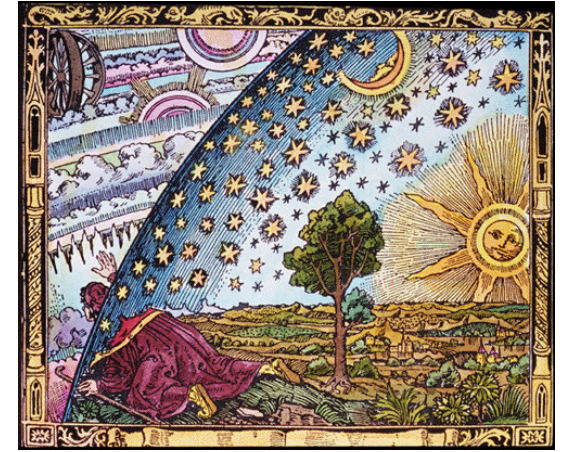
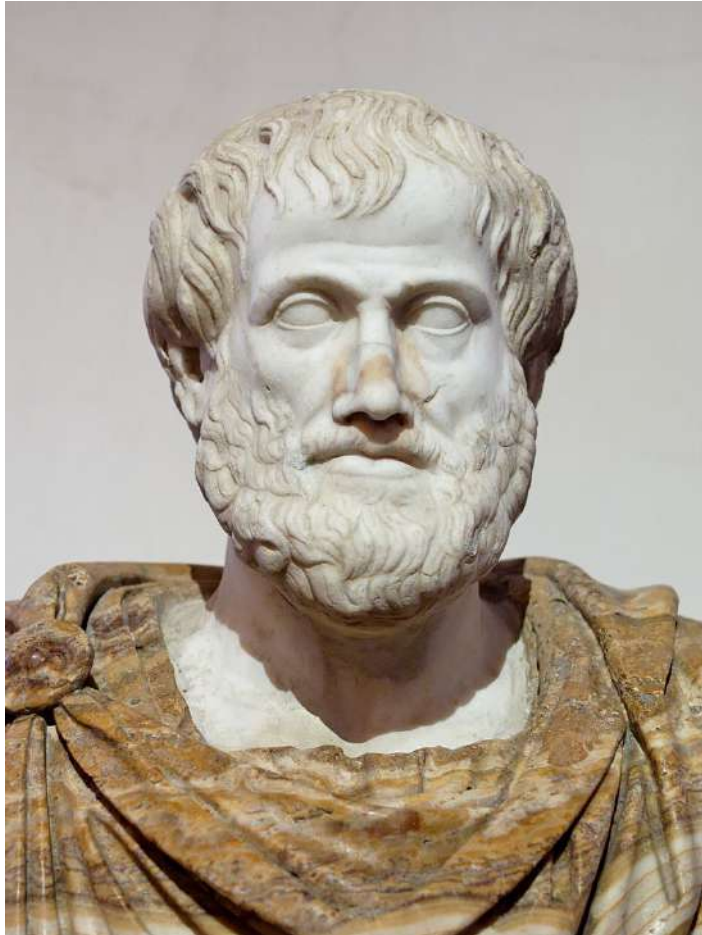




TOWARD A NEW WORLD-VIEW

Chapter 16

ADIOS, ARISTOTLE



4th century B.C.

- Earth is fixed at the center of the universe
—four imperfect changing elements.
- Earth-centered universe surrounded by planets within circular, crystal spheres.
 - Most knew this was untrue...

FAREWELL, PTOLEMY



2nd century A.D.

- Planets moved in small circles.
- Provided basic foundation of knowledge about earth.
 - Still limited knowledge of the globe. (Europe, Asia, Africa)

SCIENTIFIC REVOLUTION

Elite movement

- Little immediate impact on the masses.

Shift in emphasis from
“**authoritative**” truth to
“**factual**” truth.

