Lecture 33
Science, Education & Gender

Overview

- ☛ Public understanding
- ☛ Curriculum Development
- ☛ Access
- ☛ Gender

Public understanding:

- ☛ Public Interest ~ policy issues
- ☛ Public Interest ~ education
- ☛ Public understanding ~ terms & concepts
- ☛ Public understanding ~ scientific inquiry
- ☛ Most followed news stories 1990s

News stories 2001

- ☛ More recent popular science stories
  - ☑ Sequencing of the human genome (16% followed closely)
  - ☑ Gas and oil prices
- ☛Science & technology account for 2% of public news reading

Survey of public understanding

- ☛ More than 70 percent of those interviewed knew that:
  - ☑ Oxygen comes from plants.
  - ☑ The continents have been moving for millions of years and will continue to move in the future.
  - ☑ Light travels faster than sound.
  - ☑ The Earth goes around the Sun (and not vice versa).
  - ☑ All radioactivity is not man-made.
- ☛About one-half or fewer of the respondents knew that:
  - ☑ The earliest humans did not live at the same time as dinosaurs.
  - ☑ It takes the Earth one year to go around the Sun.
  - ☑ Electrons are smaller than atoms.
  - ☑ Antibiotics do not kill viruses☐
  - ☑ Lasers do not work by focusing sound waves.

Curriculum development:

- ☛ Sputnik, 1958, crisis year
- ☛ National Science Foundation increased funding for science education
- ☛ Developed new curricula

Science programs, 1960s-70s

- ☛ BSCS Biology

- ☛ PSSC Physics
- ☛ Chem Bond & Chem Study
- ☛ MACOS (Man A Course Of Study)
- ☛ New Math

Access to science education

- ☛ US being overtaken in SE degrees
  - ☑ More women in non-US universities
- ☛ Increases in women & URM modest
- ☛ Declines in some areas
- ☛ Rise in need for remedial education
- ☛ Master teacher program in Congress caught in political differences

US population

- ☛1/4 URM--Hispanic, African American, Native American (22%)
- ☛50% middle of the next century

Workplace:

- ☛75% entering will be minorities and women
- ☛2000, women 47% of workforce
- ☛2000, minorities and immigrants 32% of U.S. jobs

URM in Health Professions

- ☛10.3% enrollment in medical schools
- ☛3.5% of health faculty and researchers
- ☛7% of physicians
- ☛8% of nurses and physician assistants
- ☛3% of allied health professionals
- ☛5% of dentists

URM PhDs in Science and Engineering

- ☛Less than 10% of total
- ☛AA, less than 2% and declining

Charts

- ☛ PhDs in S&E (% new PhDs)
- ☛ Percent URM PhDs in S&E, 1991 Doctoral Recipients
- ☛ Median Salaries

<u>Women in science</u>

- ☛ 40-50% labor workforce
- ☛ 10% and below in science and engineering

Charts

- ☛ Graduate enrollment in S&E
- ☛ Full Professors, 1994
- ☛ Women in Physics (1990)
- ☛ Salaries

Explanation of the numbers:

- ☛Gender and race stereotyping
- ☛Overt gender and race bias
- ☛Hidden gender and race bias
- ☛Affirmative action and correction
  - ☑ Affirmative action programs
  - ☑ Test score adjustments
  - ☑ Debate over gender balance in schools

Gender and science

- ☛Feminist critique of science emerges in the 1970s
- ☛Schools of thought
  - ☑ 1. science is not socially/gender constructed
  - ☑ 2. some science is socially/gender constructed
  - ☑ 3. all science is socially/gender constructed

Examples

- ☛Biology & medicine
- ☛Caroline Merchant, *Death of Nature*

Logical positivists

- ☛Science is not socially/gender constructed
- ☛Sheila Widnall, MIT
- ☛Mary Good, National Science Board

