

# Women in Science

## Issues and Challenges in Gender (In)Equality in Science & Engineering Higher Education

**Eleni Kaldoudi**

Associate Professor, Democritus University of Thrace - Greece

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Member of the Committee

Women in Medical & Biological Engineering (WiMBE)

International Federation of Medical & Biological Engineering (IFMBE)

# SHE Figures - EU

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## Gender in Research and Innovation: statistics and indicators

- a series of 4 reports published every 3 years by EU
- currently: SHE Figures 2012
  - ↳ published in March 2013
  - ↳ incorporates data up to 2010

[http://ec.europa.eu/research/science-society/document\\_library/pdf\\_06/she-figures-2012\\_en.pdf](http://ec.europa.eu/research/science-society/document_library/pdf_06/she-figures-2012_en.pdf)

# She figures 2012 (data up to 2010)

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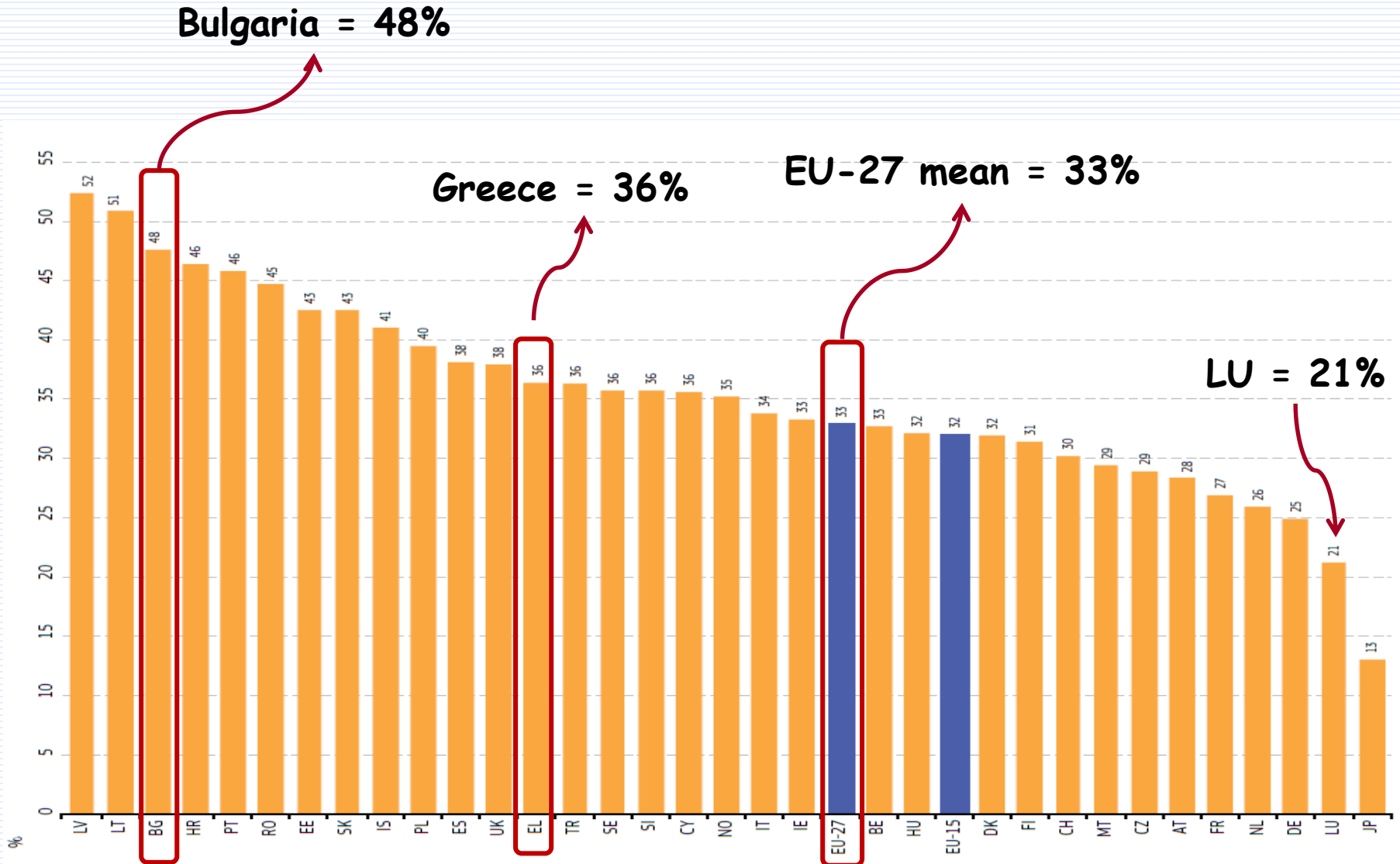
- in 2010 in EU-27
  - ↳ women: 45% of all employed persons
  - ↳ women: 53% of employed university graduates
  - ↳ only 32% of scientists & engineers are women
- women in research remain a minority:
  - ↳ 33% women of all researchers in EU-27 (2010)
- proportion women researchers in EU-27 (2010)
  - ↳ 40% women in Higher Education
  - ↳ 40% women in Government Sector
  - ↳ 19% women in Business Enterprise Sector

