Creating Change in Scientific Institutions through Subversion, Revolution (Title IX!!) & Climate Change

Debra Rolison
U. S. Naval Research Laboratory
Washington, DC

rolison@nrl.navy.mil
Mentoring — What is it really?

Mentor: a wise elder to whom Odysseus entrusted his son, Telemachus, when he left for the Trojan War.

Mentoring today? Equated to wise counsel from a trusted (typically older) voice of experience.
XX success in business correlates with active sponsorship from a trusted (typically older) insider. An outcome that fits our (mis)perception of mentoring.

Mentor ≠ Sponsor/Champion

Catalyst report (October 2011)
Exploding Myths About Why Women’s Careers Lag Men’s

Study of high-potential women & men with MBAs reveals that “doing all the right things” to get ahead works well for men, but does not provide as great an advantage for women:

→ XX rewarded for performing well
→ XY rewarded for potential

XX success in business correlates with active sponsorship from a trusted (typically older) insider.


“Telemachus and Mentor” Illustration for “Les Aventures de Télémaque” (1699)
But what is mentoring really?  What is its currency?

Information $\rightarrow$ what one needs to work smarter not harder

...and information should be sought from a spectrum of sources, not just a trusted (typically older) voice of experience

Remember #1:  H. sapiens is lazy ...

Information needs to flow to/fro:  Advertise!!

Remember #2:  H. sapiens is lazy ...

Confidence = Competence

(don’t feel confident yet?  Fake it ‘til you feel it!)
the most general interpretation of entropy is "missing information"—a measure of our ignorance about a system.

We already know that without an input of energy and effort... things go from bad to worse.
The Face of American Science Technology Engineering Math

How good can S&E be when it’s missing two-thirds of its talent?

Is Not the Face of America

Can we really claim American science is a meritocracy??

“Who teaches matters”

C.A. Trower, R. Chait

Harvard Magazine 104 (2002) 33
Why has the “problem” of women in science not been solved?

“I sincerely doubt that any open-minded person really believes in the faulty notion that women have no intellectual capacity for science and technology.

Nor do I believe that social and economic factors are the actual obstacles that prevent women’s participation in the scientific and technical field.”

“The main stumbling block in the way of any progress is and always has been unimpeachable tradition”

Wolf-laureate Chien-Shiung Wu
. . . and the tradition of Western science? “a world without women”

• academic culture traces it origins to the monastery and the ecclesiastical schools

• vestiges of that tradition still cling to the “ideal” of a dedicated academic life

• this “ideal” requires either a monastery or some other support infrastructure: i.e., a wife

• such is simply no longer life in today’s world … it certainly is not an option open to most women

Albrecht Dürer’s “Adam and Eve” … retouched by Kathy Grove to remove Eve

D.F. Noble, A World without Women, Knopf (1992)
The crux of the problem → departmental & scientific culture as exemplified by its reward structure

Point

The university system for all its warts does, in fact, serve society very well in many ways and produces people who do great science.

Counterpoint

So (the expletive deleted) what! We’ve not done the control experiment (and that’s bad science) … does that mean the university system won’t serve society—*and science*—better when it changes and integrally includes female and minority scholars?? … and why should taxpayers support discriminatory institutions?
Establish your S&T street cred first!

Start small!

climate change via creating a functional, human-friendly, innovative & productive microclimate as an existence proof

Always in taste!

... especially when in a position of lesser power/status

1. But you’ve got to know the territory!
2. Take the long view

Subversion

Revolution

Establish your S&T street cred first!

“A little revolution now and then is a good thing” —Thomas Jefferson

Climate Change

Subversion? Revolution?? Climate Change???

1. But you’ve got to know the territory!
2. Take the long view

Always in taste!

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• Reassess the myths & traditions
• Learn & use social psychology

Start small!

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Subversion? Revolution?? Climate Change???
Time for “a little revolution”!