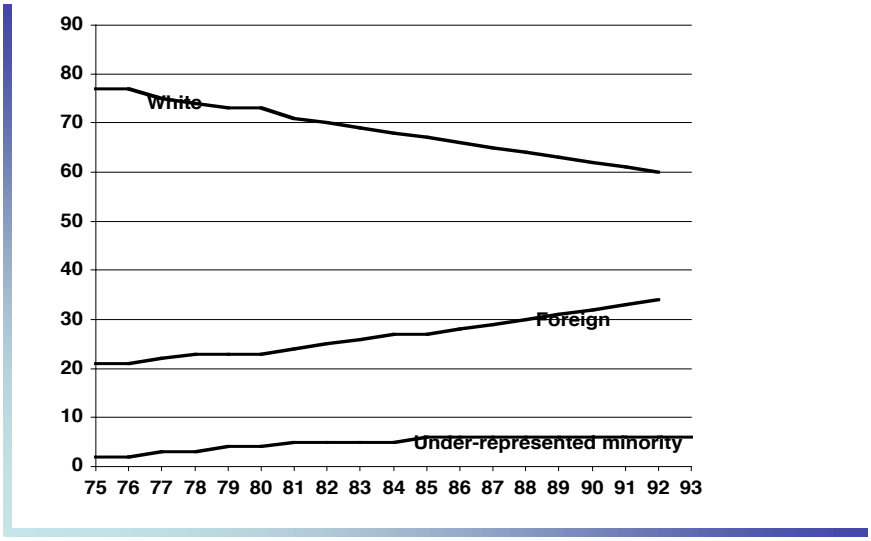
Middle of the road position

- ☛Some science may be socially/gender constructed
- ☛Anne Fausto-Sterling, *Myths of Gender* (1985)
- ☛Evelyn Fox Keller, *Reflections on Gender and Science* (1985)
- ☛Donna Harraway, *Primate Visions* (1989)

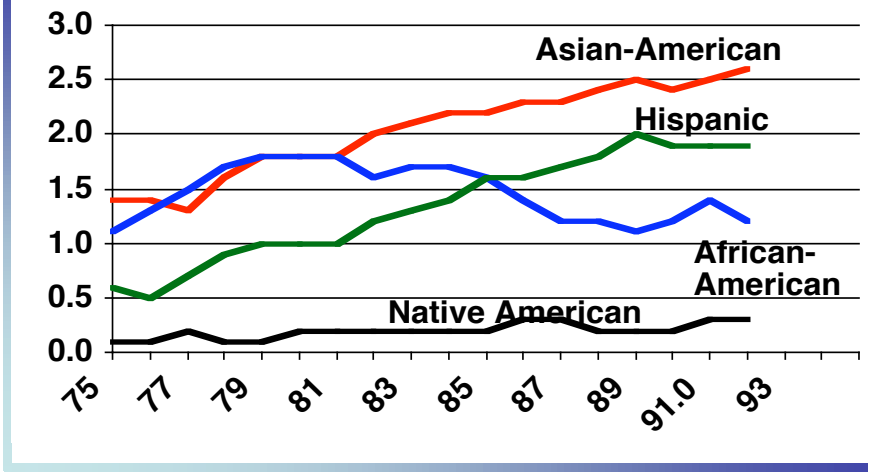
Social constructionists

- ☛Science can be no more than the individuals who do science
- ☛Sandra Harding, *The Science Question in Feminism* (1986)

PhDs in S&E (% new PhDs)

