

**Scientific method:** Is based on the concept of empiricism, which says true knowledge can only be had testing ideas in the world and rejection those don't stand up

Issues of scientific method:

- **To closed and secretive:** by today's standard we see papers once finished but the process leading to their creation- generating hypothesis building apparatus and performing experiments is hidden from public
- **Slow to adopt the new web based technologies for collaborating and sharing knowledge:** such as wikis collaborations software are used in journalism arts etc
- **Out-dated and makes sharing tacit knowledge difficult**

Science can't answer all the questions: should we build nuclear program – made by politicians. Is there a god

Advantages the above scientific methods:

- Peer reviewed has proven to be excellent quality control mechanism
- Sharing of knowledge via conferences, journals so knowledge is freely available to all
- The process builds strongly and incrementally on itself because scientist reading other work

Weakness of scientific methods:

- The scientific method is poor at dealing with phenomena that is rare (Bali lightning) hard to measure (fun) or not publically visible (human consciousness)
- The slowness of journals, and book publications, the larger critical processes can take a long time to weed out bad ideas
- The ideal of the free availability of knowledge is restricted by: for commercial gains, military advantage, or fear of publishing first
- When scientists ignore ethical values and the greater good of society the power they deliver can be put to bad ends (invention of land mines, engineering of terminator seeds)

Issue of science:

- Too closed and secretive (not transparent)
- Slow to adopt new web technologies for collaboration + sharing
- Outdated and makes sharing hard

Scientist cares most about reputation and these reputation come from. These scientific discoveries must be

- **Being first to publish:** their discoveries in a good scientific journal. Everything depends on a scientific publications- jobs promotions grants and status
- **Peer reviewed:** before they can be published they must be accepted or sent back for correction or simply rejected
- **Properly cite the original author**

**Science 2.0:** concerns new practises of posting: raw experiment data, underdeveloped theories, claims of discovery and draft papers on the web for anyone and comment about. (New scientific method)

- *“More collaborative and therefore more productive”*

Disadvantage of science 2.0 (radical openness):

- Risk having others copy or exploit work for personal gain credit.
- Providing powerful and downright dangerous experiments or discoveries → knowledge-enabled mass destruction this happens when dangerous publication gets in the hand of bad people to be weaponised.
  - This can be stopped by anticipating uncontrolled release of certain information stopping it.
  - Eg: Mutant bird flu controversy created mutant strains of the avian influenza virus. US national scientific advisory board said don't published.
- **Induction:** Is based on multiple singular experience/observation → conclusion
- **Deduction:** is based on a premise/theory → conclusion

Think of a theory as a well-substantiated explanation of some aspect of the natural world that can incorporate **facts**, laws, inferences, and tested hypotheses. And is formed by from hypothesis that have failed to faisly them