

25 October 2017

Coeducation at MIT: 1950s–60s

+

Epilog: The Enduring Bottleneck of
Women Engineering Faculty

THE GENDER/RACE IMPERATIVE

Speaker Series Led by Anita Hill

Robert M. Gray, MIT '64

Professor Emeritus, Stanford University

Last edited October 29, 2017



Harriet Fell, '64, from the MIT Museum archives. Published in March 14 2014 issue of *Science* review of [Bix 2013] by Maria Klawe.

Caption: “On the leading edge of a wave. The 25 women who entered MIT’s class of 1964 matched the graduation rate of their 874 male classmates.”

1960 was a pivotal year

History, context, and story of the sea change:

Emily L. Wick, Kenneth Wadleigh, and Dorothy (Dotty) Bowe

and J. R. Killian and J.A. Stratton

“Until the Institute could commit itself to educating women in significant numbers, and could provide suitable living conditions, coeds were not overly ‘successful’. . . . Before 1960 women entered MIT at their own risk. If they succeeded – fine! If they failed – well, no one had expected them to succeed. In 1960 the Institute committed itself to the education of women as well

as men . . . The class of 1964 entered in 1960 knowing that MIT believed in women students. It was the first class in which coeds, as a group, matched the proportion of B.S. degrees earned by their male classmates!”



Emily L. Wick [Wick 1970]

Early History

1861 MIT is founded in Boston.

1871 Ellen Henrietta Swallow (Vassar 1870, Chemistry): first woman admitted to MIT — as an experiment as a “special student” (*no tuition, hence no official record before graduation*) —
and first woman graduated from MIT (BS 1873, Chemistry)



1875-76 Swallow marries MIT Professor Robert Richards, *raises funds* from Women’s Educational Association (WEA) of Boston for women’s facilities (lab and reception room)

MIT changes admissions policy to admit “special students” for “advanced instruction in Chemistry . . . without distinction of sex”

1879 Women given privilege of being examined for a degree under the same conditions as men. *(admissions another story)*

1882 Original women's lab scheduled for demolition, Ellen Swallow Richards and WEA *raise funds* for "suitable toilet rooms . . . and a reception room somewhere in the building"

MIT decides to admit women as regular students

Margaret Swan Cheney Room provides "refuge", "haven"

80 years later students and staff will still complain in The Tech of having "to walk a mile to find a ladies room"

1895 6.3% of the 1187 MIT undergraduates are women.

Percentage not achieved again until 1969.

1899 MIT Women's Association (MITWA) founded "to promote greater fellowship among Institute women." ESR fears that MITWA "will never be a success, because we have no dormitory life, no campus, and hence no college spirit" MITWA appoints ESR President

1904 Katherine Dexter graduates from MIT. Marries Stanley McCormick. Major supporter and *fundraiser* for MIT women. Her endowment valued at \$51 million in 1997

1916 MIT moves from Boston to Cambridge.
About 1% women

Margaret Cheney Room - 1920

1923 MIT appoints library staffer Florence Styles (MIT '23) to an unofficial post as adviser to women students.



1939 Association of Women Students (AWS) founded,

mentioned in 1941 *MIT Handbook*

1945 Margaret Compton (Mrs MIT President Karl Taylor Compton) works with MITWA, The Technology Matrons (later MIT Women's League), & Florence Styles to establish first MIT women's dormitory at 120 Bay State Road in Boston. 14 beds (later 20)

Styles states should help improve the esprit de corps of the women students, and hence the graduation rate — women performed well in class in comparison with men, *but only 1 in 20 typically graduated.*

1946 Emily Lippencott Wick comes to MIT as a PhD student in chemistry from Mount Holyoke

(BA chemistry, 1943, MA organic chemistry, 1945)

Chose MIT because it had a good chemistry department and is near Rockport on Cape Ann. Lives part time at 120 Bay State Road.

1948 Dorothy (Dotty) Leaman Bowe begins work as a secretary to Professor F.H. Norton in the Metallurgy Department. Quickly expands her acquaintances beyond her Department to include students, faculty, and President Compton.

Advises students, coaches for exam preparation, connects students with faculty having similar interests, and becomes familiar with problems facing women students and becomes an advocate. Coeds were ignored or harassed by some faculty, staff, teaching assistants, and students; both in person and in print.

