

NDEW 2011 — OXIDE

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Diversity Equity is a Figure of Merit

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Georgia Tech
Chemistry & Biochemistry



Diversity Equity is a Figure of Merit

- Defining Diversity...
 - ➡ as broadly as possible
- Is there a problem? I.e., does diversity need to be *increased*?
 - ➡ What is the problem?
- Is there an Objective Function for Merit?
 - ➡ *Implicit bias* and other factors cast a shadow on objectivity
- Redefining the evaluation function in the meritocracy
 - ➡ *Diversity Equity* needs to be included
 - ✦ Document demographics and participation
 - ✦ Assess climates (Is your institution an equitably desirable place to go to?)
 - ✦ Evaluate applicant's past accomplishments in their context



What is Diversity?



Inclusion of the “*other*” :

- Gender
- Race & Ethnicity
- Disabilities
- LGBTQIQ
- Socioeconomic
- Culture
- Life experiences
- Ideas
- Geography
- University Pedigrees
- Political Ideology
- Place of Origin (International)
- etc.



Is there a problem?

Workshop on Excellence Empowered by a
Diverse Academic Workforce: Achieving
Racial & Ethnic Equity in Chemistry



“... our nation needs to take advantage of the excellence inherent in the growing percentage of URM in order to maintain a sufficient supply of domestic Ph.D.’s.”*

It is a **crisis** in our **international competitive position** if we only access 74% of our population; that population will be even smaller in 30 years.

“Human capital and the extent of education thereof is increasingly considered to be an important metric of a nation’s economic health.” (L. Hood)

Session #4: Demographics & Assessment
Donna Nelson, Eric Kaler, Jean Stockard

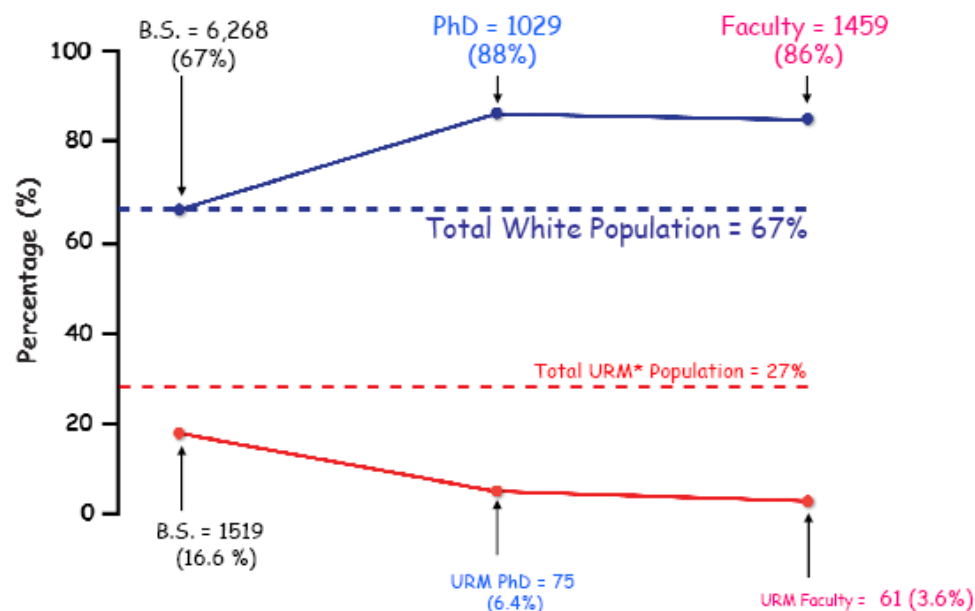
*“Workshop on Excellence Empowered by a Diverse Academic Workforce: Achieving Racial & Ethnic Equity in Chemistry,” Sept. 2007. (DOE/NSF/NIH Report) <http://chemchairs.uoregon.edu>



Is there a Problem?

- Let's do the numbers:
 - 6,268 BS / 1,029 PhD
 \Rightarrow 1 Ph.D. : 6.1 B.S.
 - (1,029 PhD / year) /
 (1,459 Profs / 25 years)
 \Rightarrow 1 Prof : 17.6 Ph.D.
 \Rightarrow 1 Prof : 107.4 B.S.
- Faculty in the top 50 are rare events.
- The best URM's have options with better odds.
- A systemic solution is needed!

