

Lecture 25: Conclusions: Science in the 21st Century

1. Introduction

- What have we learned?
- What should we look for going forward?

2. Boyle's Airpump and the Nature of Science

- Material technology: explaining unexpected results
- Literary technology: fate after publishing, e.g. Mendel vs. Darwin
- Social technology: scientific consensus and authority

3. Scientific Institutions

- The roles of institutions
- The range of institutions: societies, universities, industry
- Exclusiveness
- Elite knowledge, obscure language, and public suspicion
- e.g. evolution and intelligent design c. 2005
- the rising costs of science

4. Impact of Science on Society

- Thermodynamics and directionality
- Freud and irrationality
- Materialism and reductionism

5. Impact of Society on Science

- Eugenics and scientific racism
- Revolutions: English, French, Industrial, etc.
- Competition
- War, and new challenges for science and ethics
- Funding: from private to government to industry

6. Impact of Technology on Science

- Steam engines and thermodynamics
- Telegraphy, electrodynamics, and relativity
- Computers and simulations

7. Impact of Science on Technology and Society

- Condorcet's vision
- Transportation and communication
- Medicine and pharmaceuticals
- Explosives and warfare
- Recombinant DNA and genetic engineering
- The technological imperative?

8. Looking Forward

- Grand unified theories? Genetics? Climate modeling? AI?

Nanotechnology? Controlled fusion? Space travel?
Fears, from surveillance to designer life