

The APS 2007 Meeting on Gender Equity in Physics

American Physical Society

March 13, 2008

Arthur Bienenstock

Fundamental Goal of the Meeting

- To increase the number of women physicists significantly by:
 - Assessing the current status of women in physics and gender-related issues
 - Generating recommendations of best practices to attract, hire, retain and increase women faculty and scientists in physics
 - Generating recommendations of best practices to recruit, retain, mentor and educate students that represent the next generation

Some Meeting Particulars

- May 6-8, 2007 – American Center for Physics
- Organizer – Committee on the Status of Women in Physics (CSWP)
- Chairs
 - Norah Berrah – CSWP chair
 - Arthur Bienenstock – then APS President-elect
- Funding
 - Department of Energy
 - National Science Foundation

Some Meeting Particulars - 2

- Attendees
 - 50 chairs of research university physics departments
 - 14 national laboratory managers
 - DOE and NSF staff
 - APS staff
- Why Bienenstock?
 - OSTP experience indicates that we must increase participation of women and under-represented minorities in S&T
 - Introductory talk

Scientific and Technological Workforce

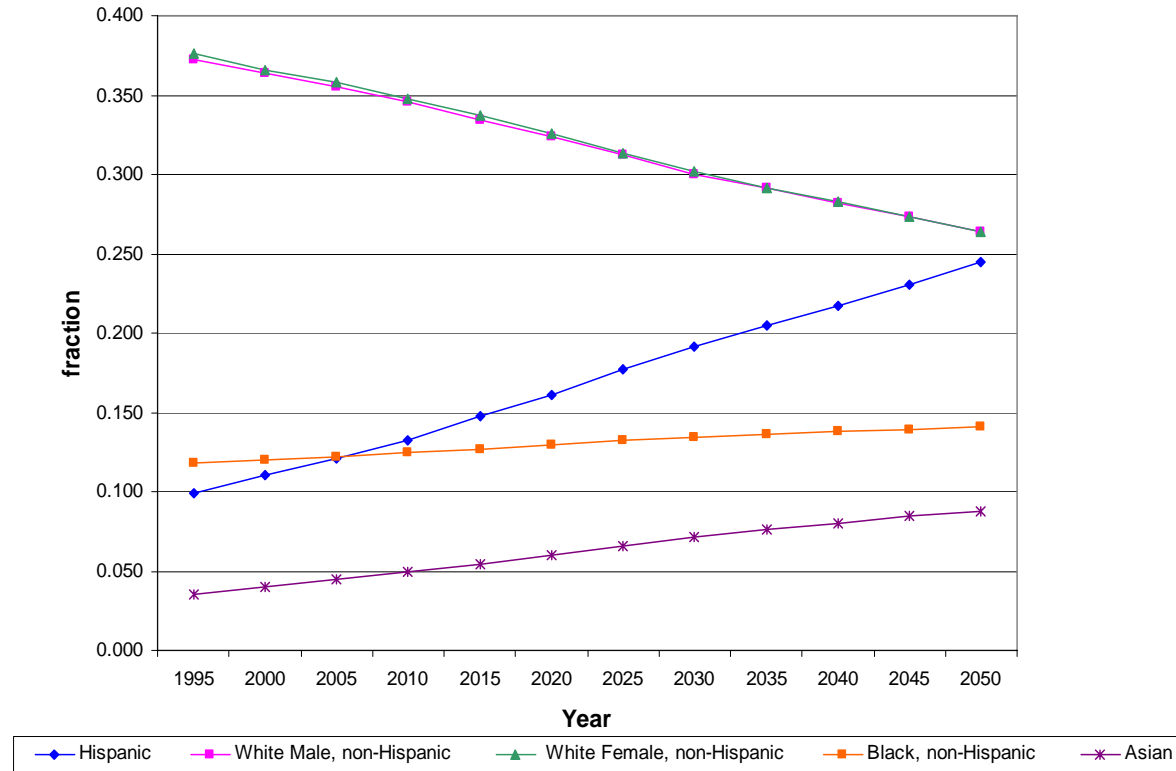
- View From OSTP – 1997-8 - 1

- Perception that science & technology very important to economy
 - Over 50% of productivity increase over past half century ascribed to science and technology
- Very low unemployment rate
- Statements that unavailability of science and technology workers is limiting economic growth
- Requests for increases in H-1B visas
- Must increase productivity to maintain standard of living as population ages and ratio of workers to retirees declines

Bureau of the Census

Demographic Projections - 18-64 year olds

Figure 1-3.