1951 Emily receives PhD in Chemistry at MIT. Becomes research Associate at MIT, then goes to work at Arthur D. Little.

1952 E. F. Bowditch, Dean of Students, suggests MIT should either “eliminate women students, at least undergraduates; or decide we really want women students, plan an adequate set-up, and then deliberately go out and get more good girls”

Ruth L. Bean appointed Assistant Dean of Students, given responsibility for women students in 1955

1954 Dean Bowditch writes President John R. Killian (JRK) suggesting an ad hoc committee on the place of women at MIT to consider all aspects of admissions, housing, and student life

JRK writes Chancellor Julius A. Stratton (JAS) asking him to bring together a group of representative people to do this

1955 In January JAS appoints committee:

Professor Leicester Hamilton (Chair), Ruth L. Bean, Mrs. Martin Deutsch, Mrs. W.W. Rostow, Associate Prof. Kenneth R. Wadleigh

Women students

For some time this office has felt the need of an extensive study of the place of women students at the Institute and for a closer integration of women students into the whole educational program for undergraduates. The special committee appointed by the provost and chaired by Professor Leicester F. Hamilton is now at work, and its recommendations should contribute immeasurably to the general welfare of women students.

from 1955 President's Report

Hamilton a friend of Dotty's boss, Mrs Hamilton a member of MIT Women's Advisory Board and a friend of Dotty's

Pressure builds against continuing to admit undergraduate women:

— heavy attrition and poor graduation rate

— “women's education should be left to ‘specialists in the field’ ”

— “. . . The business of raising a family takes from five to fourteen years at a minimum. During this time, had a male student had her place, he could have been contributing profitably in his professional capacity. At this time, when there is such a shortage of engineers, one wonders if we are justified in taking positions away from male students for female . . . With so much conflict at an emotional level, it becomes plain that their intellectual efficiency must almost inevitably become impaired . . . I think that the presence of women students in the student body has a definite leveling effect and their presence is almost universally welcomed, I believe, by the faculty and the student body. My concern is for their own welfare, however, and not for the pleasure and ornamentation they can contribute to MIT.”

MIT medical director H.I Harris, MD, 7/31/56 letter to Hamilton

Example of attitudes towards women in the mid twentieth century

Arguments against continuing coeducation countered by AWS and others with statistics of successful careers by women MIT graduates in research, teaching, medicine, law, business, and government.

Many observed *the graduation and attrition rates would improve if the resources were provided to improve the academic and personal environment for women students* **debate rages long into 1956**

1956 Killian prods JAS to prod Committee, JAS to Hamilton 10/17

“There is now a very strong feeling expressed by the President and by Jack Rule that **we must come to grips with the problem of women students**, and arrive at some early decisions . . . Even though your report may be still incomplete, may I not have whatever is ready . . . **I should particularly like to have an expression of the views of the several members of your Committee on what course the Institute should follow. It is not all necessary that these should be unanimous.**”

Hamilton submitted a confidential memo to the President.

From MIT Archives AC132, Box 18, “Women Students” Folder:

CONFIDENTIAL

Copies to:

XEROXISEK 4-29-86

This so-called "report" was submitted to Dr Stratton following his letter to Hamilton of 10/17/56 and per 10/22/56

Reference will be seen in this file to a "Hamilton report." This was not really a report at all of the committee of which he was chairman but was an assemblage of confidential statistics and information about women students collected by Hamilton. When JAS pressed him for progress on his committee's review of the status of women students at M.I.T., he produced these statistics. The Hamilton Committee per se apparently never did submit a report. Nor were any statements prepared by the committee members, as far as can be determined. Because of their confidential nature, this collection of statistics is filed in the safe.

LHM

Note for files: When Dr. Stratton's files for this period were being transferred to the Archives the section containing the above-mentioned confidential statistics were removed from the report and filed in a restricted folder. What remains is the so-called "Hamilton Report." *A complete copy of the report is in the restricted file.*

LHM
7-18-86

There was no formal report, Hamilton provided statistics and his own opinions arguing that women undergraduates have no place at MIT. Subsequent correspondence between JAS and committee members suggests they were unaware of the contents of Hamilton's confidential memo representing the committee deliberations.

Memorandum to Dr. J. A. Stratton:

Dear Jay:

May I venture some suggestions for clarifying policy with respect to women students at the Institute?

Since the Hamilton Committee has failed to come through with anything helpful, I would suggest that we seek to make administrative decisions, first, by reaching some tentative conclusions in our top administrative group, and then reviewing these with the Academic Council. These administrative conclusions should, I suggest, deal with both the long term and the short term problems, and I shall make some observations about each.