# She figures 2012 (data up to 2010)

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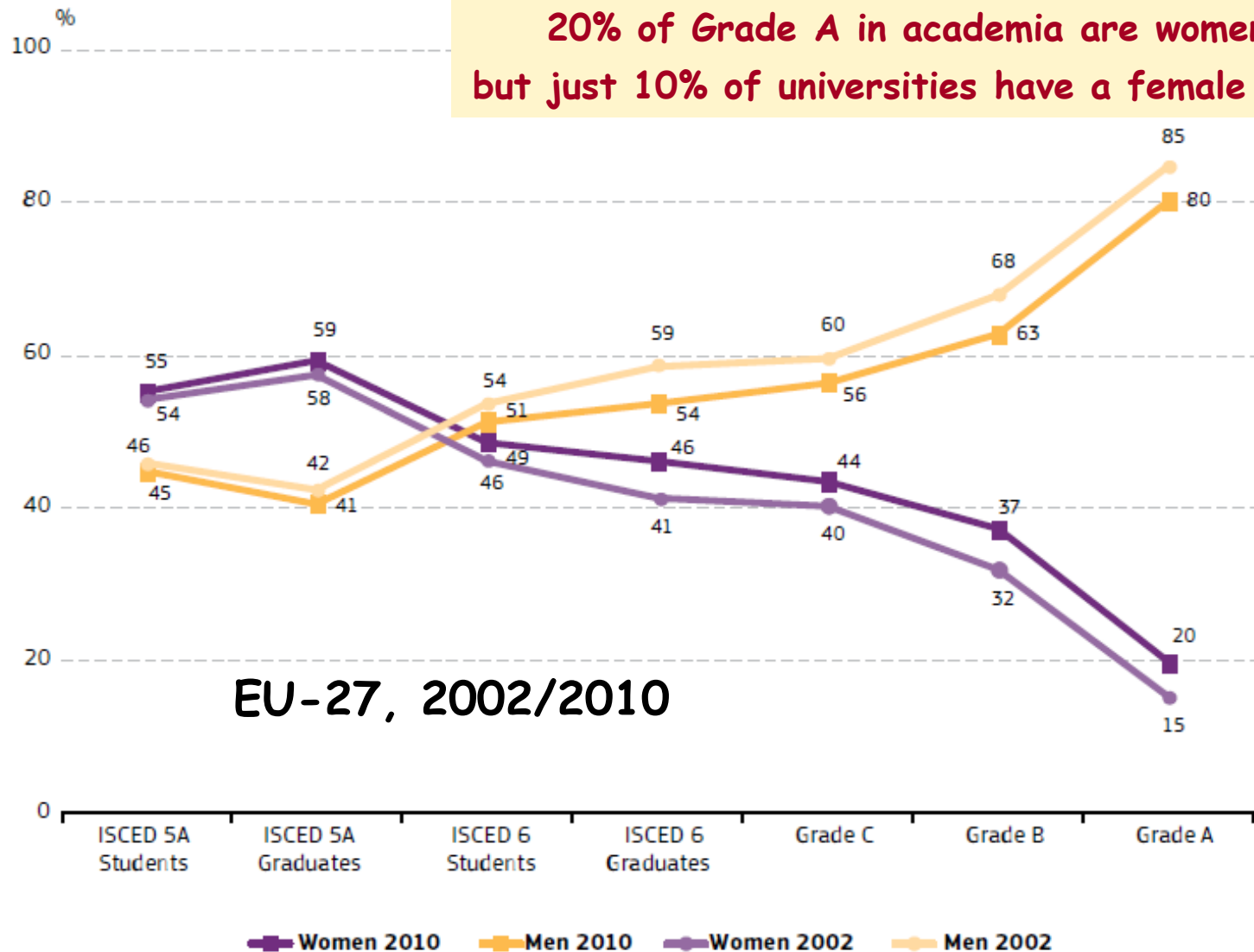
- the proportion of women researchers is growing faster than that of men
  - ↳ women: 5.1% growth annually for 2002-2009
  - ↳ men: 3.3% "
  
