

Scientific Revolution

- New mechanical conception of nature
 - Global “contact” stimulates western minds
 - Perception of reality shattered
 - New methodology
 - Set new standards for “knowledge”
- Previous view of nature
 - Christian thought w/ Ancient Greeks
 - Aristotle & Ptolemy
 - Distinction between Earth & Heaven
- Vision shattered by Scientific Revolution
- Copernicus
 - Mathematician & economist
 - Observed heavens
 - Goal = better understand God’s creation
 - *Dē revolutionibus orbium coelestium*
 - Discovered motion of other planets not related to Earth
 - Geocentric vs. Heliocentric
 - NOTE: Copernicus NOT discussed at Council of Trent
 - Giovanni Tolosani = 1st to denounce

- Focus not science but philosophy

- Tycho Brahe
 - Noble; astronomer
 - Admired Copernicus, but devoted to “stability” of Earth
 - Observations = most accurate
 - Produced unique system = Geo-heliocentric universe

- Johannes Kepler
 - Astronomer & mathematician
 - Student of Tycho
 - Studied paths of known planets
 - Devised equation for Copernicus’s theory
 - Orbits = ellipses; focus =sun
 - Velocity increases when distance from focus decreases
 - Key = All planets move same

- Galileo Galilei
 - Astronomer, physicist & engineer
 - Order & uniformity to nature - not random
 - Used observation to prove Copernicus
 - *Starry Messenger*
 - Supports theories with observations

- Result = no distinction between Earth & Heaven
- Controversy in 1632
 - Urban VIII requests arguments for & against heliocentrism
 - *Dialogue Concerning the Two Chief World Systems*
 - Insults Urban; summoned by Holy Office
- Found “vehemently suspect of heresy”
- Sir Isaac Newton
 - Mathematician, physicist, astronomer
 - Synthesized Kepler & Galileo
 - Universe = infinite; governed by laws
 - Nature also governed by laws
 - Philosophy of nature
 - Laws of Motion
 - 1: Inertia
 - 2: Acceleration
 - 3: Action = opposite reaction
 - Law of Gravity
- Advocates = as important as scientists
- Giordano Bruno
 - Dominican monk

- Free thinker
- Advocate for heliocentric universe w/in church
- Argued that universe is infinite
 - Each star = sun, w/ own planets & life
- Advocates for changes in religion
- Arrested ifor heresy; transferred to Rome
 - Tried by Holy Office
 - Sentenced to death
- Lord Francis Bacon
 - Lord Chancellor for James I
 - Drafts proper methodology – “empiricism”
 - Argues for “inductive reasoning” to discover laws
 - Challenge = 4 “idols”
 - Scientists must be collectors of “facts”
 - Science must be open & free; w/ human goals; & methodology
 - Calls for education reform
- Rene Descartes
 - Philosopher, mathematician, & scientist
 - Searched w/in self for knowledge
 - Classical education = worthless

- BUT, no need to prove God exists
- Realized only thing he could prove was he existed.
- Recognized power of rational thought
- Arrive @ “truth” by testing against experience