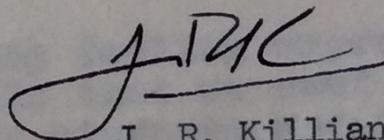
Memo. to Dr. Stratton

- 3 -

October 22, 1956

I would venture the concluding observation that I do not see how the Institute, having admitted women for so long, can now change its policy, nor do I feel that even if such a change were practical we should do it in view of the growing feeling that women should have access to our great universities.

Yours sincerely,



J. R. Killian, Jr.
President

JAS proposes new policy on undergrad coeds and Academic Council approves, summarizes policy at an informal tea for resident women students 4/24/57.

The Tech article 4/26/57

More Coeds Later, But Fewer In Fall, Sees Stratton At Tea

"Women are here to stay, and it is our hope to make them feel more a part of the MIT community" is the Institute's official policy on Tech coeds as voiced by Dr. J. A. Stratton at an informal tea given at Moore House on April 24 for resident women students.

Dr. Stratton and Dean Fassett explained to the coeds that their place in the MIT community has been under serious consideration for some time and it has now been decided to expand and amplify facilities specifically for women as rapidly as means can be found.

Since it is considered unwise and improper for the Institute to admit Freshmen women beyond its ability to accommodate them, plans have now been made for housing 14 Freshmen in the present Women's Dorm at 120 Bay State Road, with 3 upperclassmen in residence as unofficial advisors. An additional number of women commuters meeting the required academic qualifications may also be admitted to the Freshman class.

Also, a separate section of Bexley Hall will be made available to 33 undergraduate women in September with Prof. and Mrs. William F. Bottiglia as faculty residents.

Girls who would like to live in Bexley next September are asked to sign up in room 7-102 as soon as possible.



1957 Emily returns to MIT as Research Associate

1959 Emily appointed Assistant Professor in the Department of Nutrition and Food Science at MIT.

20 women in the 120 Bay State Dorm.

MIT releases document *The Woman at MIT* arguing the need for additional housing for women students.

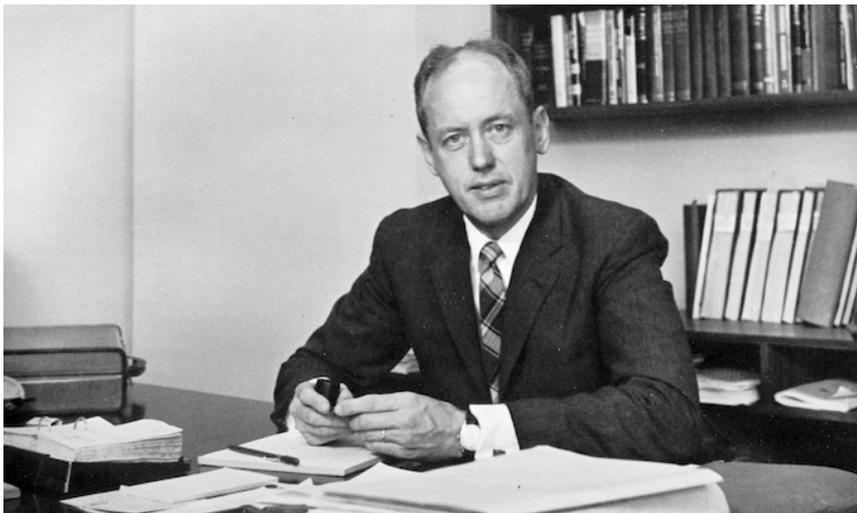
1960 Emily only woman faculty member at MIT outside of Humanities

Emily's formal responsibilities for MIT coeds lay in the future, but by default a **role model** and actively talking with coeds about the Institute and careers.

Katherine McCormick pledges for \$1.5M for a women's dormitory

“[the dormitory is] an unprecedented opportunity to advance the professional development of our women students. Women have made substantial contributions to scientific and technical progress in the past . . . Women's potential for achievement in these fields represents one of the great latent resources of the country.”

from 1960 President's Report



1961 Kenneth R. Wadleigh becomes Dean of Students in July. Title changes to Dean of Student Affairs in 1962.

1962 Sailing and fencing approved as women's club sports, but women had very low priority in using MIT athletic facilities.

1963 Stanley McCormick Hall opens, attracting national publicity.

Dean Wadleigh hires Jacquelyn Mattfeld, an Associate Dean at Radcliffe, to become Associate Dean of Student Affairs with a responsibility for the women's program.