- still, proportion of researchers ‰ of total labor force
  - ↳ male: 12‰
  - ↳ female: 7‰

# proportion of female researchers, 2009

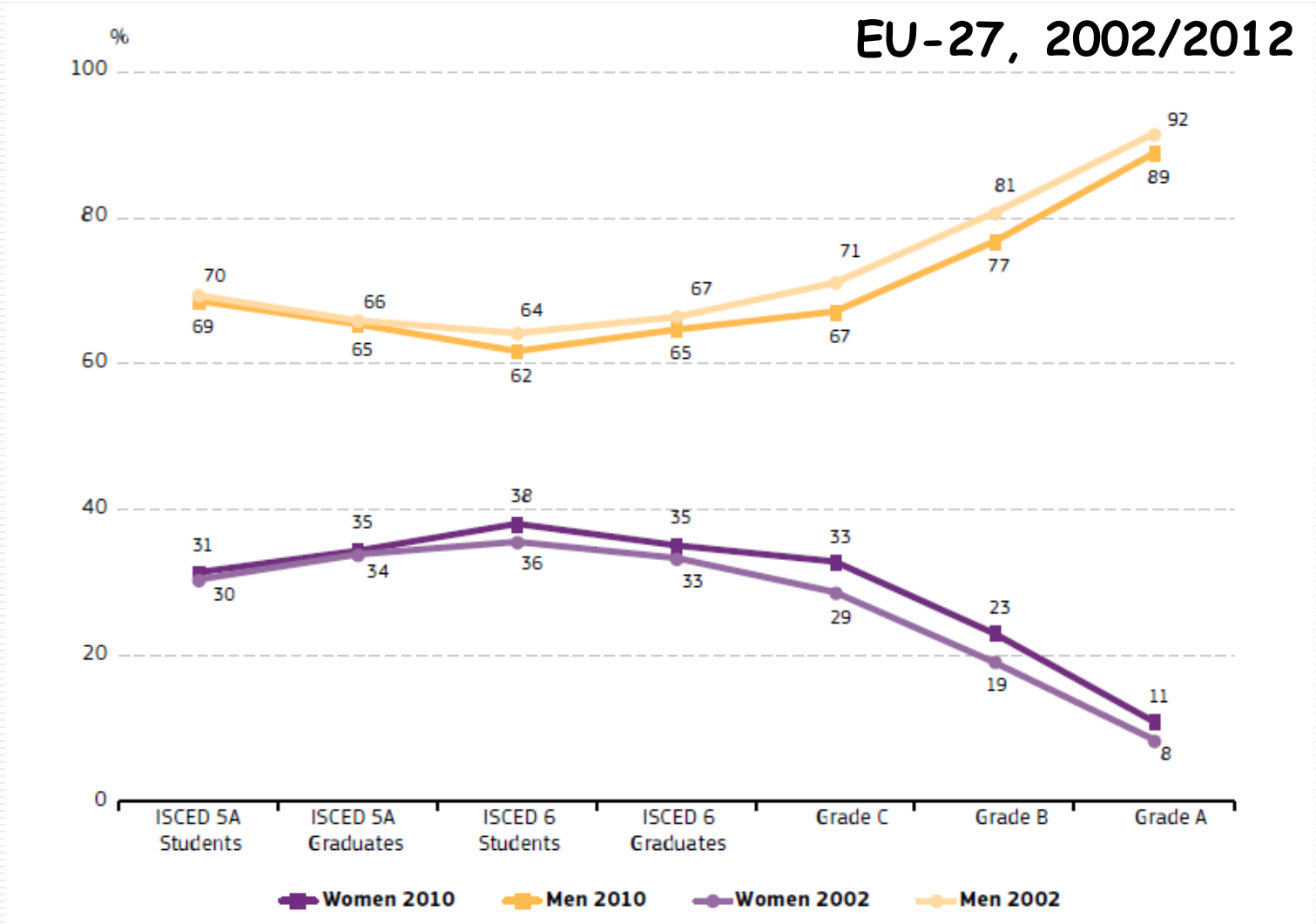


source: *She Figures 2012, EU Commission, p. 26*

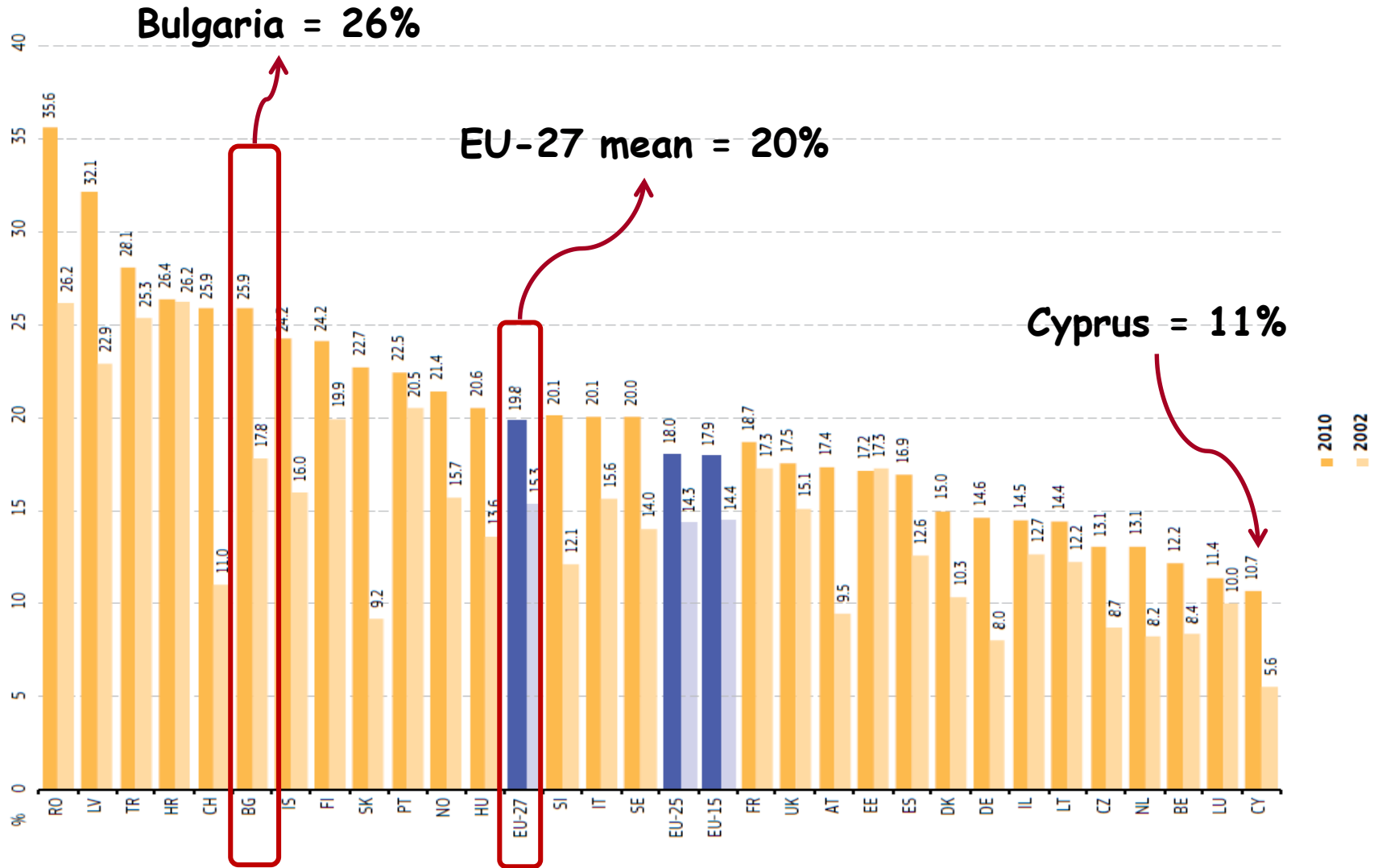
# women/men in academia



# women/men in science & engineering academia



# proportion of women in Grade A, 2002-2010





# numbers are not always that clear ...

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- numbers show that universities contain gendered hierarchies of power
  - ↳ most men with power and most women without
- however, literature reports a growing view among academic policy makers & academics that
  - gender discrimination is not an issue in higher education !