Is it time to “Title IX” U.S. S&E departments for their entrenched inability to increase the number of women represented on their faculties?

Rolison, C&EN, 13 March 2000

As a U.S. Federal Government employee, I signed an oath not to overthrow the U.S. Government, but I didn’t sign anything about not overthrowing the white-male paradigm in science...

The views about to be expressed are those of the author and are not necessarily those of the U.S. Naval Research Laboratory or the U.S. Department of Defense
A Title IX challenge to academe: Isn’t a millennium of affirmative action for white men sufficient?

Title IX, Education Amendments of 1972
Section 1681. Sex  (a) Prohibition against discrimination

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.

Section 1681. Sex  (b) Preferential or disparate treatment

Title IX may not be used to discriminate... but... “... this subsection shall not be construed to prevent the consideration in any hearing or proceeding under this chapter of statistical evidence tending to show that such an imbalance exists...”

http://www2.dol.gov/dol/oasam/public/regs/statutes/titleix.htm
Why Title IX? Because it works!  The statistics of small populations no longer apply for XX in (most) STEM disciplines

Percentage of degrees in STEM granted to women before (1970–1971) and 30 years after enactment of Title IX

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<thead>
<tr>
<th>Bachelor’s</th>
<th>1970-71 / 2001-02</th>
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<tbody>
<tr>
<td>Engineering</td>
<td>0.8 18.9%</td>
</tr>
<tr>
<td>Physics</td>
<td>6.7 22.6%</td>
</tr>
<tr>
<td>Geology</td>
<td>11.0 44.7%</td>
</tr>
<tr>
<td>Computer Science</td>
<td>13.6 27.6%</td>
</tr>
<tr>
<td>Chemistry</td>
<td>18.4 48.4%</td>
</tr>
<tr>
<td>Biological Sciences</td>
<td>29.1 60.8%</td>
</tr>
<tr>
<td>Mathematics</td>
<td>37.8 46.7%</td>
</tr>
<tr>
<td>Health Sciences</td>
<td>77.1 85.5%</td>
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<th>Master’s</th>
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<td>Engineering</td>
<td>1.1 21.4%</td>
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<tr>
<td>Physics</td>
<td>6.9 20.9%</td>
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<tr>
<td>Geology</td>
<td>9.7 39.7%</td>
</tr>
<tr>
<td>Computer Science</td>
<td>10.3 33.2%</td>
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<tr>
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<td>21.4 45.6%</td>
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<th>Doctorates</th>
<th>1970-71 / 2001-02</th>
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<tr>
<td>Engineering</td>
<td>0.6 17.3%</td>
</tr>
<tr>
<td>Physics</td>
<td>2.9 15.5%</td>
</tr>
<tr>
<td>Geology</td>
<td>3.4 28.5%</td>
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<tr>
<td>Computer Science</td>
<td>2.3 22.8%</td>
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</table>

Accumulated progress over time:
The “statistics of small populations” no longer apply

Percentage of Ph.D.s Earned by Women in Selected STEM Fields

APL News, The Back Page, Jan 2000
+ (*) 2007 Nelson Diversity Survey

![Graph showing percentage of Ph.D.s earned by women in selected STEM fields from 1967 to 1999.](image)

Percentage of Chemistry Degrees Earned by Women from 1967 to 1999

ACS Starting Salary Survey, 1999, American Chemical Society

Update: In 2010, 39% of U.S. Ph.D.s in Chemistry went to women
(total number of U.S. Ph.D.s in S&E are down)
Why do Congress & the White House care about the health of US S&T?

(2) “Augustine Report” (2005)

STEM Education is a National Security Imperative

“...the US need for the highest quality human capital in science, mathematics, and engineering is not being met.”

Recommendation

“...fund a comprehensive program to produce the needed numbers of science and engineering professionals as well as qualified teachers in science and math.”

(1) Science and Math Education
(2) Investment in Basic Research ...

are American Competitiveness and Security Imperatives!!