- Established the conflict between science and religion that exists in some ways, even today



KEY FEATURES

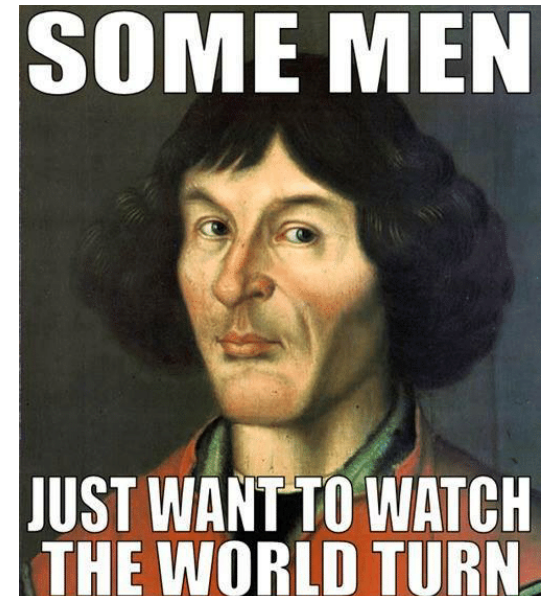
Empiricism: Belief that knowledge comes exclusively through the senses or experience.

- **Sir Francis Bacon** (inductive reasoning)

Cartesian Dualism: View that all of reality could be reduced to mind & matter.

- **Rene Descartes** (deductive reasoning)

Skepticism: Philosophy that suggests that nothing can ever be known for certain.



CAUSES OF THE SCIENTIFIC REVOLUTION

Medieval universities (13th century)

- Training lawyers, doctors, and church leaders
- Theology → Philosophy → Science

Renaissance humanism

- Return to the **classics & mathematics**
- Patronage
- Printing Press

Navigational needs

- Trade and exploration → **economic motives**



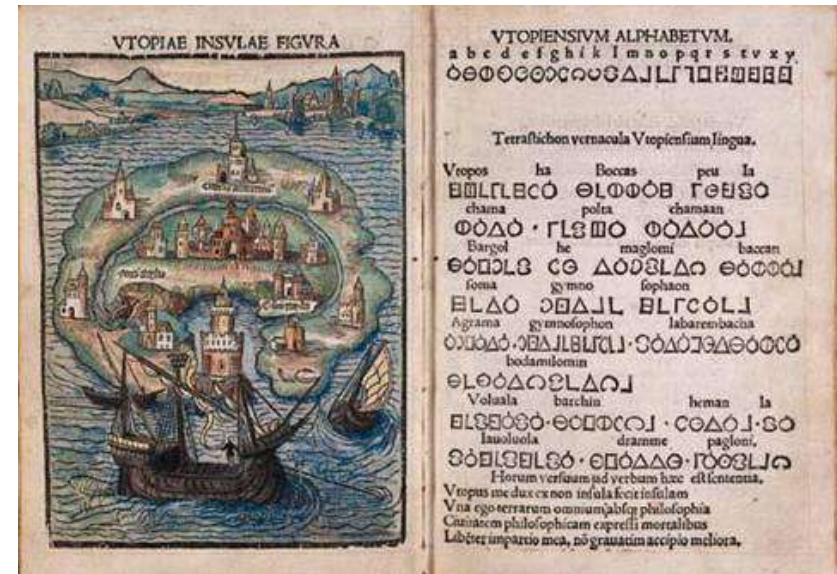
SCIENCE & RELIGION

Some thinkers viewed God as a “**watchmaker**”.

- Motivates us to search for laws of nature that regulate all human activities.
- Mechanistic Universe → *Isaac Newton*

The scientific problem-solving approach

- Aimed at perfecting society.