# senior women academics say...

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qualitative study amongst UK university senior women academics

- older women were more sensitive to the subtle homosocial culture, attitudes and norms in the university
- younger women relied more on a meritocratic approach to their careers, seemingly less aware of the institutional gendered power relations
- neither group showed signs of collective working or networking in the interests of themselves or women in general

Source: S. Ledwith and S. Manfredi, *Balancing Gender in Higher Education A Study of the Experience of Senior Women in a 'New' UK University*, *The European Journal of Women's Studies*, vol. 7, 7-33, 2000

# design for women vs. women mentoring

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Nebraska University 1999-2003, Project Muse

↳ Empowering Women for Life-Long Success  
through Computer Expertise

■ initially, with the aim to empower women undergraduates  
by teaching them technology in single-sex environments

■ findings:

↳ empowerment came from  
**peer-tutoring** and informal workshops

↳ impact came from a computer-lab,  
where students would become experts and teach peers  
⇒ the lab became a place for **socializing**

# men's patriarchal support system

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UK University qualitative research + literature evidence

- men interviewed revealed,  
(but not necessarily openly acknowledged) that
  - ↳ the help, support and encouragement of significant men were crucial elements of their own career progress
- in contrast, within this research group
  - ↳ no woman experienced such opportunity  
(but some reverse cases were reported)