248 women students

MIT Catalog mentions "up front" that MIT is a coeducational school.

The 1st tower of McCormick Hall housed about 125 women, significantly increasing the number of women admitted.

120 Bay State Road and Bexley then cease to be women's residences.

Undergraduate women required to live in McCormick or with parents or close relatives.



Mrs McCormick, Dr. Killian, President Stratton, Mrs Killian, Mrs Stratton, Margaret McVicar '64, and Mrs Compton



McCormick Hall

Emily becomes the first woman at MIT promoted to a tenured position from within the faculty ranks.



Left: In her office, Right: Talking with coeds in McCormick Hall

1964 Emily decides to learn more about other aspects of MIT. Signs up for the Committee on Student Environment, where she meets Dean Wadleigh.



Dotty Bowe appointed secretary to Mattfeld when Prof Norton retires, moves into Dean's office to work with Mattfeld

AWS, headed by Margaret MacVicar '65 (BS '64), sponsors a national symposium "American Women in Science and Engineering" with Carol Gustafsen Van Aken '65 as chairman.

MITWA, faculty members, and Dean Mattfeld provide support.

MITWA becomes the Association of MIT Alumnae (AMITA).

1965 "... from 1965 when it was an earth shattering first occasion to have *fifty* women enrolled in the first year class"

Emily Wick, *Tech Talk*, 3/28/1973

Academic Council **again** takes up question of women's future at the institute, with some faculty and administrators **still** regarding training women undergraduates as a risky venture.

After much argument, the Council finally endorses raising the number of women undergraduates to 400, raising the percentage from 3% almost to 9%.

Mattfeld leaves MIT in the spring for Sarah Lawrence to become Provost and Dean of the Faculty, later moving to Brown University and then to be President at Barnard.

After discussions with Dotty, Wadleigh chooses Emily Wick as the new Associate Dean of Students with responsibilities for women's programs.

Joins another new Associate Dean of Student Affairs, Paul Gray.

Emily joins Dotty in Room 5-108 with the intent of making it a Dean's office which would welcome students at any time. Office always full of students.

“Between 1963 and 1972, Dotty with Emily Wick were the women's program at MIT.”

Dotty's “goal was to know every woman student, and she and Emily had an office with an open door . . .



She and Emily worked with Professor Millie Dresselhaus when she came to MIT for the Abby Rockefeller Mauze Chair.” [Bowe Bio]

1967 Women finally admitted to the MIT Athletic Association, but not to the Varsity Club.

Women's sailing and crew designated “varsity teams” retroactive to 1963, all other women's sports considered “club sports”

Undergraduate women finally permitted to live off campus without the requirement that they live with family, provided they were over 21 or secured parental permission

1968 McCormick Hall East opens. Mildred Dresselhaus moves to MIT with an appointment as the first woman tenured Full Professor. Becomes involved with women students, begins discussions with Emily and Dotty on admissions policy and other issues. Emily Wick promoted to Full Professor (1st woman at MIT *promoted* to Full Professor)

Kenneth Wadleigh becomes MIT Vice President

When Wadleigh retires in 1984, President Paul Gray credits Wadleigh for encouraging him to undertake part-time administration duties in the Office of the Dean of Student Affairs and thanks him “for all these years as mentor, colleague, and friend”

In 1969 there are 217 women in a class of 3955: 5.5%
3% of School of Science faculty are women

Professor Daniel Nyhart, an expert on finance in the MIT Sloan School of Management, replaces Wadleigh as Dean of Student Affairs.

Dean Nyhart decides an Associate Dean focused on women’s affairs is *no longer necessary*

Informs Emily and Dotty of intention to dissolve office!

Aftermath: The 1970s

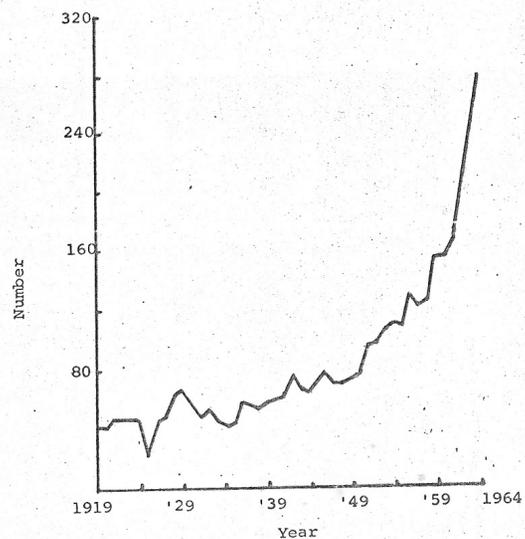
1970 In March Emily Wick submits *Proposal for a new policy for admission of women undergraduate students at MIT* arguing that admissions requirements should be made the same for women as for men — no longer limit the number of undergraduate women by the number of on-campus beds. Includes a history of of women at MIT backed by extensive statistics on performance, housing, activities, athletics, and contributions.