“...the scientific and technological building blocks critical to our economic leadership are eroding at a time when many other nations are gathering strength.”
In my view, if Title IX can do that on the playing field it should certainly do so in the classroom, where its help was originally directed... This week, I will offer another amendment to the NSF authorization bill. I want the National Academy of Sciences to report on how universities support their math, science and engineering faculty with respect to Title IX. This can cover hiring, promotion, tenure, even allocation of lab space.

The Federal government should share some of the spotlight. I will request that the Academy’s report also detail how many Federal grants for scientific research are given to men and women and why. It’s time Congress quantified and qualified the realities facing women in the sciences. Only then can we find fully effective solutions.

Gender Issues: Women's Participation in the Sciences Has Increased, but Agencies Need to Do More to Ensure Compliance with Title IX


GAO visited 7 research-intensive universities and 6 DOE national labs

Key GAO finding re: Title IX oversight by funding agencies

“much of the leverage afforded by this law lies underutilized in the science arena, even as several billion dollars are spent each year on federal science grants”

The primary GAO recommendation to the Secretaries of Energy and Education, the Administrator of NASA, and the Director of the NSF:

“... take actions to ensure compliance reviews of grantees are conducted as required by Title IX”... i.e., *proactive* not reactive reviews

In response to the GAO report

NSF, DOE, and NASA (slowly began) conducting Title IX compliance reviews of research-intensive universities

http://www.sciencemag.org/content/315/5820/1776.full.pdf
Congress to NASA:
Perform two proactive Title IX compliance reviews every year

NASA Title IX Compliance Program

- What are NASA’s roles and responsibilities under Title IX?
- Why does NASA conduct Title IX compliance reviews of its grantee institutions?
- How does NASA select grantees for compliance reviews?
- How does NASA assess compliance?
- What kinds of technical assistance has NASA offered to grantees?
- What steps would NASA take if an institution were found to be non-compliant?
- What promising practices has NASA found among grantees?
- In what other Title IX related activities is NASA involved?
(the Feds are slow and H. sapiens is lazy) So what’s next?

Subversion . . . a.k.a. how to up the ante

• Educate faculty and students re implicit bias: as a society we (men and women) overvalue the competence, performance, and productivity of men (white men) and undervalue that of women & people of color.

Subversion

Always in taste!

... especially when in a position of lesser power/status

Revolution

1. But you’ve got to know the territory!

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Climate Change

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— Thomas Jefferson

climate change via creating a functional, human-friendly, innovative & productive microclimate as an existence proof
In general:

level of prestige

# women

— A telling statistic —
even elementary school kidlets know the score

More than 1,000 Michigan elementary school students were asked to describe [in 2000, not 1975 or 1950] what life would be like if they were born a member of the opposite sex ... 


> 40% of the girls saw positive advantages to being a boy:
better jobs, more money, and definitely more respect

95% of the boys saw no advantage to being female

WHY?? gender schemas/implicit associations—unconscious mechanisms by which men and women assign higher “value” to men and lesser “value” to women

- Banaji/Greenwald: Implicit Association Test
  https://implicit.harvard.edu/implicit/demo/measureyourattitudes.html
We’re scientists! Time to do an experiment!!

S&T professionals just need to get over our myth of objectivity

Implicit Association Test

Mahzarin Benaji
Harvard University
Anthony Greenwald
University of Washington

https://implicit.harvard.edu/implicit/demo/measureyourattitudes.html

Measure Your Attitudes

I am aware of the possibility of encountering interpretations of my IAT test performance with which I may not agree. Knowing this,

I WISH TO PROCEED

(the Feds are slow and H. sapiens is lazy) So what’s next? Subversion . . . a.k.a. how to up the ante

- Educate faculty and students re: implicit bias: as a society we (men and women) overvalue the competence, performance, and productivity of men (white men) and undervalue that of women & people of color

- Put to rest the myth that a scientist's best creativity and productivity occurs in early career: the tenure clock is an artifice and especially damaging to young women trying to integrate career and family ... time to re-think tenure?

