Thoughts on the Future of Graduate Education in Physics

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Demographic Shift Brings New Worry for Republicans

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“Before, we thought it was an important issue, improving demographically,” said Al Cardenas, the chairman of the American Conservative Union. “Now, we know [diversity is] an essential issue. You have to ignore reality not to deal with this issue.”
The Republican Party “needs messages and policies that appeal to a broader audience,” said Mark McKinnon, a former strategist for George W. Bush. “This election proved that trying to expand a shrinking base ain’t going to cut it.”
...Tom Davis [former Republican member of Congress] said that the problem ... goes beyond just Hispanic outreach. ... “It is time to sit down practically and say where are we going to add pieces to our coalition,” he said. “There just are not enough middle-aged white guys that we can scrape together to win. There’s just not enough of them.”
Physics PhDs Conferred in the US, 1900 through 2010.

Number

http://www.aip.org/statistics
A vast and growing body of research provides evidence that a diverse student body, faculty, and staff benefits our joint missions of teaching and research by increasing creativity, innovation, and problem-solving.

Manzoni, Strebel, and Barsoux 2010; Herring 2009; Page 2007; Putnam 2007; van Knippenberg and Schippers 2007; Mannix and Neale 2005; Cox 1993; Swann 2004; McLeod, Lobel and Cox 1996
Efficacy of teams

- Diverse groups $\rightarrow$ more conflict
- If welcome, diverse ideas $\rightarrow$ better solutions
- If unwelcome, diversity $\rightarrow$ failure
Women lack math ability …

- **STEREOTYPE THREAT**: performing below ability because of expectations
- Example: “hard” math test
  - Men: 25/100
  - Women: 10/100
  - *Gender gap in math?*
- “This test has been designed to be gender neutral”
  - Women: 20/100
  - Men: 20/100
- Also important for minority students
What makes a great physicist?

- Native intelligence
- Curiosity
- Determination, persistence
- Communication skills
- Multi-tasking
- ...
- (Aggressiveness, assertiveness) not!
- (How little sleep can you get away with?)
GRE usefulness: UCSC informal survey

![Graph showing the relationship between student quality and Physics GRE score. The graph has a positive correlation, with higher scores corresponding to higher student quality.](courtesy Michael Bolte, UCSC)
Becoming/being a monk/physicist

• “Calling”
• Work 24/7
• Celibacy
Northeast Regional Conference for Undergraduate Women in Physics
Yale University – January 2009