Gender, Education and STEM

馬璃

Ma Li

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(please note the underscore between the surname Ma and the given name Li)

Outline

- Situation
- Experiences
- Reflections

Women in STEM fields

- Historically underrepresented
- Reasons for the gender gap
- Strategies for improvement

From Northern Europe

Norway in focus


The Research Council of Norway
Gender balance and gender perspectives in research and innovation
Policy for the Research Council of Norway 2013–2017

KIF: Committee for Gender Balance and Diversity in Research

- Launched in 2004 as “Committee for Mainstreaming – Women in Science”
- Completed three terms
- The third committee changed its name
- The fourth 2014-2017

Senter for tverrfaglig kjønnsforskning

- Senter for kvinneforskning (1986-2001)
- Senter for kvinne- og kjønnsforskning (2001-2008)
- Senter for tverrfaglig kjønnsforskning (2008 -)

Gender balance and learning outcomes

Kjønnsbalanse og læringsutbytte

Kvinneuniversitetet i Norden
Nordic Women's University

- Funded by the Norwegian Ministry of Education and the Ministry of Children, Equality and Social Inclusion
- hosted by Nesna University College

Nordic programme on gender in the Nordic research and innovation area

- A newly established programme (2015)
- Co-funded by
  - Research Council of Norway
  - Forte in Sweden
  - Ministry of Education, Science and Culture in Iceland


Swedish Secretariat
for Gender Research

- Coordinate the Gender in Norway project

Outline

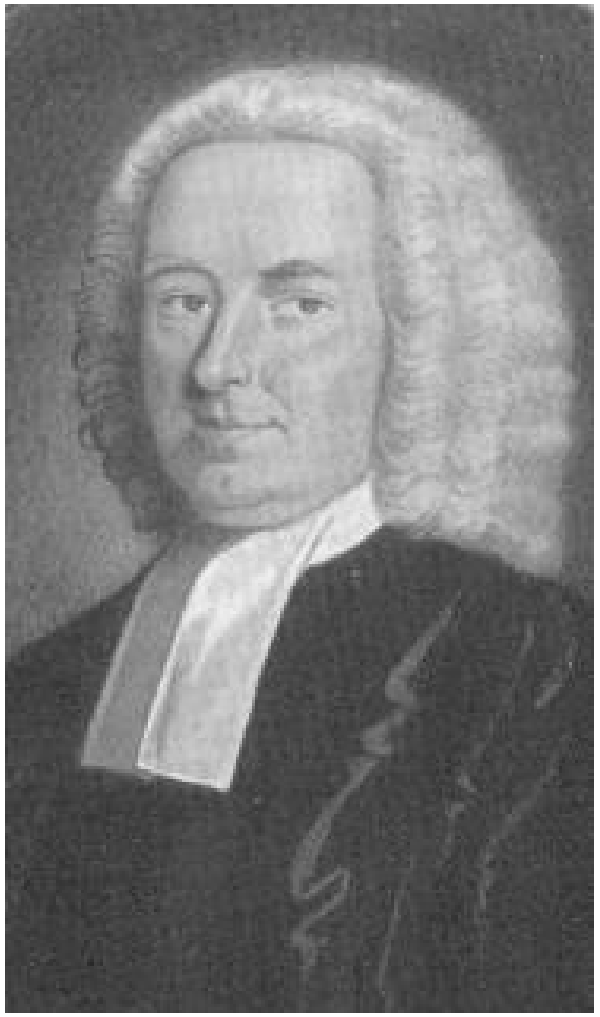
- How it came about
- Horizon 2020 – an example of good practice
- Norway & Sweden
- North & South
- West & East
- Yin & Yang
- Vertically & horizontally (historically and
- Gendered science & the science of gender