FROM B.S. TO FACULTY: THE PIPELINE FOR U.S. CITIZEN ETHNIC GROUP REPRESENTATION IN CHEMISTRY in 2003



* Underrepresented Minorities

* From: "Workshop on Excellence Empowered by a Diverse Academic Workforce: Achieving Racial & Ethnic Equity in Chemistry" (DOE/NSF/NIH Report)
<http://chemchairs.uoregon.edu>

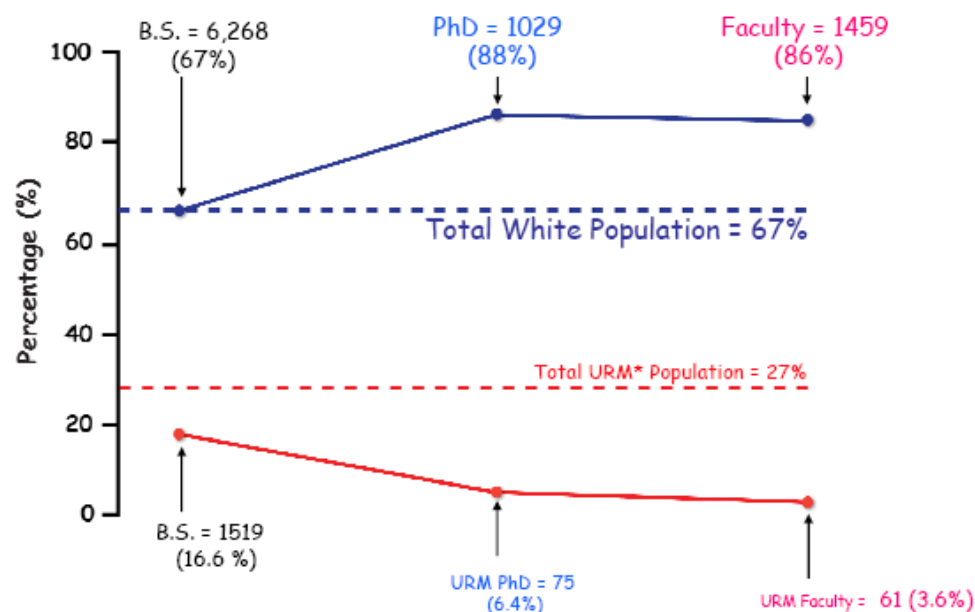
WARNING: No breakout groups at NDEW2011 on postdocs!?



Can we blame the pipeline?

- Yes... (we should support better K-12 education)
- **BUT:**
 - URM^s are represented at 20% even after whatever we do to them as undergraduates
 - We *effectively* reduce that percentage at subsequent stages
 - So we can do something about it!

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International Diversity

Figure 2-26
First university natural sciences and engineering degrees, by selected countries: 1998–2006