Recommendation adopted by MIT in 1971

249 women housed on campus

In September Wick releases a shorter report *Women Students at M.I.T.* including many of the same ideas. [Wick 9/1970]

Figure 2.
Total Enrollment of
Women Students
1919-1964



From The President's Report 1963 - 1964, M.I.T.

Table II. Graduation and Attrition Data for Men and Women
in the M.I.T. Classes of 1960-1969

Class	Number Entering Class ¹		Percent Graduated (BS) ^{2,3}		Percent Disqualified (D ₁) ^{2,4}		Percent Withdrawn ⁶	
	Women	Men	Women	Men	Women	Men	Women	Men
1960	22	914	36	89	27	*	36	*
1961	16	883	56	87	12	*	31	*
1962	18	923	66	85	22	*	11	*
1963	21	915	62	90	9	*	28	*
1964	25	874	84	86	4	*	12	*
1965	23	885	87	90	0	*	13	*
1966	23	869	91	92	0	11	9	0
1967	39	889	92	94	0	10	8	0
1968	46	861	87	86	0	11	13	3
1969	50	918	100	82	2	8 ⁵	0	10

* Unknown

¹ From Presidents Reports. Women Students Classified by Years; Classification of Students 1956-69.

² From Records in Office of Dean for Student Affairs. Transfer students included.

³ From Presidents Reports, Degrees Awarded 1959-1969. Transfer students included.

⁴ From Committee on Academic Performance, Policies and Procedures, May 1969.

⁵ From Committee on Academic Performance, February 1970.

⁶ Calculated by difference.



1971 Emily steps down as Associate Dean. Room 5-108 closed. Dotty promoted to staff position and moves to Financial Aid. Emily recommends that someone be appointed to continue her work.

Wadleigh writes to Killian 10/20/1971 that “Emily played the key leadership role in the successful development of a strong identity and character for undergraduate and graduate women at M.I.T. during her tenure on the administration.”

Strong student reaction. Excerpts from 12/7/71 Letter from Carol L. Epstein '72 and Paula F. Stone, '72, to MIT community. Copies to *The Tech*, President Weisner, Provost Gray, Dean Nyhardt, . . .

To Members of the Institute Community:

We are writing this letter in response to the retirement of Emily Wick from the Deans' Office and the circumstances and issues surrounding her decision. With the demise of Dean Wick's office as of January 1 1972, the women students of M.I.T. will lose an integral, personal representative in the higher echelons of the Institute as well as a congenial, intimate friend who is sensitive to the problems that we, as women, must cope with in a male-run, male-oriented environment.

To our knowledge, after consulting several faculty and members of the administration, no definitive action is being taken to replace Dean Wick. The needs and position of women at the Institute have apparently failed to generate a serious commitment. We are concerned that unofficial policies will remain the same; that they will perhaps be re-examined and discussed, but that nothing will be done; that the urgency for our full recognition as members of the M.I.T. community will be ignored, and the entire white-washed, appeased, and silenced.

A standard argument used against the establishment of a separate office for women at M.I.T. is that women and men are equal, therefore there is no need for such an office. We argue that we are indeed equal, but that we have not been granted equality; although we are intellectually equal, there are parts of the Institute in which we (and our friends) have experienced **personal harassment and discrimination**. . . .

As of January 1, 1972, the office of Dean of Women Students will be empty, and will *de facto* have been abolished

We would also like to set up an Institute Committee on Women's Affairs at M.I.T. as an investigatory body to look into areas of concern to women, especially in response to input from the community. . . .

Administration reacts to strong outcry, decides to appoint another Ad Hoc Committee — on the Role of Women Students at MIT

Meanwhile, Emily, Mildred Dresselhaus, and Paula Stone organize a meeting for women students in January to discuss issues of common interest, *but they forget to put "students" in the title of the flyer*

1972 Title IX of the Education Amendments Act of 1972:

“No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under **any education program or activity** receiving Federal financial assistance.”