NICOLAUS COPERNICUS (1473-1543)

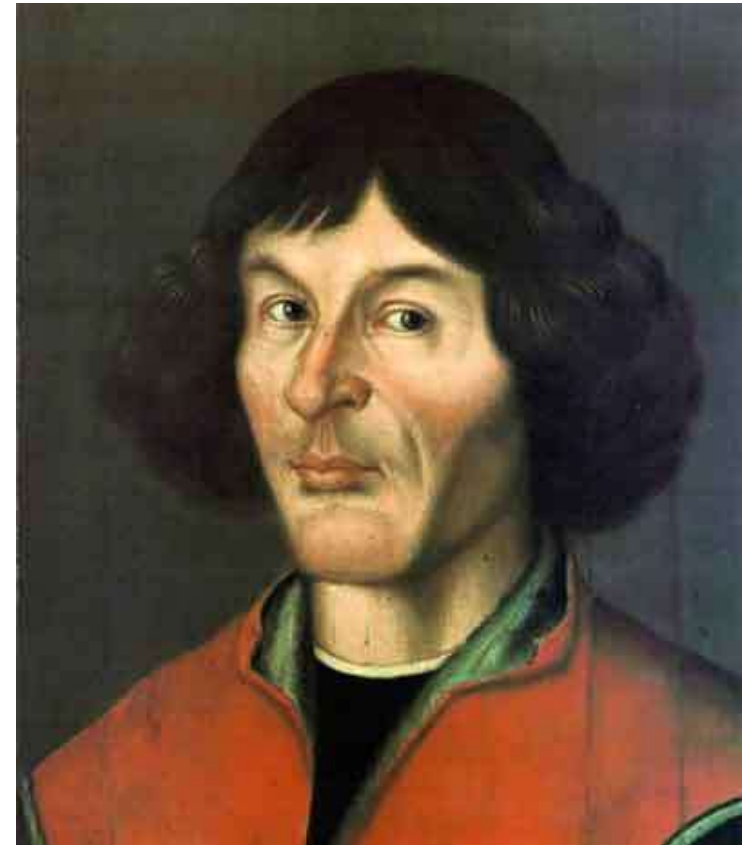
Wanted to explain and glorify God's handiwork.

Heliocentric theory: Earth spins on axis daily and circles the sun.

- *On the Revolutions of the Heavenly Bodies (1543)*

Implications:

1. No crystal spheres to move stars around the Earth
2. Universe is huge
3. Earth is just one of many planets (*where is heaven?*)



GALILEO GALILEI (1564-1642)

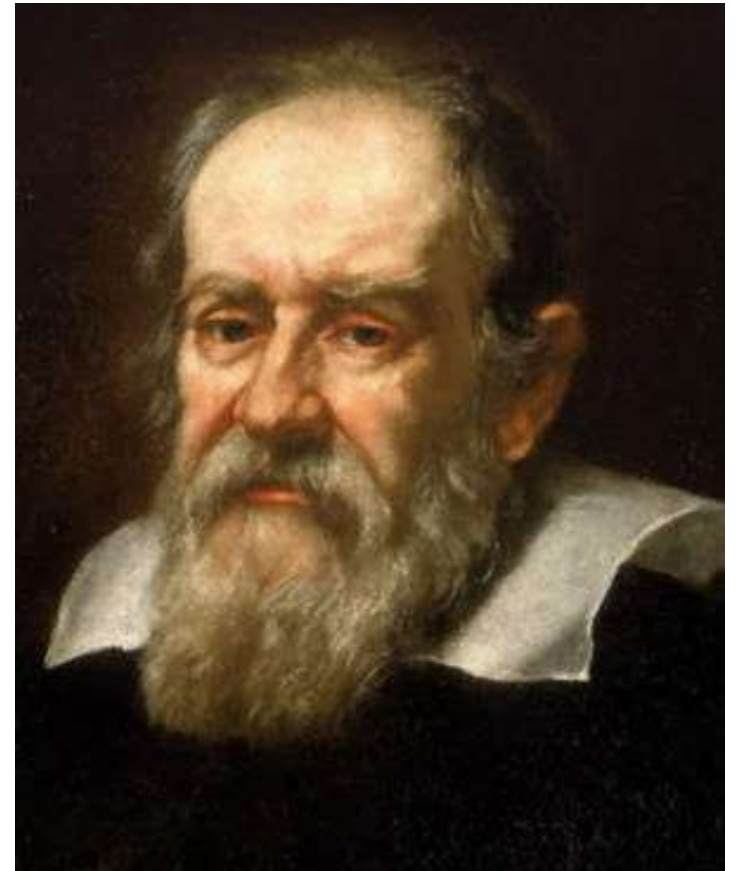
Universe as mechanical device with interlocking parts, created & set in motion by God.