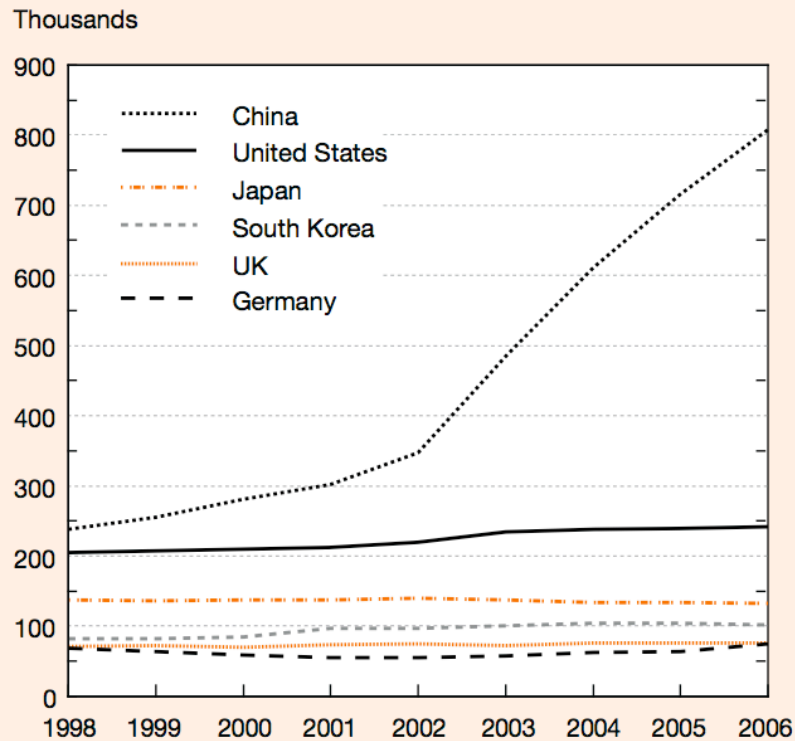
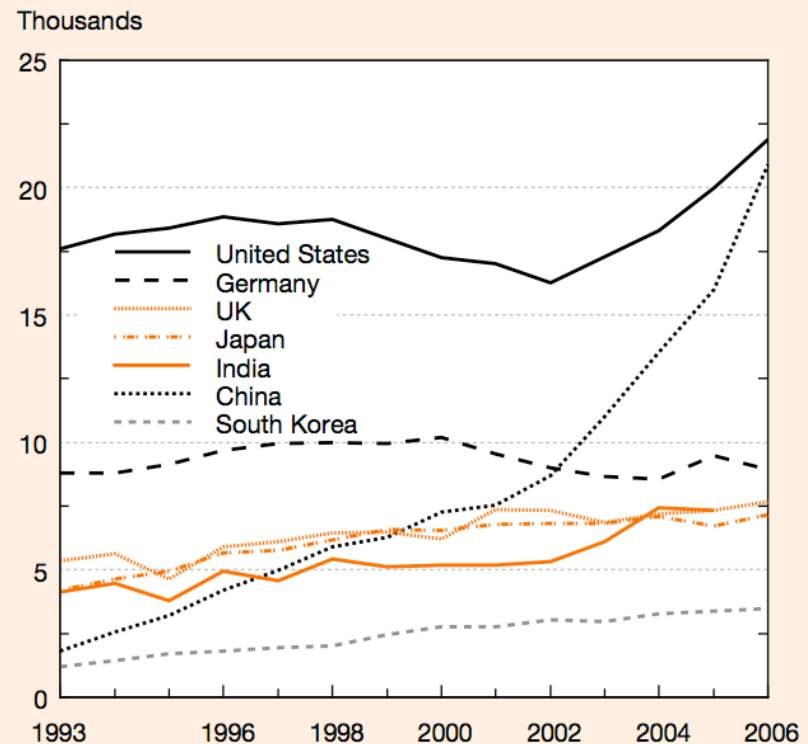


Figure 2-27
Natural sciences and engineering doctoral degrees, by selected country: 1993–2006



Source: NSF Science & Engineering Indicators 2010

- 4% S&E Bachelor's degrees are awarded to temporary visa holders
- 40% Physical Sciences Doctorates are awarded to foreign students
- The playing field is leveling... & our domestic students increasingly require international perspectives that they are not being exposed to in their undergraduate peer groups



Is there an Objective Function for Merit?

- I know quality when I see it
 - I can count (publications, grants, etc)
 - I can admire pedigrees
 - I can read letters of recommendation
- And, of course, these objective functions have been working *well* up to now...



Questioning our Objective functions of Merit:

Distortions of objective perceptions and Implicit Bias

Bryan Nosek has shown how unreliable the senses are in making judgments when our experience or expectations circumscribe the elements in the field of view.