- Put to rest the myth of 80-h weeks: Survey of UC tenured faculty shows ~55-h/week gets the job done, even for faculty with children (Mason, Gouldin)
Late one evening Ernest Rutherford found a diligent student still at work in his lab. “Do you work in the mornings, too?” he asked. “Yes,” replied the student, expecting to be commended for his stamina. “But when,” Rutherford asked, amazed, “do you think?”

Under Rutherford’s directorship of the Cavendish, Nobel Prizes were awarded to Chadwick for discovering the neutron, Cockcroft and Walton for splitting the atom using a particle accelerator, and Appleton for demonstrating the existence of the ionosphere.
Educate faculty and students re implicit bias: as a society we (men and women) overvalue the competence, performance, and productivity of men (white men) and undervalue that of women & people of color.

Put to rest the myth that a scientist's best creativity and productivity occurs in early career: the tenure clock is an artifice and especially damaging to young women trying to integrate career and family ... time to re-think tenure?

Put to rest the myth of 80-h weeks: Survey of UC tenured faculty show ~55-h/week gets the job done, even for faculty with children (Mason, Gouldin)

Put to rest the myth of critical mass: 15%? No!! \geq 35%
What if it isn’t a critical mass that is needed? … but a percolation threshold?

~15% is also where one needs to be to reach a percolation threshold in a heterogeneous 3D transport problem.

Once over the threshold, the small amount of “other” in the sea of majority thinks it represents the whole and electron/ion/heat transfer occurs with impunity, as does communication and a sense of community, if we are talking about women in a man's world & minorities in a white world.

Is reaching a contiguous network the better goal??

D.R. Rolison: “Women in the Chemical Workforce, National Academy Press (Washington, DC) 2000, Ch. 6

The good news about a percolation mechanism: women *and* men—whites *and* underrepresented minorities—can be members of such networks.
Really upping the ante

- Create professional society or foundation equivalents to Title IX—e.g., the American Chemical Society could award Petroleum Research Fund (PRF) grants to faculty from underrepresented groups in all departments, but otherwise only to non-URG faculty from departments with environments that have attracted women and URG above the historical brick wall of 10%.

- Do diversity audits of S&E departments (á la APS)—highlight/praise/reward departments that create environments appealing to women and minorities.

- Market dynamics: Encourage undergraduates to give diversified (human) departments & research groups their first attention when looking at graduate school—create a Faculty Diversity Index for all tenure-track faculty in research universities.