First meeting chaired by Dresselhaus and Stone draws over 100 women (and two men). Brings in women from all aspects of MIT life and raises awareness of the immense needs and frustrations of women at MIT. Named the *Forum of Women*, begins regular meetings. Part of this group is appointed as the official Ad Hoc Committee on the Role of Women Students at MIT.

Committee produces report *Role of women students at MIT* by the end of spring:

“A **discriminatory attitude** against women is so institutionalized in American universities as to be out of the awareness of many of those contributing to it. Decisions may indeed be made with no deliberate effort to exclude women – at least at times – but policy must be judged by outcome, not by pronouncement. And here we find inadequate numbers of women at all levels, most significantly so at senior levels.”

Recommends:

- active recruitment of women
- publicity about women at MIT
- alumnae Educational Councilors interviewing applicants
- department awareness to admit more women
- a system of women advisors
- more women graduate students

Dean Nyhart hires Anne Ellison as **Assistant** Dean of Student Affairs in response to another recommendation by Ad Hoc Committee

Students on Ad Hoc Committee win a Karl Taylor Compton Prize

Emily Wick receives a Bronze Beaver Award from the MIT Alumni Association. Cited as an “advocate and model for a generation of women students at MIT from a handful to an abiding presence”



1973 Emily leaves MIT to become Dean of the Faculty at Mt. Holyoke College. Ad Hoc Committee prize used to fund a women’s intercollegiate sailing trophy in her name. *Presented in appreciation for her efforts on behalf of women students at M.I.T. June 1973*

Presented for AWS by Paula Stone on June 7

Aside: Boat is *Beaver II*, Emily’s Herreshoff-designed Bullseye

Mary Rowe appointed as special assistant to the president and chancellor for women and work.

In *A Century of Women Students at M.I.T.*, June 3 1973, Emily describes the accomplishments and progress during her time as Associate Dean of Students.

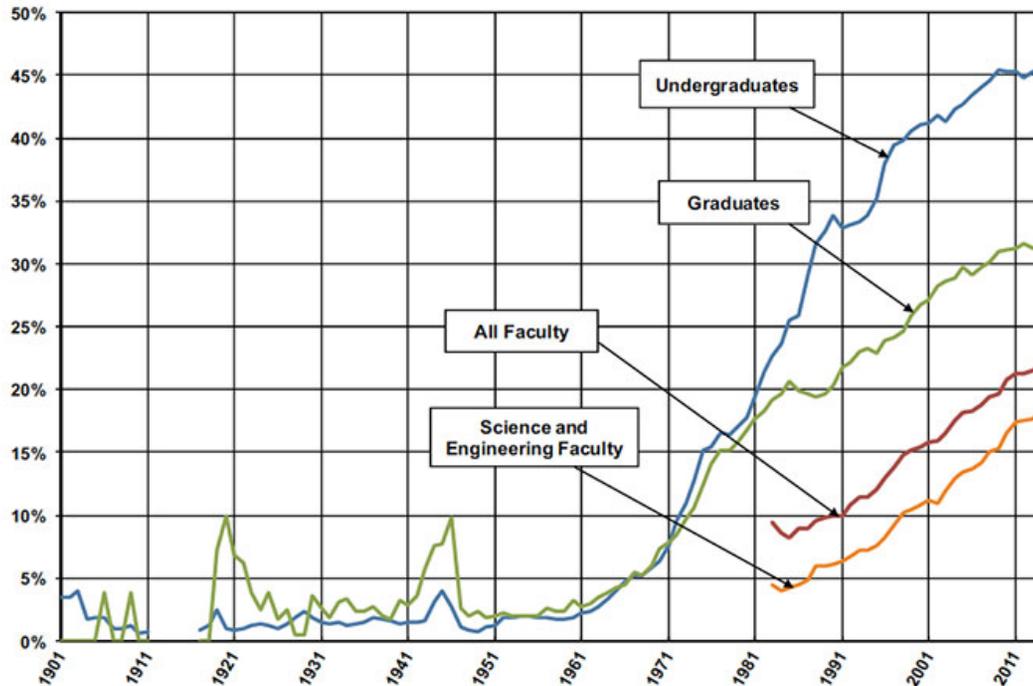
Remaining tasks include:

“First, [there must be more women faculty at both junior and senior levels](#). Women students need to observe and to communicate with women who have been successful in their field of study. . . . Such role-models are necessary if women are to be encouraged to seek careers. . . .

