equal professional accomplishments to their male peers.

(Executive Director, Non-profit, 2006)

# Different Issues for Senior Women

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I definitely do. Junior women are seen as having exciting potential and are themselves often very upbeat, while senior women get beaten down by facing the same prejudices over long periods of time. As they get discouraged, they are often discounted and sometimes ignored.

(Executive Director, Scientific Professional Society, 2006)

# Different Issues for Senior Women

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Senior women (and men) also face situations in which leadership roles are offered to/thrust upon them, sapping their time and energy. For women, this may make a bigger difference if they also are doing more teaching or more home involvement. I think also that as women get older and their labs larger or more established, and/or if they are put in positions of leadership and authority, they are more likely to encounter resentment (among men and other women) than might happen when they are younger. What kind of psychological toll would this take? It will depend on the individual, of course, but I think it can be a significant distraction or disturbance.

(Professor, Research I University, 2006)

# Different Issues for Senior Women

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Yes, many senior women have been able to advance by playing the game as it is, as opposed to challenging the game. Young women have been led to think that everything is fine and fair—and then they hit the wall and discover discrimination still exists.

(Program Head,  
Scientific Society, 2006)

# Different Issues for Senior Women

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Yes, although in part the challenge is self-inflicted. Many women do not want to leave the bench to take on administrative positions. But until they do, they will lack both power and legitimacy. Through ADVANCE, the NSF is paying for semi-annual meetings of women deans and chairs in engineering. It would be good if this were extended to science. Such meetings help address practical problems, but they also create networks and support for women who often feel isolated.

(Program Head, National Academies, 2006)

# Policy/Practice Areas Ripe for Change

- Issues may differ for junior and senior women scientists
- Balancing career and family is major issue for junior women, but not necessarily for senior women
- Overt discrimination and harassment
- Decreased funding issues
- ADVANCE may be addressing more of the issues significant for junior, rather than senior, women