Rolison, *Women, Work & the Academy*, Barnard College, 2004
<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Years</th>
<th>Employers</th>
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<tbody>
<tr>
<td>David N. Blauch</td>
<td>California Institute of Technology</td>
<td>1991–1993</td>
<td>Davidson College</td>
</tr>
<tr>
<td>Carol A. Bessel</td>
<td>SUNY at Buffalo</td>
<td>1993–1995</td>
<td>Villanova U→NSF↔DOE</td>
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<tr>
<td>Karen E. Swider</td>
<td>University of Pennsylvania</td>
<td>1994–1997</td>
<td>Naval Research Laboratory</td>
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<td>Elizabeth J. Osburn-Atkinson</td>
<td>University of Arizona</td>
<td>1996–1997</td>
<td>Linfield College</td>
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<tr>
<td>Jeffrey W. Long</td>
<td>University of North Carolina</td>
<td>1997–2000</td>
<td>Naval Research Laboratory</td>
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<td>Michele L. Anderson</td>
<td>University of Arizona</td>
<td>1997–2000</td>
<td>Office of Naval Research</td>
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<td>Jeremy J. Pietron</td>
<td>University of North Carolina</td>
<td>1999–2003</td>
<td>Naval Research Laboratory</td>
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<tr>
<td>Jean Marie Wallace</td>
<td>North Carolina State University</td>
<td>2000–2004</td>
<td>Naval Research Laboratory</td>
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<tr>
<td>Todd McEvoy</td>
<td>University of Texas-Austin</td>
<td>2003–2004</td>
<td>Air Products, Inc.</td>
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<td>Wendy S. Baker</td>
<td>Texas A&amp;M University</td>
<td>2002–2004</td>
<td>Southwest Medical Center</td>
</tr>
<tr>
<td>Michael S. Doescher</td>
<td>University of South Carolina</td>
<td>2002–2005</td>
<td>Benedictine College</td>
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<td>Anne E. Fischer</td>
<td>Michigan State University</td>
<td>2004–2006</td>
<td>AAAS Fellow→SAIC/DARPA</td>
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<td>Amanda S. Harper</td>
<td>University of North Carolina</td>
<td>2004–2006</td>
<td>Fairfield University</td>
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<td>Katherine A. Pettigrew</td>
<td>Univ. of California-Davis</td>
<td>2004–2007</td>
<td>George Mason University</td>
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<tr>
<td>Justin C. Lytle</td>
<td>University of Minnesota</td>
<td>2005–2008</td>
<td>Pacific Lutheran University</td>
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<td>Christopher N. Chervin</td>
<td>Univ. of California-Davis</td>
<td>2006–2009</td>
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<tr>
<td>Megan B. Sassin</td>
<td>Univ. of California-Irvine</td>
<td>2007–2010</td>
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<td>Benjamin P. Hahn</td>
<td>University of Texas-Austin</td>
<td>2009–2012</td>
<td>Boston Scientific, Inc.</td>
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<td>Joseph P. Parker</td>
<td>University of North Carolina</td>
<td>2011–2014</td>
<td>Naval Research Laboratory</td>
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<td>Paul DeSario</td>
<td>Northwestern University</td>
<td>2011–</td>
<td></td>
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<tr>
<td>Irina R. Pala</td>
<td>Wayne State University</td>
<td>2012–</td>
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\[ \Sigma = 26 (13 XX) \]
People in academics can, and do, do it right—we should stop rewarding the ones who do it wrong, even if they bring in dollars (and renown) galore.

The first and highest rewards should go to those who fulfill their duties to what *is* the product of the U.S. university: the students!!

WHY? Brutal environments drain the joy out of doing science

... this country should want joyous scientists ...

✓ Reward those faculty who do do it right via grant funds/renewals, institutional resources, chocolate, etc.

... such faculty are indeed national treasures ...

REWARD THEM!!!
“... you’re only here because you’re a woman...”
when far-too-many men are “here” because they are men
(gender schemas (XY↑ XX↓) = accumulation of advantage for men)

“preferential hiring”
we’ve always had it: ~ 90% white men ... now, *that’s* a quota!!!
... or because we’ve had universities since the 11th century:
“Isn’t a millennium of affirmative action for white men sufficient??”

“I generally prefer carrots to sticks...”
... We are dealing with carnivores: Carrots are for vegetarians

“search committee”
manila-envelope-opening committee (disinterested in searching)
Leading (not store managing) Search committees must stop being envelope-opening committees: *Who teaches matters!*

- STEM departments need to recruit what they need … and they need women (don’t just stand around opening manila envelopes!)
  