Percent of 22 Year Olds Earning Science & Engineering Degrees - 1995

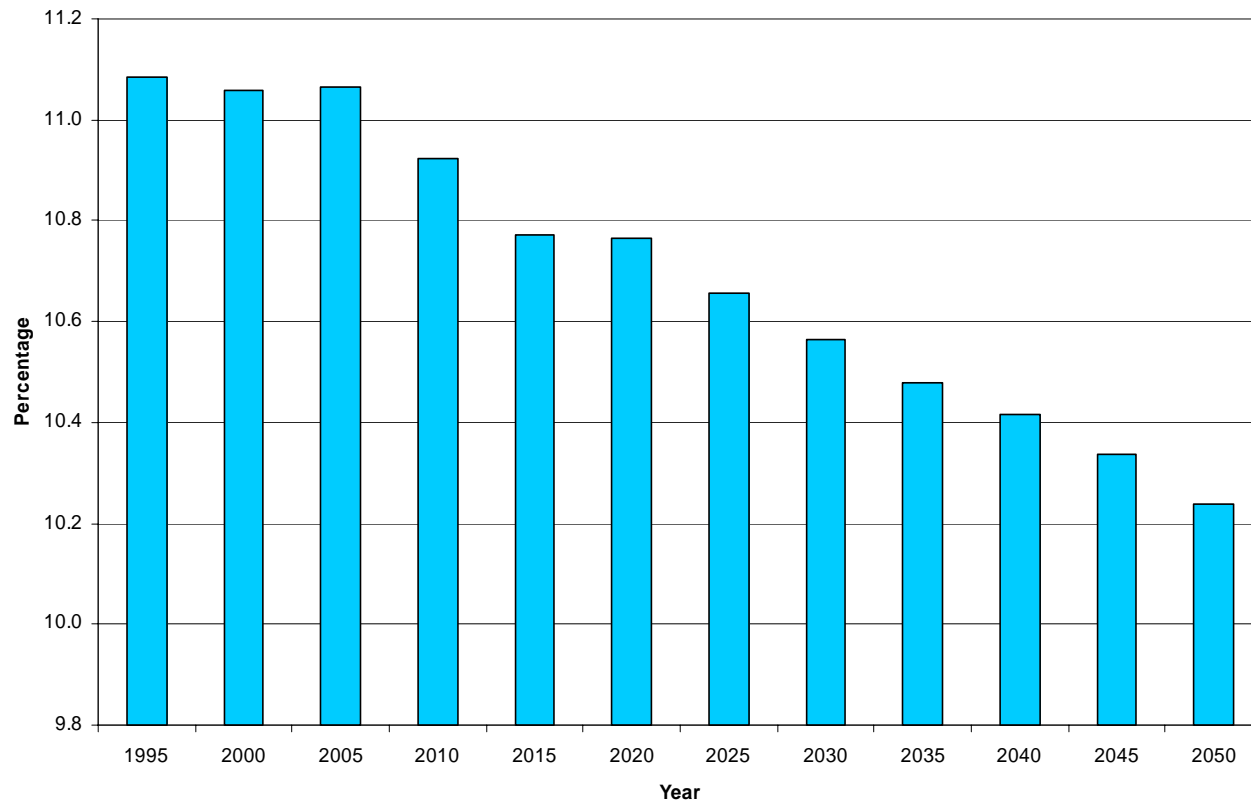
- African-Americans - 5.7
- Asians - 21.6
- Hispanic - 4.8
- non-Hispanic White Females - 11.8
- non-Hispanic White Males - 13.8

Projections of Future Situation

- **If** participation rates of all the groups remain the same and demographic projections are correct,
- **then** fraction of workforce that is ST&E will decrease significantly at time when increase is likely to be needed.