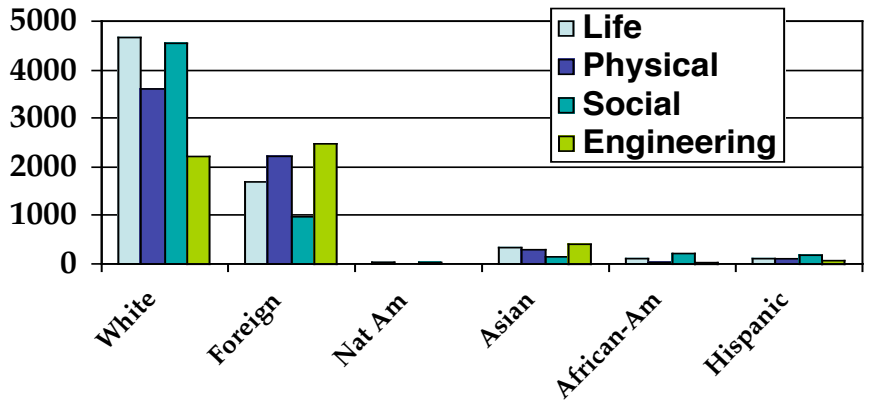


Percent URM PhDs in S&E

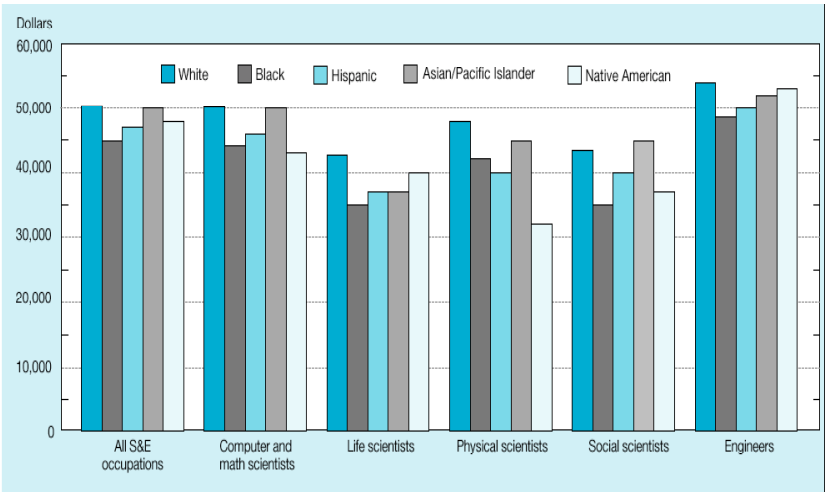


1991 Doctoral Recipients

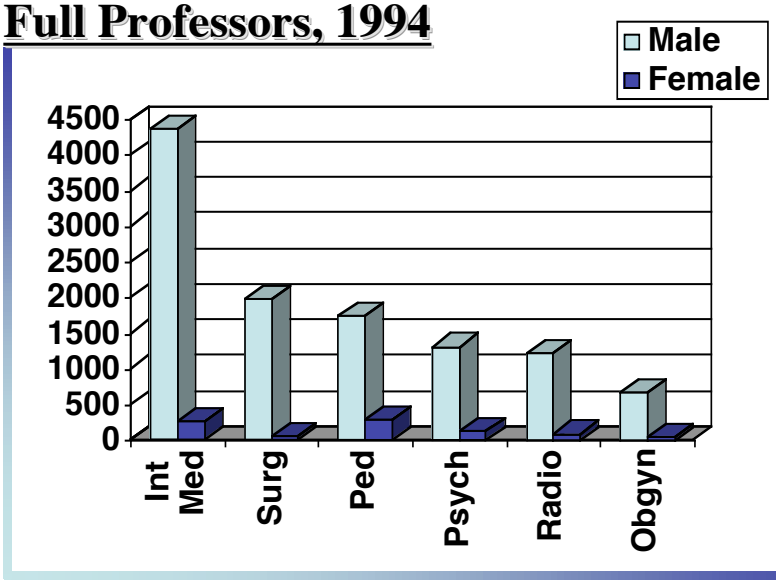
	White	Foreign	Nat Am	Asian	African-Am	Hispanic
Life	4657	1686	19	324	116	126
Physical	3593	2211	14	306	53	99
Social	4563	961	21	154	231	197
Engineering	2218	2473	6	401	55	59

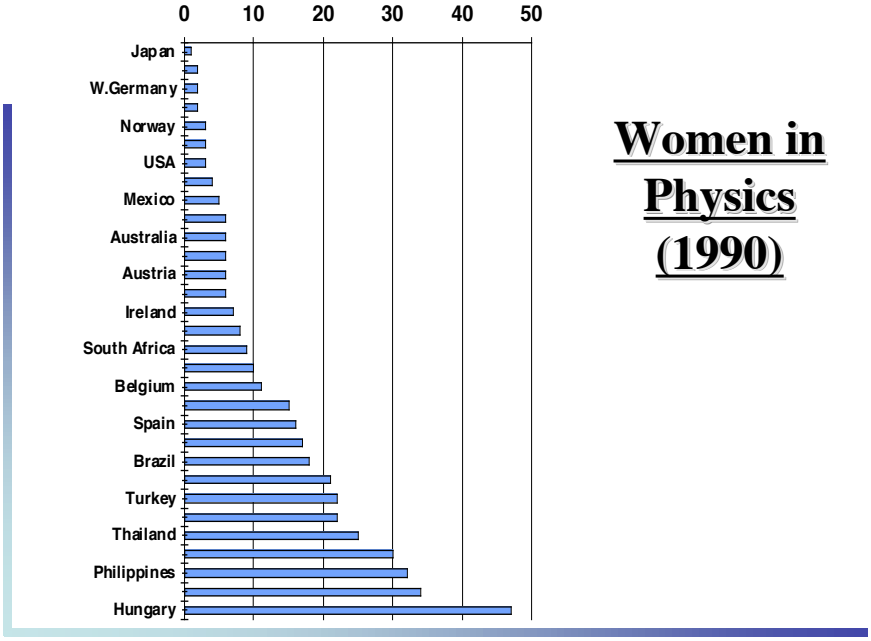


Median Salaries



Full Professors, 1994





Women in Physics (1990)