Second, there must be more women students. M.I.T. — as a leading university in our society — has a responsibility to educate those people whose talents can best be met by the Institute’s resources. . . . ”

2014 Women at MIT from MIT web site

<http://web.mit.edu/fnl/volume/264/numbers.html>



Large discrepancy from undergraduates to faculty!
⇒ A problem in growing the number of women students in engineering: small number of women faculty of engineering

too few women faculty, role models, counselors, advisors

Epilog: The Bottleneck Facing Women in Academic Engineering

At the beginning of the millennium:

Only 8.2% of PhDs granted in EE in the US during 1985–2001 were to women.

Percentage of Women in a few EE/ECE/EECS Faculties in 2002

University of Delaware	0%	UC Berkeley	11%
UCSD	2%	Penn State	11%
USC	4%	Stanford	11%
Cal Tech	5%	Cornell	13%
UT Austin	5%	University of Washington	20%
Princeton	7%	Duke	30%
University of Michigan	7%		

By 2010,

Institution	% women	total faculty
CalTech	19.2%	13
Duke	18.5%	27
University of Washington	17.5%	40
UCLA	13.0%	46
U Wisconsin	13.0%	38.5
RPI	12.8%	39
MIT	12.0%	151
Georgia Tech	11.4%	114
Texas A&M	11.1%	72
Princeton	10.9%	27.5
Purdue	10.8%	83
Rice	10.0%	20
U Michigan	9.8%	71
UC Berkeley	9.8%	40.5
Top 50 Average (2007)	9.7%	
Cornell	8.8%	34
Stanford	8.6%	41.5
Carnegie-Mellon	8.2%	49
U Illinois	8.2%	85
Northwestern	7.8%	51
NC State	7.4%	54
U Maryland	6.8%	62
UT Austin	5.0%	68
USC	4.9%	61
UCSD	3.8%	52

↑ 10.5%, 42.5 in 8/2010

Rigorous statistics [Donna J. Nelson and Christopher N. Brammer, *A National Analysis of Minorities in Science and Engineering Faculties at Research Universities: Second edition*, January 2010]:

Table 11. Women in the Academic Pipeline*

Discipline	Students				Departments 1 - 100 FY2007			
	BS2004	BS2005	PhD86-95	PhD96-05	asst	assoc	prof	all
Chemistry	51.0%	51.7%	26.3%	32.4%	21.2%	19.6%	9.7%	13.7%
Math	46.1%	44.9%	22.5%	28.7%	26.8%	18.4%	7.1%	12.9%
Computer Sci	24.7%	22.0%	19.8%	21.2%	20.0%	11.6%	10.3%	13.2%
Astronomy**	41.5%	42.4%	15.2%	22.7%	25.3%	21.6%	12.3%	15.8%
Physics	21.6%	21.1%	10.8%	14.3%	16.8%	13.4%	6.1%	9.1%
Chemical Engr	35.6%	36.7%	17.1%	23.7%	24.2%	17.6%	7.3%	12.6%
Civil Engr	24.1%	23.9%	12.7%	22.0%	24.7%	14.5%	7.1%	13.0%
Electrical Engr	14.0%	12.9%	8.6%	12.3%	15.5%	12.5%	5.7%	9.5%
Mechanical Engr	13.7%	13.2%	7.3%	8.4%	18.0%	11.9%	4.4%	8.8%
Economics	32.5%	31.5%	25.7%	30.2%	30.8%	20.3%	8.7%	16.3%
Political Science	51.1%	51.0%	32.8%	38.9%	37.0%	29.3%	17.6%	26.1%
Sociology	71.5%	70.5%	53.4%	60.8%	56.1%	45.7%	28.2%	39.8%
Psychology	77.8%	77.8%	59.1%	67.8%	48.5%	43.9%	29.5%	37.3%
Biological Sci	62.5%	62.2%	39.6%	46.3%	35.0%	30.0%	17.4%	24.4%
Earth Sciences	42.1%	41.9%	22.5%***	31.8%	28.2%	20.9%	11.3%	16.5%

*Females were 50.7% of the 2006 US population. **Top 40 departments. ***1995 data only.