# men's patriarchal support system

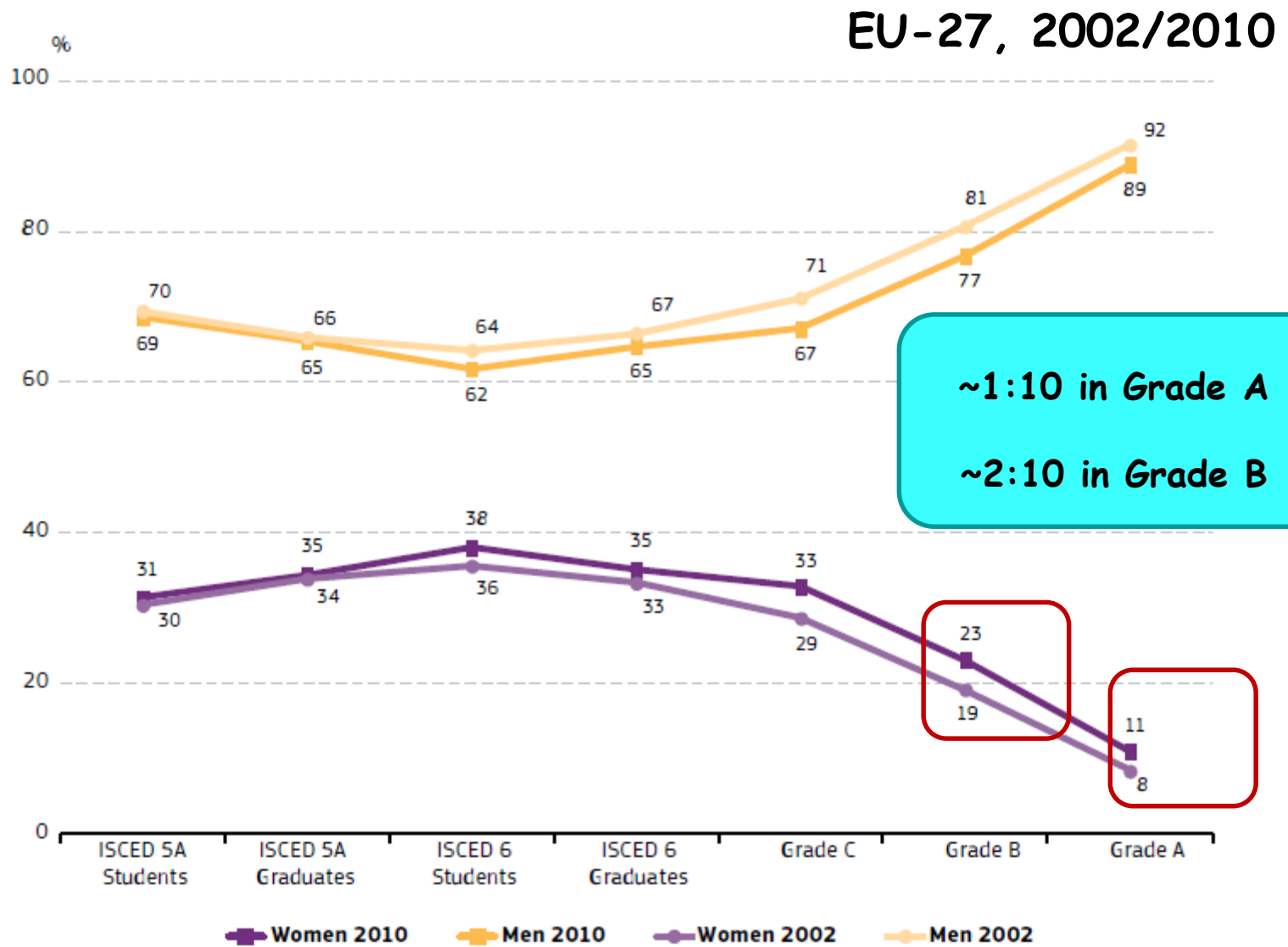
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## findings:

1. women presume that someone is going to speak on their behalf, their good work will be recognized and rewarded (they believe in true merit, not self-advertisement)
2. the academic profession does not supply adequate support and guidance for women

Source: *B. Bagilhole ,J. Goode, The Contradiction of the Myth of Individual Merit, and the Reality of a Patriarchal Support System in Academic Careers : A Feminist Investigation. European Journal of Women's Studies , vol. 8, 161, 2001*

# women/men in science & engineering academia



so, can women in academia still hope for  
a transition from surviving to thriving ?

