



Week Five

History of Science I

5.1 overview

Topics :-

- How far did the influence of islam reach?
- Islamic scientific & technological achievements
- The decline of an advanced civilisation
- comparing the decline of islamic civilisation with the decline of china

5.2 Beginning of the influence of religion

Preliminary points

- Scientist used to be called natural philosophers
- Two views of scientific history
 - i. an inevitable progression towards the truth and human development
 - ii. It is all socially constructed
- * The truth somewhat in the middle

The ancient world I

- Usually start with the ancient Egyptian & Mesopotamian culture
- The basis of everything is water
 - i. Idea of a single building block
 - ii. Underlying reality vs external appearance

Religion & science

As christianity interacted with pagan culture, apologetics became increasingly important & greek sources of thought were often referred to

- Augustine believed like plato that knowledge of the natural world revealed the godness of its creator

5.3 How far did the influence of Islam reach?

Nature of Islam

- the nature of it made more likely to drive scientific change
- There is strict rules for scripture
- The house of Islam expanded rapidly through Spain, North Africa, ME, Persia & India

5.4 Islamic scientific & technological achievement

Islamic world: Translation movement

- Greek texts translated into arabic
 - E.g The house of wisdom in Baghdad
- Production of paper learnt from china
- Literacy as a requirement
 - * Apologetics: seek knowledge
 - * Prayer Direction (lunar calendar)
 - * Usefull for Political Unity and Practical utility

Islamic Astronomy, mathematics & optics

over half of the bright stars visible on any night bear Arabic names

- Mizar الميزار
- Vega المنار الواقع
- Deneb ذنب الدجاجة

many modern astronomical terms are also of Arabic origin

- Zenith
- Azimuth
- Nadir

• Ibn al-Haytham

- Intromissive vision
- challenging Ptolemy & Euclid
- Ray theory of light as the basis of optics

• Al-Biruni:

- Geodesy
- Mineralogy
- Pharmacology
- Anthropology

Medicine	Mathematics	Astronomy
Al-Zahrawi's surgical instruments & geometry big syringe & needles	Algebra, trigonometry & geometry	Mechanical calendar called box of the Moon

optics	chemistry	Architecture
<p>Mirror reflection</p> <p>Abbas bin Fernas developed lenses for improvement vision</p>	<p>-chemical element & equivalent</p> <p>-Ethanol</p> <p>-Hard soap</p>	<p>Wind powered grist mill</p>

5.5 The decline of advanced civilisation

Decline - intellectual aspects

- 1 Failure to distinguish between culture and technology
- 2 Ascetic spirituality ; Fate and Pre-destination ; using the mind outside its limits
- 3 Anthropomorphism