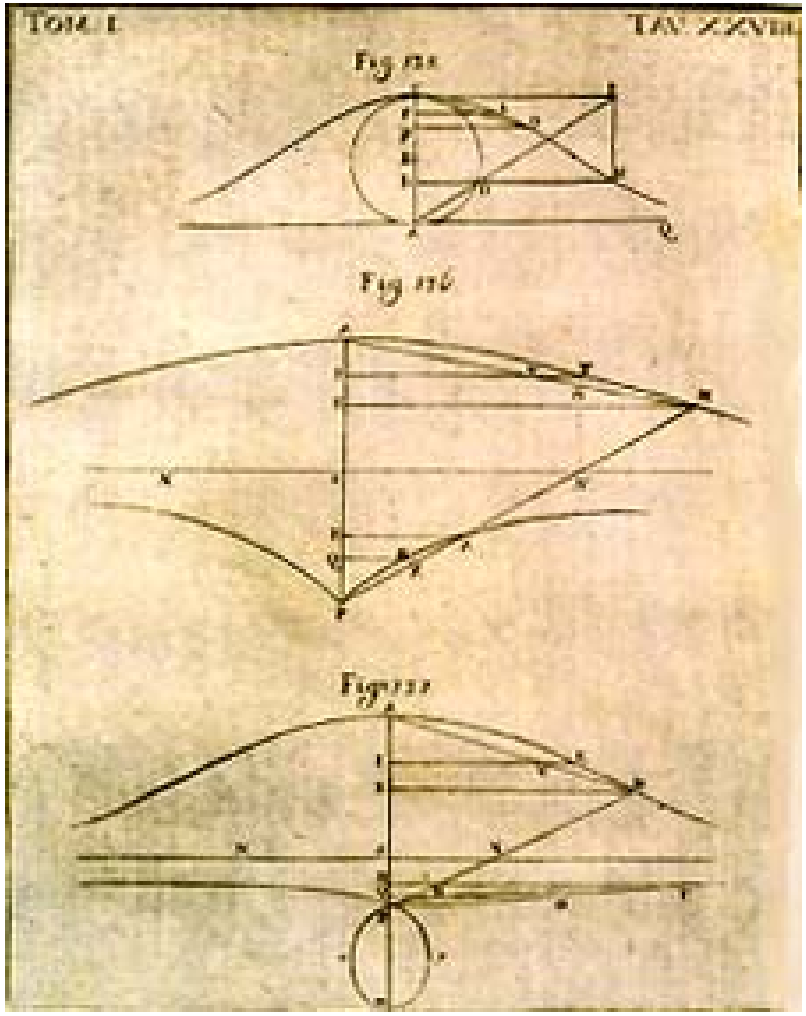
How it came about

- Joan Stm

Thank you!

INSTITUZIONI
ANALITICHE
DI D.na MARIA GAETANA
AGNESI
TOMO I.




Tom. I
Fig. 115
Fig. 116
Fig. 117

The Witch of Agnesi

is an example for using original sources to integrate history of mathematics in mathematics education. Maria Gaetana Agnesi (1718-1799) was the first woman to publish a mathematical work. Her *Instituzioni Analitiche ad uso della gioventù italiana* supplies one of the first complete accounts of calculus. Her style of presentation is characterized by expositions through examples, the most well-known is the Witch of Agnesi, so named in the English-speaking world due to an error in translation.

Gendering mathematics education

The main duty of a mathematics educator, as well as her fondest privilege, is to explain the humanity of mathematics, to illustrate its greatness, beauty and dignity, and to describe how the incessant efforts and accumulated genius of many generations have built up that magnificent monument, the object of our most legitimate pride as human beings, and of our wonder, humility and thankfulness, as individuals. The study of the history of mathematics will perhaps not necessarily make better mathematicians but gentler ones, it will enrich their minds, mellow their hearts, and bring out their finer qualities.

Studies of Wang Zhenyi

Wang Zhenyi (1768--1797) lived in the Qing Dynasty. Despite her short life she left voluminous works on astronomy, mathematics, literature, history, medicine, geography, etc. This study is based on her *Collection of Defeng Pavilion* and is part of a monograph.

Cuneiform Mathematics

- C. C. Lambert-Kalowski
- E. M. Bruins
- J. Friberg
- J. Needham

Traditional Oriental Mathematics

- pedagogical implications and didactical consequences

- As art
- As science
- As technique

Comparative studies

www2.lse.ac.uk/economicHistory/CCPN/whosWho/Team/MaLi.aspx

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- Who`s who
- Team members
  - Ms Helen Tung
  - Professor Martin Albrow
  - Dr Xiangqun Chang
  - **Professor MA Li**
  - Dr Esena Dugarova
  - Ms Ana Faria-Santana
  - Dr Godfrey Gowland
  - Ms Erika Helms
  - Mr Jackson Ng

How to contact us

Professor MA Li

Ma Li received a Ph.D. in mathematics from CTH/Gothenburg University in 1994. After post-doctoral research in Kyoto, she was appointed a university lecturer/senior lecturer/associate professor and worked in Sweden for a decade before moving on to Norway. She has been teaching mathematics and various related yet "non-standard" courses at the under-graduate as well as Master and Ph.D. levels. Her research interests include mathematics and its history; fuzzy logic; the influence on learning styles of language background, gender perspective and culture; methodological issues in comparative studies; the public understanding of science; and STS (Science, Technology & Society).

As an ECMI stipendiary she studied in Cambridge where she met among others Professor Sir Geoffrey Lloyd, Professor Nathan Sivin, and the late Dr. Joseph Needham and Professor Tom Whiteside, who, along with Professor Göran Fribergh from Gothenburg, encouraged her interest in comparative studies. Subsequently she was awarded Royal Society ESEP Visiting Fellowships three times to conduct comparative studies of mathematical traditions at Cambridge University, Needham Research Institute, and Imperial College London. An important part of the investigation has been focusing on parallels between ancient Chinese and Mesopotamian mathematics.

The OECD has been coordinating a worldwide evaluation PISA in its member countries. Much of the methodology follows the example of the Trends in International Mathematics and Science Study. Since China/Shanghai was included in the study as a non-OECD education system in 2009, the top test scores of Shanghai students stun the world. Having been invited to speak on the successes, the significance and to offer explanations, Dr. Ma Li indicates that the results may be more a consequence of cultural factors than pedagogic excellence. Further explorations are under way from a comparative perspective.

