



Science is Global – Can we take a Global Approach to Diversifying the Science Workforce?

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Worldwide - %researchers who are women (2003), UNESCO Institute of Statistics

Country	Women's %share
Bulgaria	47%
Chile	33%
France	28%
Germany	12%
Japan	12%
Panama	37%
Thailand	46%



Unesco Institute for Statistics – 2006 Regional Averages

Region	Average % women researchers
Latin America and Caribbean	46%
Europe	32%
EU/EFTA	27%
Other Europe	42%
Asia	15%
Central Asia	50%
Arab States in Asia	18%
South Asia	12%
South East Asia	42%
Africa	29%
World Total	27%




My Conclusions....

- Data shows wide variation in participation rates
 - At different career stages
 - Not just demographics
 - Between different fields
 - Between different countries
 - Countries that score higher on many measures such as gnp, general education of women, access to health care etc can have lower participation rates
- Cultural Factors not Genetics
 - Differences in performance in math much bigger if compare countries than if compare genders



Given this

- Does it make sense to look at problems globally?
 - All politics is local...but comparisons can help make clearer what the issues are that impede progress
 - Many countries have increasing the diversity of the STEM workplace as a stated policy/goal
 - Can we work together?



UPGEM Study % women in EU Physics (2006 Data)

Country	Associate Professor	Professor
Denmark	10	3
Estonia	11	10
Finland	12	9
Italy	33	23
Poland	14	13
US	14	6



UPGEM

- Understanding Puzzles in the Gendered European Map
 - Partly a result of Wenneras and Wold study of acceptance rates for postdoctoral fellowships
<http://www.advancingwomen.org/files/7/127.pdf>
 - Also demographic trends
- <http://www.dpu.dk/site.aspx?p=8581>
 - Break the Pattern – workplace cultures
 - Draw the Line – conference proceedings



Research Workplace Cultures

- The Hercules Culture – physicist fighter
 - Individual seeks personal recognition such as Nobel
- The Caretaker Culture – social physicist
 - Members engaged in and care about social context of workplace
- The Worker Bee Culture – diligent physicist
 - Researchers work for “distant” leader

	Hercules	Caretakers	Worker Bees
Work Relation	Physics is the only thing	Physics is everything but must be socially acceptable	Physics is not everything in their life
Workplace Identity	Focus is on ego	Focus is on group	Focus is on task and family/friends
Competition	1-on-1 fights using all means available	Group versus Group	Uninterested in competition
Power Relations	Anti-authoritarian with hidden power games	Group requires young members to work their way up	Formal Hierarchy
Gender	Used as negative element in competition	Acceptance in relation to group and not used negatively in competition	Not used negatively in competition



Physics in Culture

- Primary relation between scientific culture and national culture:
 - **Hercules** culture is most pronounced in **Denmark**.
 - **Caretaker** culture is most pronounced in **Italy**.
 - **Worker Bee** culture is pronounced in **Estonia** and **Poland**.
 - The **Finnish** data do not suggest a domination of either but a **mix** of the three
- Influences **Pull** factors that draw people in and **Push** factors that drive people out



General Push factors creating leavers

- Competition - open and hidden (the latter bordering on harassment)
- Poor reconciliation of family and work life
- Demands of mobility
- Loneliness, lack of feedback
- Problems of time management (long hours at work)



Women especially affected by

- Perception of women's career as inseparable from children & family responsibility
- Sexual harassment / need to downplay femininity
- Lack of female role models and little identification with the (male) stereotypes in natural science
 - Schema Issues – if women as group not seen as leaders then women as individuals not seen as leaders
 - Unconscious Bias



Next Steps

- We have a much better understanding of the factors that impact women's progress now than we did ten years ago
- How do we best build on this knowledge to design effective interventions?
 - See my next talk.....