Implicit bias encompasses stereotypic and prejudicial associations acquired from one's socio-cultural environment/context

Session #1: Contributing Factors
Denise Sekaqueptawa, Fred Smyth,
and Virginia Valian

*“Workshop on Excellence Empowered by a Diverse Academic Workforce: Achieving Racial & Ethnic Equity in Chemistry” (DOE/NSF/NIH Report) <http://chemchairs.uoregon.edu>

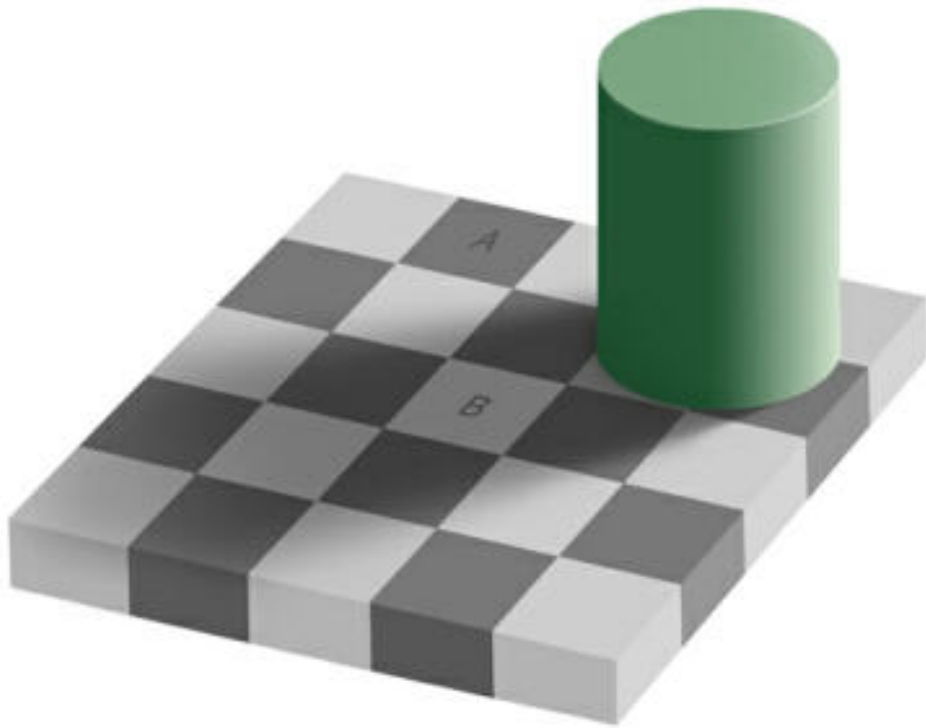
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Do You Know Your Own Mind?

Implicit Bias is Ever Present



Are Squares A and B
the Same Color?

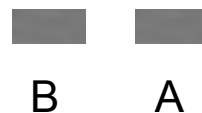
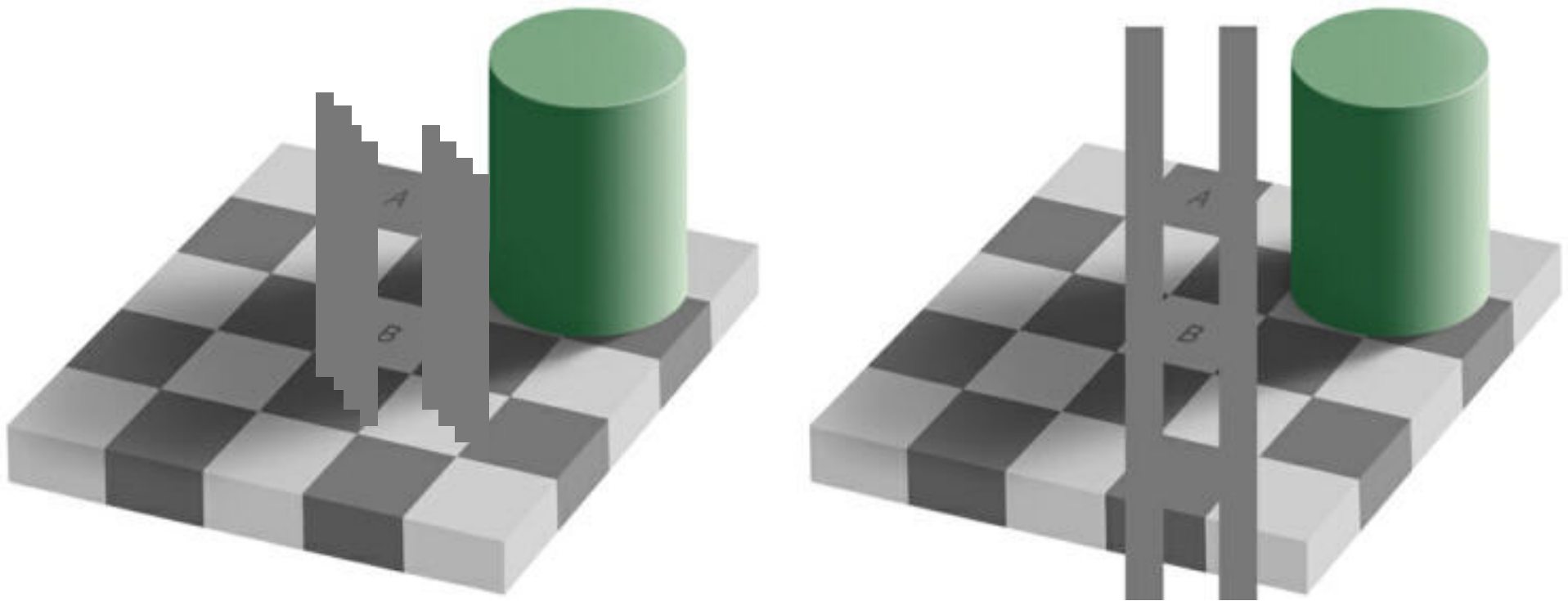
Courtesy of B. Nosek, U.Va. & T. Swager, MIT

