Advanced Research Computing

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RSE Leeds Network

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RSE Leeds Network – First Meeting
University of Leeds
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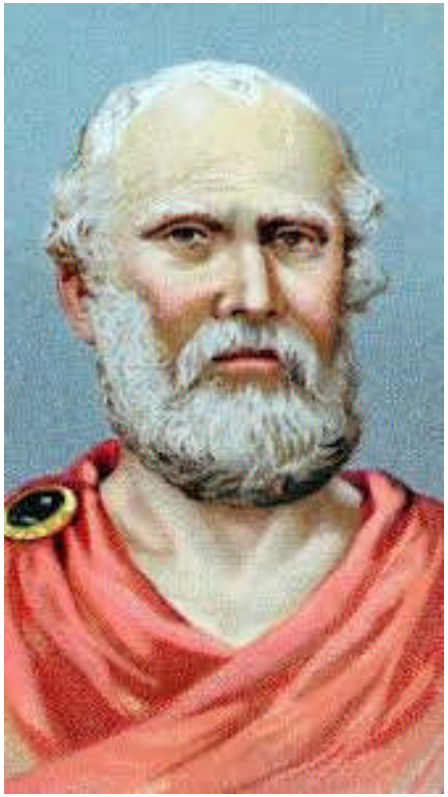
The First Paradigm of Scientific Discovery – Theory and Deduction

Plato - 348/347 BCE



Aristotle - 384–322 BC

The Second Paradigm - Experimentation

- Frances Bacon 1561 – 9 April 1626
- In about 1750 the experimental method started to supplement that. It took the experimental method 150 years to be adopted. The computational method has been in practice for 50-60 years.
- By looking at the development of experimentation we can better understand how far into the adoption process we are for computation.

The Third Paradigm - The Computational Method

- Since the 1950s a third paradigm has been increasingly evident, aka the computational method.
- Also called
  - Computational Science and Engineering
  - Computer aided research
  - The Computational Method
  - eScience
  - Research Computing
  - Research Software Engineering

Tom Kilburn (1921 – 2001) built the Baby – the first stored memory Computer 1948

Observations:

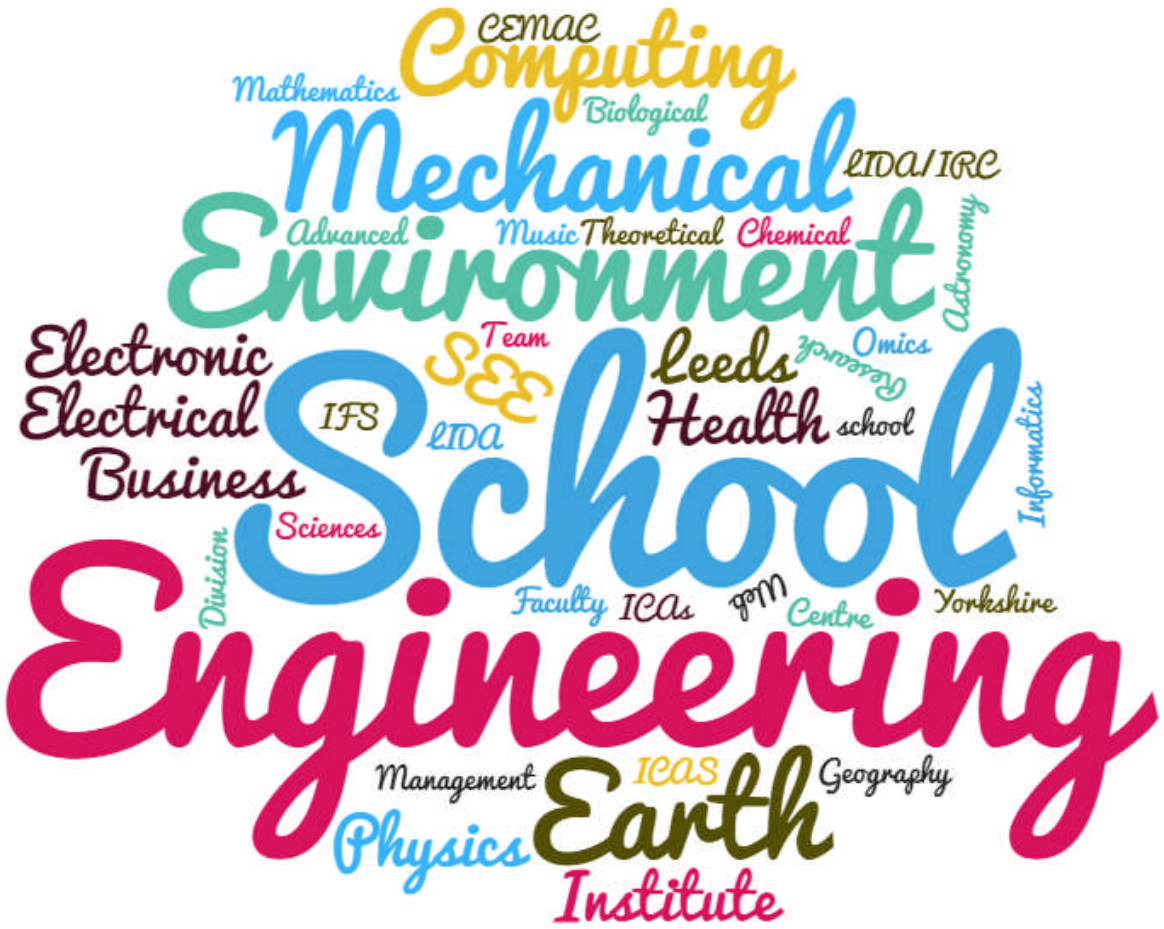
- Inconsistent and lack of terminology shows the computational method is still developing.
- How far down the development path do you think we are? ¼, ½ or ¾ of the way?
- Development is not even across disciplines – generally the physical sciences and engineering are at the forefront but there are exceptions.
- It is a currently a rapidly accelerating and transforming method.
- In 2014 the Software Sustainability Institute did a survey[1]:
  - 92% of academics use research software
  - 69% say that their research would not be practical without it
  - 56% develop their own software, 21% of those have no training in software development
  - 70% of male researchers develop their own software while 30% of female researchers do so

"Computational Science and Engineering (CSE) is an emerging, rapidly developing and potentially very significant force in changing scientific practice by offering a 'third way' of carrying out research in addition to, or indeed, instead of, theory and experiment. ***It is unlikely that such a significant change can continue to be accommodated by the organizational structures that were put in place for other established research practices."***

So…..

- The research councils are funding the Software Sustainability Institute (SSI) who have fellowships, a yearly unconference (2017 it is in Leeds) and training courses
- And the research councils are taking advice from the SSI
- There is a mailing list for RSEs and a yearly conference see http://www.rse.ac.uk/

Where have we come from?



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What are our job roles?

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What do we want?

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Discussion Topics

1. What do we want from the network?
2. How well is the adoption of computer aided research going? - at Leeds and elsewhere?
3. What methodologies do we use? And is this different to computing methodologies that are not used for research?
4. What makes an ideal career?