  **U-Dub Faculty Recruitment Toolkit**
  http://www.washington.edu/admin/eoo/forms/ftk_01.html

- STEM units certainly recruit the men that they want to join their ranks

- Universities certainly understand that to build a competitive, functional team, recruitment is a necessity…

  *otherwise, the basketball coach gets fired*

---

Jacob Jordaens, *The Four Evangelists*, Antwerp, ca. 1625, oil on canvas, Musée de Louvre, Paris
and if search committees finally search and women apply, 

**Evaluators and evaluation committees need to:**

- **✓** recognize that there is bias in evaluating “others”

- **✓** We also need to recognize that it is human to identify (and therefore) pick the person who most reminds one of oneself

**Ex. 1:** “Blind” auditions can explain 30 to 55% of the increase in women winning orchestral jobs  
(1) *Washington Post*, 13 July 1997  
(2) M. Gladwell, *Blink*

**Ex. 2:** Even when the application packages are identical, university psychology professors prefer, 2:1, to hire “Brian” as faculty over “Karen”  
(1) *Washington Post*, 2 April 2000  

**Ex. 3:** Women applying for a Swedish Medical Research Council postdoctoral fellowship had to be 2.5 times more productive to receive the same competence score as the average male applicant  

**Ex. 4:** Even when the application packages are identical, XY *and* XX scientists prefer to hire “John” over “Jennifer as lab manager  
“... you’re only here because you’re a woman...”
when far-too-many men are “here” because they are men
(gender schemas (XY↑ XX↓) = accumulation of advantage for men)

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“We only want the *best* candidate...”
... “best” is in the eye of the beholder: make them define it!
Diversification of a University Faculty: Observations on Hiring Women Faculty in the Schools of Science and Engineering at MIT, N. Hopkins, MIT Faculty Newsletter 18 (2006) March-April, p. 713

http://web.mit.edu/fnl/volume/184/hopkins.html

Change without external pressure? ... not really ...

Number of Women Faculty in MIT’s School of Science (1963–2006)

Normal search protocols do not identify excellent non-white, non-male candidates
Subversion ... throw out the old dictionary

“... you’re only here because you’re a woman...”
when far-too-many men are “here” because they are men
(gender schemas (XY↑ XX↓) = accumulation of advantage for men)

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old: “choice”    new: decision

too many of the young women & men we would most like to see pursue a life in research universities & institutions make a decision not to do so, because they see no choice ...
So many U.S. citizens ask if they can postdoc with me that (alas) I have to turn most away ...

Nobel Laureate Rick Smalley voiced concerns regarding the low number of Americans earning STEM Ph.D.s and how difficult it was to attract U.S. citizens to postdoctoral research (including with him)

I countered with the following:

So many U.S. citizens ask if they can postdoc with me that (alas) I have to turn most away ...

Why the difference?

1. Our postdocs earn a professional, living wage ($74,800/year in 2014)
2. Compelling research in nanoscience & energy
3. Healthy microclimate emphasizing teamed research + active (not osmotic) professional development

The U.S. Navy's Nanoarchitectural Firm
The most notable fact that culture imprints on woman is the sense of our limits. The most important thing one woman can do for another is to illuminate and expand her sense of actual possibilities.

Adrienne Rich in *Of Woman Born*, 1976

...from the Declaration of Sentiments adopted at the Woman's Rights Convention in Seneca Falls in **1848**: "He closes against her all the avenues to wealth and distinction which he considers most honorable to himself."

“The most notable fact that culture imprints on woman is the sense of our limits. The most important thing one woman can do for another is to illuminate and expand her sense of actual possibilities.”

Seneca Falls, NY
Women’s Rights National Park
Amelia Bloomer (center) introduces Susan B. Anthony (left) to Elizabeth Cady Stanton (right)
[photo: C. Korzeniewski]


Sarah Glazer: “Gender and learning: Are there innate differences between the sexes?” *CQ Researcher* 2005, 15(19) 445–468 (20 May)

An example of why lawsuits don’t work in the STEM world

The outcome of the class-action suit against the University of Minnesota

$7 million in legal fees and settlements, including

- $1.6 million to settle Shyamala Rajender's lawsuit (originally filed because the Dept of Chemistry would not transfer her to the tenure track)
- $100,000 award to Ms Rajender (who became a lawyer!)
- $1.5 million in legal fees for her lawyers

— and that’s in 1980 $$

(2) http://www1.umn.edu/mnwomen/mwchistory.html

... & in 2000 after 20 years to improve the situation??