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The Colors Are Exactly the Same:
It is Only the Context That has Changed



If it is That Easy to Trick You...

How Can You be Completely Objective in the Complex Analysis of Science/People?

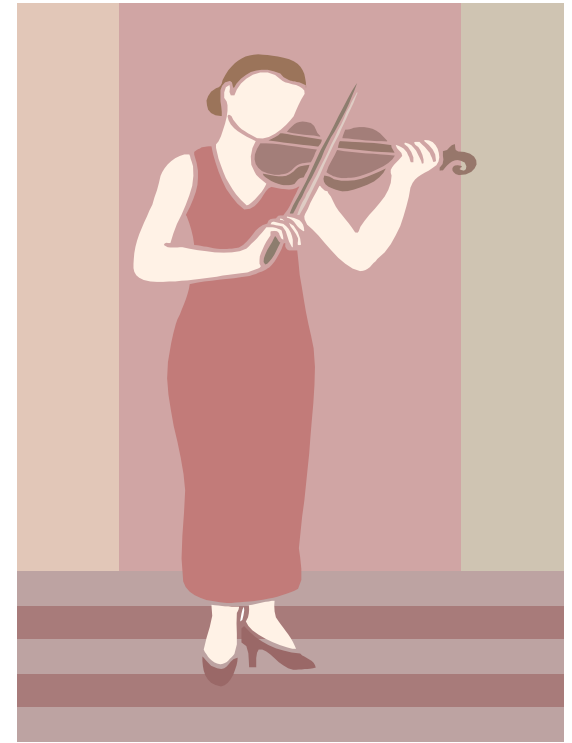
- A challenge to even the most enlightened faculties:
 - ▶ Admitting that we (All of Us) have a problem is the first step
- But surely, these are just simple tricks, and they wouldn't affect actual hiring decisions...
 - ▶ Or would they?



Blind Auditions: Gender

Records from major US symphony orchestras from 1970-1996:

- Audition data from 14,000 individuals show the use of a screen increases the probability that a woman will advance from preliminary rounds by 50%
- Roster data from 11 major orchestras show the switch to blind auditions accounts for 30% of the increase in the proportion of women among new hires



