

Scientific Revolution

Monday, October 31, 2005

11:02

- Background

- "Intellectual Revolution"
- 17th century age of genius
- About Ideas, not technology
- Science before the Scientific Revolution
 - Aristotle
 - 4th Century BC
 - Geocentric - earth is center of the universe
 - Outward - more pure; crystalline spheres
 - Natural tendency is rest
 - Things have to be moved; prime mover = God
 - Ptolemy
 - Based on Aristotle's universe
 - 80 concentric spheres from earth; angles fly around
 - Stars were fixed points of light
 - All heavenly bodies revolved around earth; all luminous (created own light)
 - Galen
 - To cure illness = to let out evil spirits
 - Blood letting
 - Bible
 - Main source of knowledge
 - Dante
 - *The Inferno* (book) (travel through 10 spheres of the earth)
 - Hell = center of the earth
 - Middle Ages
 - Scholasticism
 - Use science to prove religion
 - Renaissance
 - 7 Liberal arts
 - Not much science
 - One great scientist: Da Vinci
 - Did not communicate with anyone
- Applied reason to scientific data
- Paved way for enlightenment (philosophical ideas)

- Scientists

- Bacon
 - 1561-1623
 - Scientific method
 - Inductive (detail --> general)
 - *Insauration Magna* (Great renewal)
 - *Did not understand mathematics*
 - Reject everything unless you can prove it
 - Little influence on later scientists; but changed the thought process
- Descartes
 - 1596-1650
 - Deductive (general --> detail)
 - Mathematician
 - Inventor of coordinate geometry
 - Discourse on Method
 - Doubted all previous knowledge
 - *Cogito ergo sum*
 - "I think, therefore I am"
 - How to prove what we know

- **Copernicus**
 - 1473-1543
 - Polish astronomer
 - **Heliocentric** - earth rotates around the sun
 - **Starts were fixed**
- **Galileo**
 - 1564-1642
 - Invented telescope
 - **Moon is not luminous; starts, planets aren't perfect**
 - Challenged the church
 - Recanted his beliefs
- **Tyco Brahe**
 - 1546 - 1601
 - Built an observatory
- **John Kepler**
 - Orbits of the planets
 - **Elliptical orbits**; (ovals) move at different speeds
- **Newton**
 - **Principia**
 - Combined all the knowledge
 - Theories of gravity and inertia
 - Natural laws
 - Invented calculus
 - Colors are combinations of primary colors
 - Particles of matter attract one another

Implications of SR

Wednesday, November 02, 2005
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- Implications of the Scientific Revolution

- Religious Implications
 - *Most scientists were religious*
 - SR: Earth not center of the universe
 - Man not center of the universe
 - Reduced standing of mankind
 - Church: Everything fixed
 - SR: exploding stars, comets, eclipses, etc.
 - SR: Universe is constantly changing
 - SR: Hand of Prime Mover not necessary for planetary motion
 - Natural state: probably motion not rest
 - SR: church is not the only source of knowledge
 - SR: universe is mathematical in structure
 - *Laws of Mechanics* (laws of motion)
 - SR: Heavens are infinite
 - SR: Earth like other bodies (not particularly Xn)
 - SR: Increased confidence in human powers
 - Dignity of man
 - Not dependent on God
 - Human reason
- Practical Implications
 - Demand for evidence
 - Law
 - Judge lost discretionary powers (to procedure)
 - Rules of evidence
 - Hearsay (rumor) evidence excluded
 - Legal counsel common (attorney)
 - Belief in witchcraft ended
 - Confessions obtained under torture less convincing
 - Historical Scholarship
 - Demand for evidence
 - Collected old primary sources
 - Paleography
 - Science of dating (how old)
 - Interest in chronology
 - Numismatics
 - Study of inscriptions on ancient buildings
 - Questioned origin of books of Old and New Testament
 - Miracles questioned

John Locke and Natural Law

Wednesday, November 02, 2005

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- John Locke

- Political scientist
- Basis of democracy
- **State of Nature**
 - Man without government
 - Man gets along
 - Man has basic rights
 - Life
 - Liberty
 - Property
- **Social Contract**
 - Government
 - To protect the rights of man
 - People
 - Have right to overthrow the government
- **Two Treatises on Government**
 - Book about Government
- **Essay Concerning Human Understanding, 1690**
 - When we are born our brain is a "*tabula rasa*"
 - Clean slate
 - No innate ideas (nothing there before birth)
 - **Empiricism**
 - Environment shapes experience
 - All knowledge comes from sense experience
 - Idea of equality
- **Beginning of liberalism**
 - Improve human nature by changing society
 - Confidence in social programs
 - All able to learn
- **Natural Law**
 - 17th century
 - Right vs. Wrong (Right = natural)
 - Universal
 - No matter of heritage, customs, traditions
 - Discover natural law through reason
 - Law of Nations
 - Idea used both by Locke and Hobbes

CHAP REVIEW

Monday, November 07, 2005

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1. Scope
2. Contributions
 - Through rediscovery of old ideas and application of scientific method, the scientific revolution sparked a century of technological development and societal change. As the result of the scientific revolution, demand for evidence and reason challenged the widely accepted doctrines of the past and ultimately set apart science and religion; it gave man a new way to think and a new way to prove his theories
3. Political theory
 - Threat to absolutism
4. Political theory
 - Threat to absolutism
5. Economic issues
 - Threat to absolutism
6. Philosophical spokesmen
 - Bacon
 - Descartes
 - Who we know?
7. Social issues
 - Upper class only
8. Religious issues
 - Censorship
 - Man not center of universe
 - Universe isn't perfect
 - All church ideas questioned
9. Scientific
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 - *Principia*

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- Colors are combinations of primary colors
- Particles of matter attract one another
- **Cavendish**
 - Woman
 - Created scientific gatherings

10. Geographic

- Eastern Europe were not as scientific revolutionized
- Portestants were more welcoming of SR