• of the 46 Assistant/Associate/Full Professors listed at http://www.chem.umn.edu/directory in 2000, 3 were women … 6.5%
Revisiting arguments that were boring the first time around ...

Lawrence H. Summers, then president of Harvard, suggested on 14 January 2005 that he believed that women's lagging progress in science and mathematics arises from differences in “intrinsic aptitude” between the sexes ...


Elizabeth Spelke, Professor of Psychology at Harvard, who studies basic spatial, quantitative and numerical abilities in children ranging from 5 months through 7 years:

“... when we measure their capacities, they're remarkably alike ... while we always test for gender differences in our studies, we never find them. It's hard for me to get excited about small differences in biology when the evidence shows that women in science are still discriminated against every stage of the way.”

The Nelson Diversity Studies
Top 50 ranking based on research expenditures as determined by NSF

http://cheminfo.chem.ou.edu/faculty/djn/diversity/chemEdiv.html

Percentage of Ph.D.s awarded to women, 2000-2001

Source: Nelson Diversity Survey

Ivory Tower

- Sociology: 36%
- Psychology: 34%
- Political science: 24%
- Biology: 20%
- Astronomy: 12%
- Chemistry: 12%
- Economics: 12%
- Computer science: 11%
- Chem. engineering: 11%
- Civil engineering: 10%
- Mathematics: 8%
- Mech. engineering: 7%
- Physics: 7%
- Elec. engineering: 7%

... well ... “Science is Still a Man’s World”
Time Magazine (27 February 2005)
Historic opportunity?

To be seized or squandered??

unless women fill their share of the positions opening up as the STEM faculty and staff hired in the 1960s retire

... The U.S. will have squandered its premier opportunity to increase the fraction of female STEM faculty and staff

... thereby locking in another generation of faculties with women-poor demographics

— real room in the academic pool —

Intarsia panel in the City Hall of Leiden

[from: The Magic Mirror of M.C. Escher, B. Ernst, Taschen, 1994]
Why are women voting with their feet against academics?

Point: applications from women for advertised positions are \( \leq 10\% \) of the total (9 men for every woman)

c.f.

Counterpoint: for every 3 men granted a Ph.D. in Chemistry in the US, there are more than 2 women r.s.

the women are there (and have been for years) ... why aren’t women voluntarily applying for academic positions commensurate to their production rate??

... It’s the culture, stupid!

Men are the stewards and beneficiaries of the current system \( \Rightarrow \) they have a moral responsibility to decide how to transform the institution

How do institutions change?

- complete demolition
  ... see the French Revolution

- coercion: e.g., no Federal dollars ... a *very* large stick

- a sustained effort to change the reward structure...because that is the only way to lead a standing structure by the nose
Title IX (… it’s not just for sports…) Assessments of Science & Engineering—Town Hall Discussion

Title IX—It’s Not Just for Sports
Debra Rolison, Organizer and Moderator, U.S. Naval Research Laboratory

Title IX—An Effective Change Strategy in Academia
Jocelyn Samuels, National Women's Law Center

The Slow State of Change in STEM Departments
Willie Pearson, Jr., Georgia Institute of Technology

Funding Agencies and Their Implementation of Title IX for STEM
Judith Sunley, MPS, National Science Foundation

Recruiting and Retaining Women Faculty
George Whitesides, Harvard University

My Thoughts on Applying Title IX
Richard Zare, Stanford University
Synopsis of 2006 AAAS Symposium

- Every federal funding agency has the authority to do Title IX compliance reviews *and* the authority to withhold federal funds
- Overcaution prevents institutions from taking lawful affirmative steps
- One pattern of science does *not* fit all people or all science!