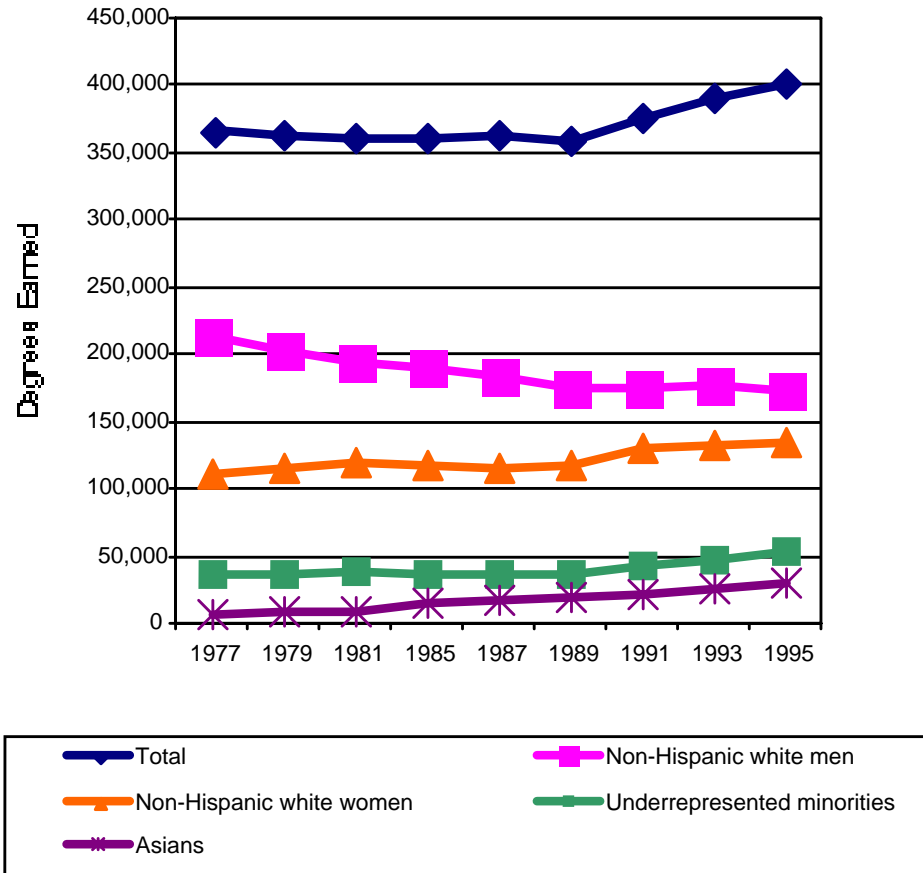
Calculated Fraction of 22 Year Olds Receiving Bachelors Degrees in Science & Engineering if Award Rates of Various Groups Remain Constant

Figure 1-4.



There has been progress

Figure 1-14. Earned BS/BA degrees in ST&E fields, by Race/Ethnicity, 1977-1 (U.S. citizens and permanent residents)



Bill Gates Quote in Today's New York Times

- "The shortage of scientists and engineers is so acute that we must do both: reform our education system and our immigration policies."