<http://sitemaker.umich.edu/advance/stride>

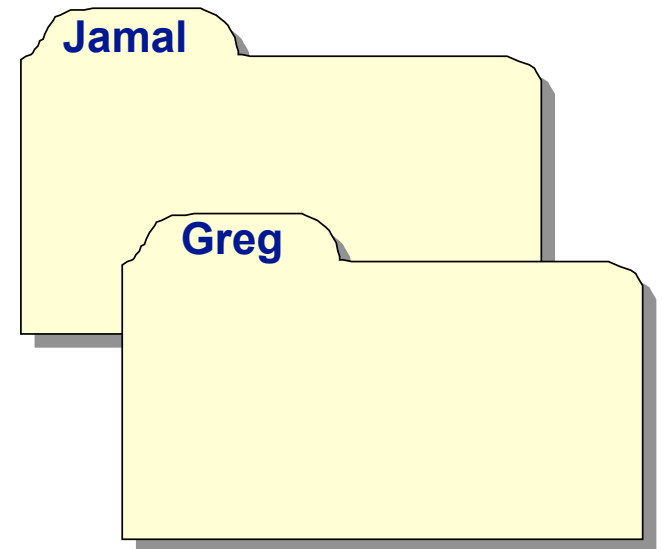


Goldin & Rouse (2000) *The American Economic Review*, 90, 4, 715-741.



Evaluation of Identical Resumes: Race

- Applicants with African American-sounding names had to send 15 resumes to get a callback, compared to 10 needed by applicants with white-sounding names.
- White names yielded as many more callbacks as an additional eight years of experience.
- The higher the resume quality, the higher the gap between callbacks for white and African American names.



<http://sitemaker.umich.edu/advance/stride>



Bertrand & Mullainathan (2004) *Poverty Action Lab*, 3, 1-27.



Why do race cues produce different evaluations?

Ambiguity in Job Credentials: Race

- Identical resumes, but ambiguous *fit of credentials to job* (rather than ambiguous credentials)
 - In a white sample, evaluators recommend
 - Black candidate 45% of the time
 - White candidate 76% of the time
- Whites get “benefit of the doubt” in ambiguous situations—bias leading to advantage in this case

<http://sitemaker.umich.edu/advance/stride>



Dovidio & Gaertner (2000). *Psychological Science*, 11, 315-319.



Questioning our Objective functions of Merit:

Accumulation of micro-aggressions

Daniel Solorzano, University of California, Los Angeles, 'pointed out that students and faculty of Color experience and respond to the university climate very differently from the perceptions of their majority counterparts. His research shows that many of the interactions URM have with majority group members are not harmless but constitute "racial microaggressions" because they serve to remind the out-group member that member.'*

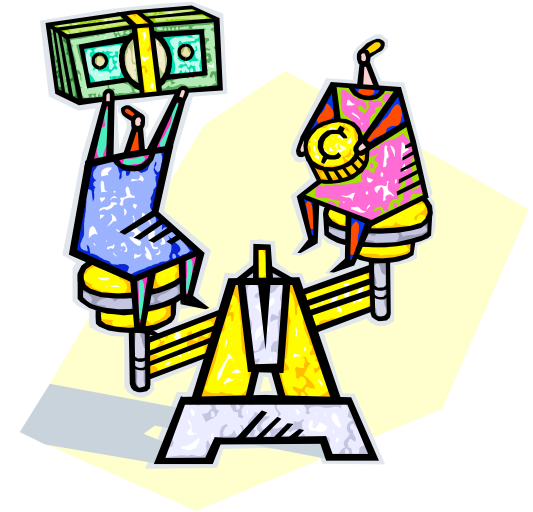
Solorzano defines racial microaggressions as a "form of systemic everyday racism used to keep those at the racial margins in their place."

*"Workshop on Excellence Empowered by a Diverse Academic Workforce: Achieving Racial & Ethnic Equity in Chemistry" (DOE/NSF/NIH Report) <http://chemchairs.uoregon.edu>



Accumulation of Advantage and Disadvantage

- Very small differences in treatment can, as they accumulate, have major consequences in salary, promotion, and prestige, including advancement to leadership positions.
- “Mountains are molehills piled one on top of the other”