Experimental method

- **Law of inertia** → went against Aristotle
- **Moons of Jupiter** → went against Ptolemy

Tried for heresy by the papal Inquisition

- “Recanted”



SCIENTIFIC REVOLUTION FOR WOMEN

Madame du Chatelet (1706-1749)

- French high aristocracy
- Studied physics and mathematics

Excluded from the **Royal Academy of Sciences.**

- Focused on spreading the ideas of others
 - Translated works of Isaac Newton into French for the first/only time

Believed limited contributions of women in science due to limited access to education.



-ISM'S AND I -ATION

Rationalism: reason as the source of knowledge and basis of opinions.

Liberalism: encourages citizens' rights and individual freedom

Nationalism: allegiance to the concept of the nation-state

- Positive: liberates people from domination (USA)
- Negative: justifies wars of aggression

Industrialization: (1750 →) leads to wealth, imperialism, & even socialism

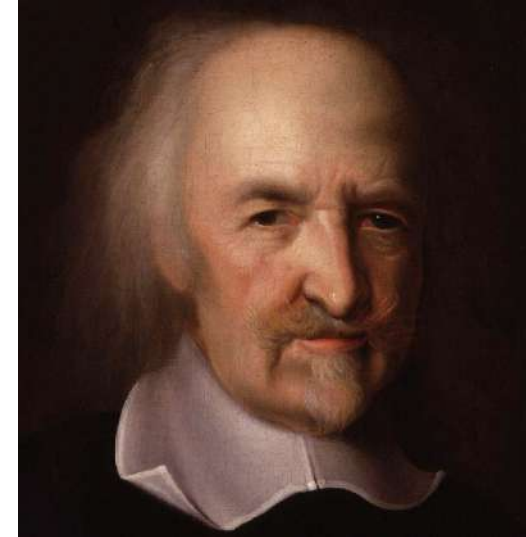


Marquis de Condorcet
Free education key to
rational society. Equal Rights for
Women

THE ENLIGHTENMENT IN 17TH CENTURY ENGLAND

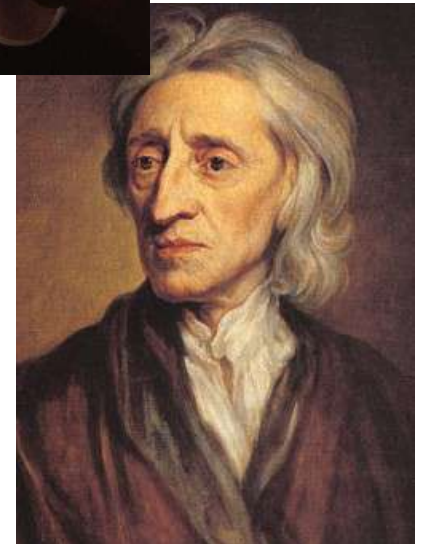
Thomas Hobbes (1588-1679)

- Sovereignty given to absolute monarch by the people
- Human nature: greedy & competitive (**pessimistic**)
 - *Leviathan*



John Locke (1632-1704)

- Ideas are derived from experience (**Tabula Rasa**)
- Human development determined by education and social institutions
 - *Essay Concerning Human Understanding* (1690)



THE INFLUENCE OF THE PHILOSOPHES



The Philosophes: French intellectuals who proclaimed that they were bringing the light of knowledge to their fellow humans.

- Wanted to reach a larger audience of elites

Salon: Meeting place to discuss literature science, and philosophy.

