

# Righting the Wrong *and* What about the Future?

Frances Grundy

RIGHTING THE WRONG

Closing the  
Gender Gap  
*in* Computing



*“Those who cannot  
remember the past,  
are condemned to repeat it.”*

*- Jorge Santayana 1905*

# Women Studying Computing at First Degree Level in UK

- 1980s 12-15%
- 2020 16%
- 2030 ?

# The Foundations

- Science
- Engineering
- Mathematics

# Thomas Vaughan

mid C17 alchemist

## On men and women

“The soul of man consists chiefly of two Portions  
... The *superior* is *Masculine* and *Eternall*, the  
*inferior Foeminine* and *Mortall*.”

# Francis Bacon

Philosopher (1561 – 1626) Developed scientific method

Nature - female Her investigators - male

Science was to

*“conquer”, “subdue”, “storm ... her castles and strongholds”*

Men should make no scruple of

*“entering and penetrating into these holes and corners, when the inquisition of truth is his whole object”.*

# Joseph Glanvill

## Fellow Royal Society 17C

*“[W]here the Will, or Passion hath the casting voyce,  
the case of Truth is desperate. ... The Woman in us, still  
prosecutes a deceit, like that begun in the Garden: and  
our Understandings are wedded to an Eve, as fatal as  
the Mother of our miseries.”*

# This continues ....

- 18C Berlin Academy of Sciences
- 20C WWII Bletchley Park  
'Dilly's fillies'
- 21C *Brotopia* *Breaking up the Boy's Club of Silicon Valley*  
by Emily Chang (2019)  
About life for women working in Silicon Valley



# Engineering

- Meanings and implications of:
  - engineering* and *to engineer*
  - genetic and social engineering
  - computer engineering
- Brotherhoods
  - Social – bonding and humour
  - Professional bodies
- But masculinist overtones are still too strong

# Mathematics

- Computing owes much to mathematics post WWII
- Contributed to masculine image
- Influence on image less pervasive now
- Girls and women do *and* don't like it
- History of reasons for teaching mathematics
- Still important and must be taught - but sensitively

**What labels do we want?**

Power

# Michel Foucault

Philosopher (1926-1984)

*“When I think of the mechanics of power I think of its capillary form of existence, of the extent to which power seeps into the very grain of individuals, reaches right into their bodies, permeates their gestures, their posture, what they say, how they learn to live and work with other people.”*

# Resisting Pressures

- Micro pressures  
day-to-day resistance
- Macro pressures  
resistance at the institutional level

# Present Situation is Immoral

- Consistently low education and employment statistics for girls and women since 1950s
  - ⇒ almost half population ignored
    - A scandal
- Change in the bye-laws?

# Dangers in Present Situation

- AI
  - *'The Gender Gap in Computer Science Research Won't Close for 100 Years'* NYTimes 2019
  - Systems for hiring, vetting CVs devised by self-defined groups
  - Reflect their predelictions, biases etc.
  - Amazon debacle for vetting CV's - rejecting those including 'women' reported 2018
- Also facial recognition, robotics ....
- Could embed bias permanently



# 'But this isn't computing!'

## Sacred Science

- Sandra Harding (1986)

*“Why is it taboo to suggest that natural science ... is a social activity, a historically varying set of social practices?”*

*“To what other ‘community of natives’ would we give the final word about the causes, consequences, and social meanings of their own beliefs and institutions?”*

She suggests that

objections to studying science as a social activity make science special

- Science tends to hold itself above and beyond scrutiny

# So we must scrutinise topics like AI

- Investigations into what's happening in AI
  - BCS priority
  - Ethics Committee
  - Strategy Board
- Goals look promising
  - but will they identify past and present trends?

# What is to be done?

- Be aware of image created
- Ethics committees to investigate and act
- More pressure on all education policies
- Record statistics to maintain oversight of
  - all employment decisions
  - all projects

Emily Chang *Brotopia*

*“Stop blaming everybody else for the problem or pretending that it is too hard for us to solve. It’s time to look in the mirror.”*

# FUTURE of the DISCIPLINE?

- Chang has many suggestions for employers to increase diversity
- Widening range of applications is bringing diversity to the subject matter ... could this help?
- Focus on the young

Three Bears panto [getwiththeprogram.org.uk](http://getwiththeprogram.org.uk)

[scratch.mit.edu](http://scratch.mit.edu)

[girlswhocode.com](http://girlswhocode.com) .....

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## Righting the Wrong

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