Table 12. Female Professors by Rank and Year at Top 50 Departments

Discipline	FY2002*				FY2007			
	Assistant	Associate	Full	All Ranks	Assistant	Associate	Full	All Ranks
Chemistry	21.5%	20.5%	7.6%	12.1%	21.7%	21.3%	9.7%	13.7%
Math	19.6%	13.2%	4.6%	8.3%	28.0%	15.5%	7.2%	12.1%
Computer Sci	10.8%	14.4%	8.3%	10.6%	19.5%	11.3%	11.5%	13.5%
Electrical Engr	10.9%	9.8%	3.8%	6.5%	14.5%	14.1%	6.2%	9.7%
Mechanical Engr	15.7%	8.9%	3.2%	6.7%	18.2%	12.0%	4.9%	9.0%
Physics	11.2%	9.4%	5.2%	6.6%	17.5%	12.6%	6.8%	9.5%
Civil Engr	22.3%	11.5%	3.5%	9.8%	25.3%	14.3%	7.1%	12.7%
Chemical Engr	21.4%	19.2%	4.4%	10.5%	23.7%	17.8%	8.3%	12.9%
Astronomy**	20.2%	15.7%	9.8%	12.4%	25.3%	21.6%	12.3%	15.8%
Economics	19.0%	16.3%	7.2%	11.5%	30.7%	16.0%	8.5%	15.1%
Political Science	36.5%	28.6%	13.9%	23.5%	35.9%	30.1%	17.4%	25.6%
Sociology	52.3%	42.7%	24.3%	35.8%	57.9%	45.6%	28.0%	39.7%
Psychology	45.4%	40.1%	26.7%	33.5%	44.9%	41.9%	29.9%	36.0%
Biological Sci	30.4%	24.7%	14.7%	20.1%	36.0%	30.9%	17.7%	24.8%
Earth Sciences	not available				28.6%	21.7%	10.6%	16.1%

*Chemistry and astronomy data are for FY2003. **Top 40 departments

Serious problems of pipeline and pool.

Critical bottleneck: engineering faculty —

★ small numbers can have a major impact ★

One EE professor was the PhD supervisor of

- 4% of *all* US women EE Professors in 1996
- 3.3% of women EE professors in top 50 schools in 2002
- 7.6% of all female EE *Full* Professors in 2002
- 2.4% of all women IEEE Fellows in 2002

But only *5 women!* includes first woman tenured in EE at Cornell and CalTech, first woman Full Professor in EE at BU, three Associate Deans (University of Washington, UCSD)

Small increases \Rightarrow large %, more role models, more diverse experience, more effective faculty \Rightarrow *draw more students*

Are things any better in 2017?

I retired in 2013, I don't know, *but*

School of Engineering
Department of Electrical Engineering
Faculty Demographics by Gender
September 1, 2015

School of Engineering				
School	Rank (broad)	Female	Male	Total
Engineering	Assistant Professors	11 22%	40 78%	51 100%
	Associate Professors	9 18%	41 82%	50 100%
	Professors	18 11%	139 89%	157 100%
Total		38 15%	220 85%	258 100%

Department of Electrical Engineering				
Department	Rank	Female	Male	Total
Electrical Engineering	Assistant Professor	3 38%	5 63%	8 100%
	Associate Professor		5 100%	5 100%
	Professor	2 5%	36 95%	38 100%
Total		5 10%	46 90%	51 100%

(actually it's $5/51=9.8\%$)

UCSD $5/52=9.6\%$ ↑ Caltech $3/19=15.8\%$ ↓ U Washington 17% ↓

Thoughts on what works and challenges

- Active faculty recruiting across a wide spectrum:

Fair and open searches (Denice Denton wrote the book.)

The richer the pool discovered in a search, the better the final candidates. (Basic principle of optimization)

It's a search committee, not an envelope-opening committee.

Denice Denton

Leadership challenge¹ — dealing with residual and often unconscious bias, educating search committees (who often see no problem reproducing themselves)

lip service not enough

- Creating a respectful, productive, and fulfilling environment

¹Schools with best records had activist Presidents and Provosts!

Acknowledgements

Material draws heavily from the papers of Emily L. Wick in the possession of her niece, Laura Hallowell (Wellesley '64), *The Technique*, the MIT Museum archives, email exchanges, and the old Web pages of the Association of MIT Alumnae (AMITA) beginning at <http://alumweb.mit.edu/groups/amita.old/esr/swallow.html>

Unfortunately there seem to be no links to the historical material at the modern AMITA Website <http://amita.alumgroup.mit.edu>

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