- Many hosted by **women**
- Connection between philosophers, French nobility, and middle classes

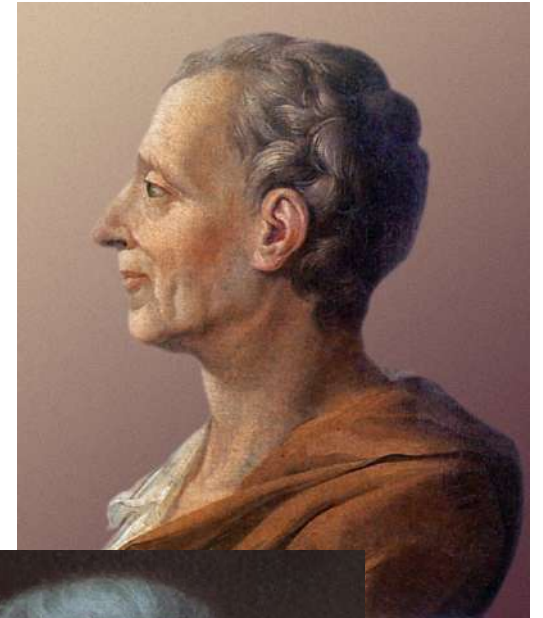
THE PHILOSOPHES

Baron de Montesquieu (1689-1755)

- Used satire to criticize existing practices & beliefs
- Separation of powers → defend liberty
 - *The Spirit of Laws* (1748)

Voltaire (1694-1778)

- Used satire to criticize the French government
- Supported the idea of an Enlightened Monarch → “human beings are rarely worthy to govern themselves”.
 - No social equality



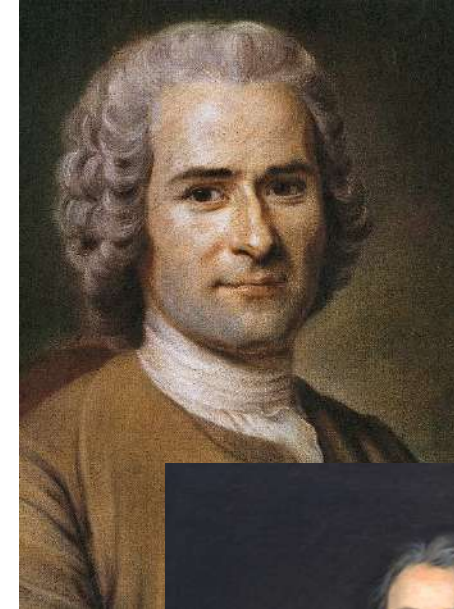
THE PHILOSOPHES

Jean-Jacques Rousseau (1712-1778)

- Fundamental concepts: the general will & popular sovereignty
 - *The Social Contract* (1762)

Denis Diderot (1713-1784)

- Worked with Jean le Rond d'Alembert as editors of the *Encyclopedia* (1765)
- Example that humans could use the process of reasoning to expand human knowledge



THE PHILOSOPHES

Immanuel Kant (1724-1804)

- Greatest **German** philosopher of the age
- Freedom to exercise public reason will lead to enlightenment
 - Emphasized **enlightened monarchs** (Frederick the Great) for permitting freedom of the press



RELIGION

What kind of religion will these folks develop?

Deism:

- Trend to skepticism/ atheism
- A new view of “cosmos” based on reason/ math
- God is a source for good— reject traditional church dogma/ revelation



Emilie du Chatelet
Physics & Math
Also translated Newton.

RACE

Scientists began classifying humans into “races” (18th century)

- Old ways: People grouped into “nations”
- Hierarchy

Enlightenment beliefs of racial superiority

- Scientific racism → **slavery**

Challenges to racial superiority

- Attacks on slavery & European colonization
 - History of the Two Indies (1770) -the abbe Raynal



Abbé Raynal

GENDER

Philosophes saw women as intellectually & physically inferior

- Women played informal role in the Enlightenment → **Salons**
- Education reform

Mary Wollstonecraft (1759-1797)

- Applying natural law philosophy
- Advocated for women's education → Women were capable, but needed to be given the opportunity