<http://sitemaker.umich.edu/advance/stride>

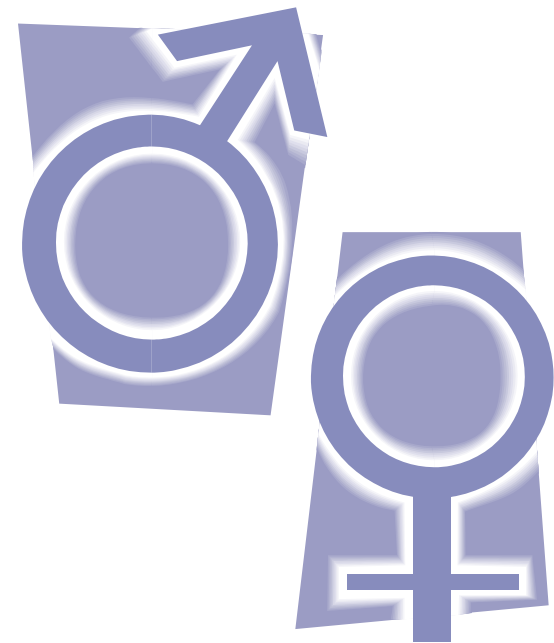


Merton (1948) *Antioch Review*, 8, 193-210 and (1968) *Science*, 159, 56-63.
Valian (1998) *Why So Slow? The Advancement of Women*. Cambridge: MIT Press, p. 280.



Unintended Impact of Schemas

- Gender and race schemas result in biased evaluations for members of both groups.
- These biased evaluations have important consequences that accumulate over time.



<http://sitemaker.umich.edu/advance/stride>



Questioning our Objective functions of Merit:

Summary

- *Flawed Hypotheses (Myths):*
 - Talented URM scientists are out there; They need to be identified, encouraged and recruited
 - But we should be aware that the academic climate for URM has been largely unsupportive, indifferent, or in some cases even hostile...
- *Distortion (Error) in Objective Perceptions & Implicit Bias*
 - Awareness: We need to recognize that our HR skills are not always perfect.
 - Systemic actions/corrections are more difficult because training classes are often ineffective
- *Accumulation of micro-aggressions & misuses of schemas*
 - The accumulation of the effects of implicit biases and micro-aggressions is a subtle factor pervading all our interactions and undermines the progress of URM candidates at all levels of the pipeline from B.S. to faculty.

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Including Diversity Equity into the Objective Function for Merit

- The NRC Rankings include the following principal components (out of 20):
 - Faculty characteristics:
 - v. Racial/ethnic diversity of program faculty
 - vi. Gender diversity of program faculty
 - Student Characteristics:
 - v. Racial/ethnic diversity of the student population
 - vi. Gender diversity of the student population
 - vii. A high percentage of international students
- Eric Kaler will discuss the weights of these factors during Session #4.

A Guide to the Methodology of the National Research Council Assessment of Doctorate Programs

Jeremiah P. Ostriker, Paul W. Holland, Charlotte V. Kuh, and James A. Voytuk, editors; Committee to Assess Research- Doctorate Programs; National Research Council, ISBN: 0-309-13956-2, 202 pages, 8.5 x 11, (2009)

Free PDF may be downloaded from: <http://www.nap.edu/catalog/12676.html>

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Including Diversity Equity into the Objective Function for Merit

- The return on investment for companies has been observed to correlate positively with the diversity in the working group :
 - Hubbard EE. The Diversity Scorecard: Evaluating the Impact of Diversity on Organizational Performance (Improving Human Performance). Oxford: Elsevier; 2004.
 - Jackson SE. Diversity in the Workplace: Human Resources Initiatives. New York: Guilford Press; 1992.
- The value for increasing diversity in a collective thus introduces an extra factor in the decision matrix involved with hiring or promoting individuals whose inclusion diversifies the collective.
- This dichotomy is seen routinely in hiring discussions
- Do you really need to be twice as good to get a position?