**Initial NSF/DOE compliance review focus**

Students in engineering/physics/IT programs at high $$$ grantees

- emphasis on admission/retention/access to resources and faculty

*How should compliance reviews operate?*

- Require disaggregated data at every stage
  - w/r/t students and (rank of) faculty—and not just XX vs. XY
- Do climate surveys (along the spectrum)
- Note the # of complaints filed with/against the university

... BUT REMEMBER: [as noted in the GAO report] XX in STEM eschew making complaints or filing grievances because of career implications
Suggestions (from the “uppity” list) for meaningful, relevant data for Title IX compliance reviews: Focus on faculty

- start-up package (not just start-up funds)
- space, including square footage and renovation money
- total compensation (salaries+)
- allocation of discretionary funds AND research support (i.e., students/postdocs)
- teaching loads in credit hours per semester by undergraduate and graduate course load
- advising loads
- sabbaticals, other discretionary leave time
- matching funds for proposals
- representation on committees that decide on resource allocation (e.g., space, fellowships)
- Number of large projects headed by women vs. those of men
Even a trickle of press coverage …

[24-Mar-2006] Title IX: Not just for athletes (Officials consider extending gender-equality law to science)—Neil Munro

“The NSF needs to challenge universities' definition of academic success because successful “university faculty tend to replicate themselves,” Hogan declared. “We think academic institutions are at the heart of the problem.”


“Compliance reviews frequently end with agreements in which institutions agree to change certain policies, and with policy guidance that is broadened to apply to colleges that were not reviewed.”

[7-Apr-2006] Bush wants women off the field, into the lab—Bonnie Erbe

“… the Bush administration did something uncharacteristic and unexpected. It announced it would explore the possibility of using Title IX as a tool to channel more women into the studies and fields of science and math. Helping women with Title IX instead of hurting them? Unheard of, at least by this administration.”
... leads to push back (even though Title IX is THE LAW!!!!)

[9-Apr-2006] Title IX nonsense—Carrie Lucas

“... some officials at the National Science Foundation and Education Department share the feminists' immunity to cognitive dissonance. They are exploring Title IX's applications to specific areas of study, but only in disciplines where Title IX's application will benefit women.”

[17-Apr-2006] President's knees go weak when confronted with feminist agenda—Phyllis Schafly

NSF “confirms that it is starting “a joint effort” with the Education Department “to do Title IX compliance reviews,” which spells the end of picking the best and the brightest.”...

“One agitator for compliance reviews, Debra Rolison of the Naval Research Laboratory, reveals that compliance reviews are focusing on the way women students are “experiencing a different climate” in engineering and computer science departments. Boohoo.”
... leads to push back (even though Title IX is THE LAW!)!

**the weekly Standard**

[24-Apr-2006] The math and science of quotas—Jessie Gavora

“4 days “after Monroe's announcement appeared in National Journal—the White House quietly forced a retraction. On Department of Education letterhead, a statement was released over Monroe's signature promising that “the Department of Education is not expanding Title IX enforcement beyond its regular activities to combat unlawful discrimination.”

**USA TODAY**

[17-May-2006] Title IX shouldn't be used as an academic weapon—Christina Hoff Sommers

“If the Education Department and National Science Foundation were strictly to impose Title IX compliance standards on academic science, we could see men's participation in math, physics, technology and engineering capped at the level of female interest. That would wreak havoc in fields that drive the economy and where the USA already lags other countries..

“Not everyone finds that prospect worrisome. Debra Rolison of the U.S. Naval Research Laboratory campaigns nationally for using Title IX to eliminate bias in academic science programs. She hails the campaign as a “not-yet-realized earthquake.”
THE GREATEST CHALLENGE is changing the perception of what constitutes a successful academic career in STEM... We must dispel the notion that working day and night equates to productivity.

I strongly favor the application of Title IX to the STEM enterprise... Concentrate on the careful collection and wide circulation of ... Title IX measurables, quantitative measures that help us judge progress in achieving gender equity.
Great people + healthy microclimate = great science and productivity:
20 patents + > 100 papers since 1999