# quantitative study published in 2011

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quantitative study (n=1714) in USA

- contrary to almost all published literature, and
- taking into account factors such as
  - ↳ tenure, discipline, family status and doctoral cohort,

women actually have somewhat  
more collaborators on average  
than men do



# women mentoring network ?

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towards effective and meaningful  
networking & mentoring to empower women in academia

- use on-line social networking services
- focus on women
- involve men
  - ☺ why not keep up with the progress of the 1:10 ratio?
  - ☺ only, the other way around ...
- ↪ focus on women mentoring
- ↪ use semantic technologies to suggest/enrich/enhance meaningful mentoring relationships

# IFMBE - WiMBE

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## IFMBE:

International Federation of Medical & Biological Engineering

↳ since 1959

↳ as of 2010: 130.000 members and 61 affiliated institutions

## IFMBE - WiMBE:

Committee on Women in Medical & Biological Engineering

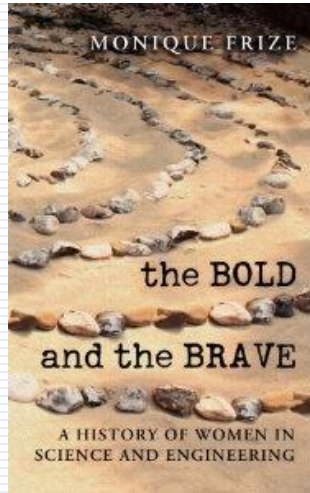
↳ since 2004

↳ president: Monique Frize (Canada)

website:

<http://ifmbe.org/organisation-structure/committees/women-in-mbe/>

## *Books by Monique Frize*



1. **The Bold and the Brave: A History of Women in Science and Engineering, The University of Ottawa Press, 2009**
2. **Ethics for Bioengineers, Morgan & Claypool, 2011.**
3. **The Extraordinary Life of Laura Bassi in Eighteenth Century Italy. 2013 (In print)**

# IFMBE - WiMBE

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action plans (amongst else):

- ↪ ensure greater inclusiveness of women in the various roles such as **keynote and plenary speakers**, **Chairs of sessions**, women receiving **awards** and as **judges** for the young presenters awards
- ↪ develop a **database of women** in biomedical engineering and sciences and identify women for high profile roles
- ↪ organise **workshops on gender issues** at major IFMBE events
- ↪ develop an internet-based **mentor project**

# IFMBE - WiMBE

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so check WiMBE website for updates:

[ifmbe.org/organisation-structure/committees/women-in-mbe/](http://ifmbe.org/organisation-structure/committees/women-in-mbe/)

look for

WiMBE workshops and events in IFMBE conferences

and give us names & ideas!!!

so, just “add women and stir” ?

should ensure that

women's interests,  
women's ways of thinking and acting  
are an integral part  
of the scientific & technological enterprise and  
of the academic environment

*Source: Byanyima, W., The Role of Women Engineers in Developing Countries, Daphne Jackson Memorial Lecture', RSA Journal CXLII (5454):, 57-66., 1994*

... If you want anything said, ask a man.  
If you want anything done, ask a woman

*Margaret Thatcher*



**Eleni Kaldoudi**

**Associate Professor  
School of Medicine  
Democritus University of Thrace  
Greece**

**[kaldoudi@med.duth.gr](mailto:kaldoudi@med.duth.gr)**

**thank you!!!**





**Cite as:**

**E. Kaldoudi, "Women in Science"  
Workshop on  
Current Status and Trends in the Career  
Development of Biomedical Engineers  
Marie Curie Career Integration Grants (CIG)  
(FP7, PCIG09-GA-2011-293846), "PHASETOMO:  
Development of a three-dimensional  
Reconstruction Algorithm for Phase Contrast  
Breast Tomosynthesis"  
Varna, Bulgaria, 8 April 2013**