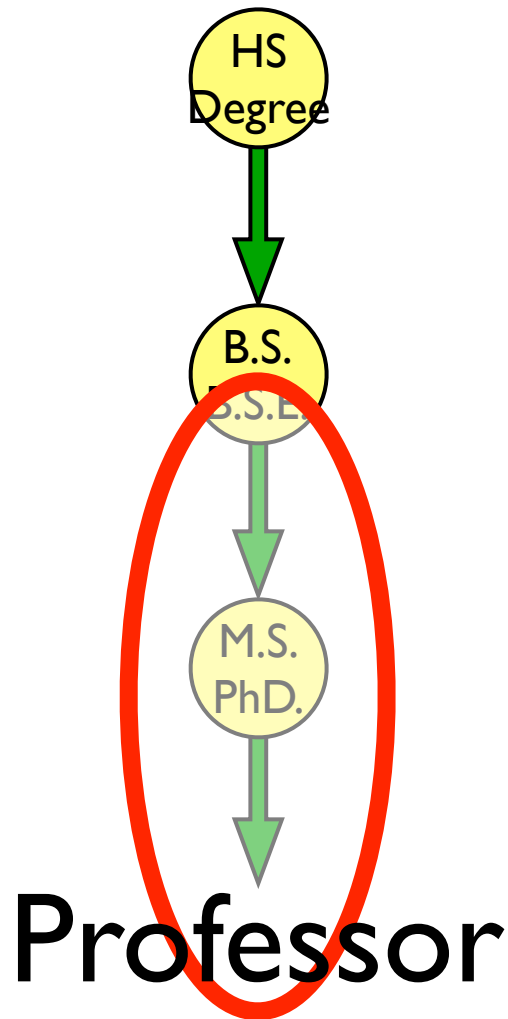


Including Diversity Equity into the Objective Function for Merit

- Quantify the value of the individual to the collective and reward her or him for it
- Additional administrative responsibilities should be correlated with additional staff support
- Academic pedigrees should be contextualized, and individuals judged on what they do thereafter
- Ensure that evaluations are based on quantitative statements not “feelings” or schemas
- Always reward success



Can you do anything to change departmental demographics and climate?



- New Interventions/Programs
 - Session #2:
Frank Dobbin, Jean Stockard, Sheryl Burgstahler
- Standing Recommendations & Outcomes:
 - Session #3:
Ken Houk, Isiah Warner, Karl Booksh, Lawrence Wagner
- Breakout groups:
 - Focus on academic groups and transitions



Diversity Equity is a Figure of Merit

SUMMARY & CONCLUSIONS

- Burden of thorough assessment of individuals is on institutions (traditional methods may overlook qualified candidates)
- Institutional assessments should track demographics (OXIDE will survey departments and report out numbers in C&EN)
- University resources are being provided to departments that win on diversity equity:
 - Implications on how you will lower or raise your budget relative to other departments at your institution.
 - Implications on how you will “out-resource” other chemistry departments in raiding each other’s faculties

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Acknowledgments

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My Group



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Dr. Eliezer Hershkovits

Gungor Ozer

Ashley Tucker

Matthew Hagy

Galen Craven



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8 Breakout Groups

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- **Group B1 East**
 - Topic: Graduate Student Recruitment
- **Group B3 West**
 - Topic: Graduate Student Recruitment
- **Group B3 North**
 - Topic: Faculty Recruitment
- **Group B3 South**
 - Topic: Faculty Recruitment
- **Group B4**
 - Topic: Faculty Climate & Retention
- **Group B6**
 - Topic: Faculty Climate & Retention
- **Group B7**
 - Topic: Graduate student promotion/subsequent career success
- **Group B9**
 - Topic: Faculty promotion/subsequent career success

WARNING:
No breakout
groups at
NDEW2011 on
postdocs!?



Charge to Breakouts

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- **Deliverable #1**

- Scribe (to present on Wednesday)
- Chair (to present on Tuesday)

- **Deliverable #2:**

- Which demographic within the topical area of your group do you intend to target?
- What are the inequities that you are targeting to alleviate?

- **Deliverable #3:**

- Propose a program or intervention to address the concerns you identified in the second deliverable.
- What is the basis for your hypothesis that such a program or intervention would impact your objective?



OXIDE: Open Chemistry Collaborative in Diversity Equity

- Annual Demographic Census of Research-Active Doctoral Chemistry Departments
- National Diversity Equity Workshops
- Dissemination of relevant findings in the Social Sciences & Natural Sciences
- Assessment of Departmental Interventions
- Self-Assessment of OXIDE Activities

pending funding!

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