Another of Ma Li's current projects is a monograph about a female scholar living in eighteenth century China, and her contribution to the exact sciences. The work is based on original sources, taking the social environment of the time into consideration and referring to an Italian female mathematician of the same period.

Ma Li has learned a dozen languages and is fluent in a handful of them. At Massachusetts Institute of Technology she completed technical translation between Japanese and English in the STS/Japan Program. From 2005 to 2009 she was chair of the Japan Society for the Promotion of Science alumni board and remains a board

China in Comparative Perspective Network, LSE
中国比较研究
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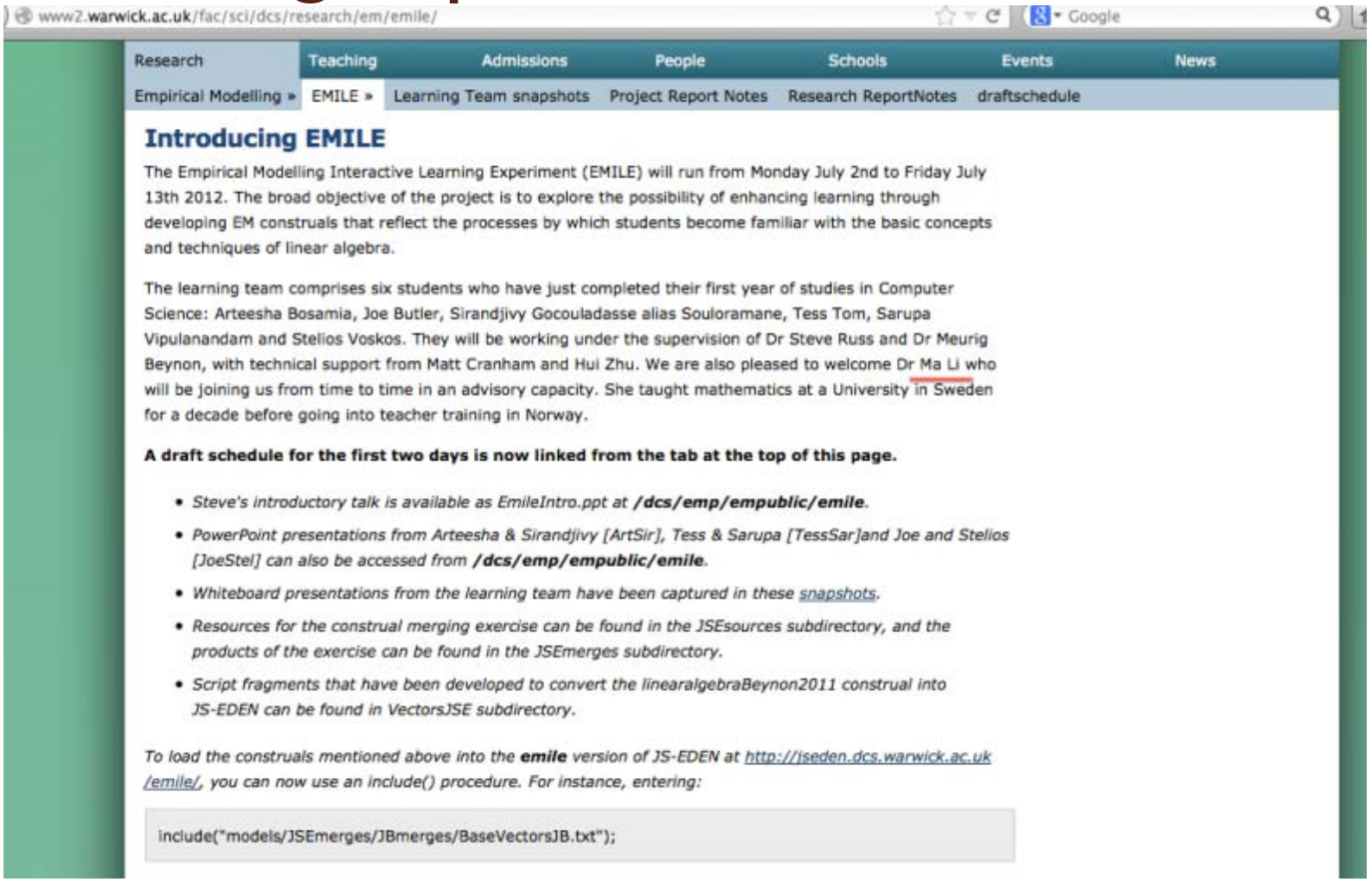
Empirical Modelling Interative Learning Experiment



Learning styles influenced by language background

- Ideogram vs. phonogram
- East vs. West
- Reading vs. spoken focus
- Visual vs. aural communication
- Recording vs debating
- Documentative vs argumentative

Cross-disciplinary perspectives

- Educational
- Historical
- Cultural
- Linguistic
- Gender
- …