US Women in Physics

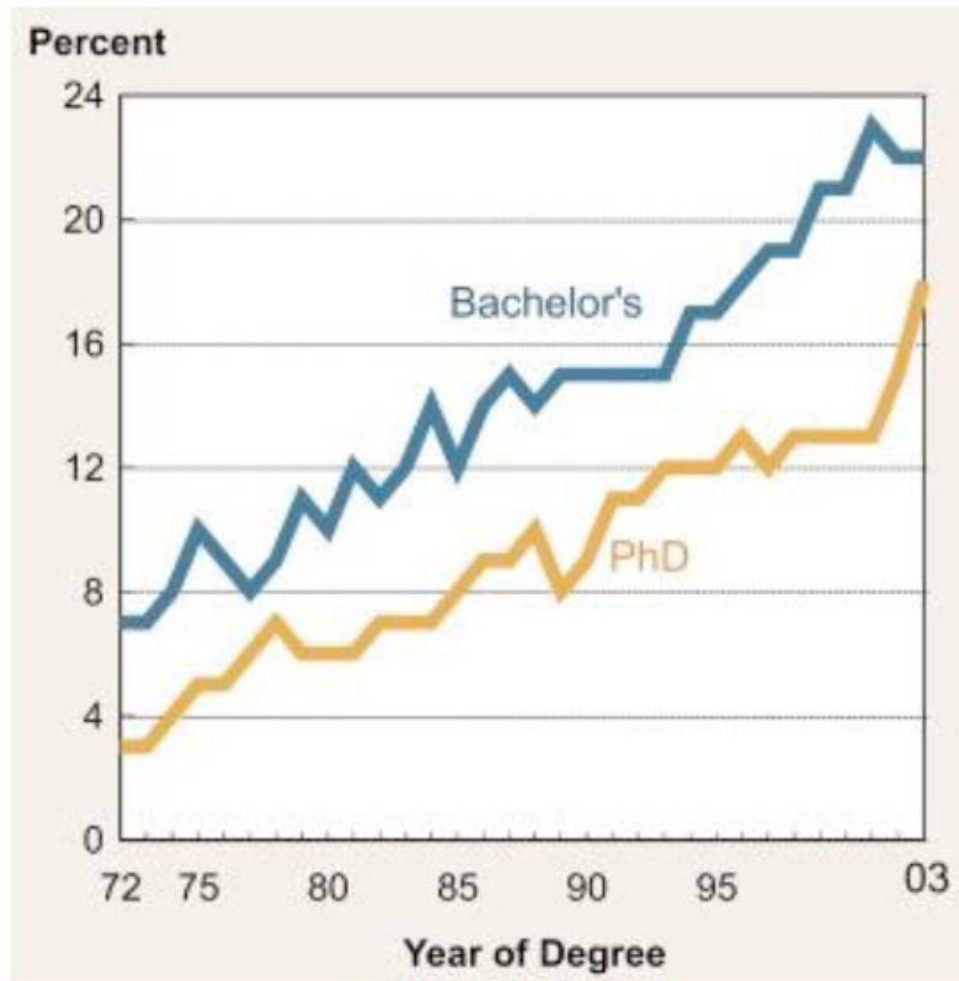


Table 6. Percent of faculty positions in physics held by women, 1994, 1998 and 2002.

| | 1994 % | 1998 % | 2002 % |
|---------------------------|-----------|-----------|-----------|
| Academic Rank | | | |
| Full professor | 3 | 3 | 5 |
| Associate professor | 8 | 10 | 11 |
| Assistant professor | 12 | 17 | 16 |
| Instructor / Adjunct | N/A | N/A | 16 |
| Other ranks | 8 | 13 | 15 |
| Type of Department | | | |
| PhD | 5 | 6 | 7 |
| Master's | 7 | 9 | 13 |
| Bachelor's | 7 | 11 | 14 |
| Overall | 6 | 8 | 10 |

Recruiting Female Students

- Actively recruit physics majors
 - Inform them of broad B.S. and M.S. opportunities
 - Only 1 in 7 physics B.S. holders go on to PhD
 - Many other important functions in society
- Design physics major that start in sophomore year
- Encourage undergrads to work in labs.
- Design major that includes physics education courses
 - Terrible shortage of credentialed high school physics teachers
- Chairs should hold meetings with women students to assess environment for them.

Building A Respectful Environment

- Ensure that all policies (e.g., hiring, tenure, promotion, harassment, space allocation, teaching assignments) are transparent and easily available
- Ensure that harassment policies are clear, equitable and enforced uniformly
- Develop policies that support a work/life balance
 - Dependent care leaves
 - Don't schedule meetings late in the day

Recruiting Practices

- Actively recruit women
 - Keep track of women in the pipeline
 - Make sure they know you want them to apply
- Advertise broadly
- Invite more women to interview
- Be creative regarding dual career families
 - Women physicists are much more likely to marry scientists than are men

Female Retention

- Provide new faculty with more than one mentor
- Train mentors
- Stopping the tenure clock for family leave
- Nominate women for small and large awards

Action Items for Funding Agencies

Topics

- Building a Diverse Community
- Improving the Grant Process
 - Early Funding
 - Grant Structure and the Proposal Process
 - Proposal Review
- Integrating Family Care
- Outreach/Pipeline Building

Bienenstock Comment

- The recommendations w.r. faculty and students would make good sense even if gender were not an issue. They are good management practices.