Part One = Scientific Revolution (16\textsuperscript{th}/17\textsuperscript{th} Century)

Focus is on the discovery of Natural law/physical law: changes the way Europeans look at the physical universe.

This concept of Natural Law gets applied to society during the Enlightenment

I) Background/Causes (of the Scientific Revolution)
   A) Rise in the number of universities
      (1) Science starts to be taught as separate subject
      (2) Prior to this period science was taught as part of theology
   
   B) Renaissance
      (1) Questioning accepted knowledge/Montaigne-Descartes/skepticism
      (2) (interest in Natural world)
      (3) Da Vinci: considered the first scientist-especially interest in human anatomy

   C) Reformation
      (1) Ok to be anti-catholic (many scientific ideas that are disproved were supported by the Catholic Church-Sci. Rev is more prominent in Protestant areas)

   D) Government involvement
      (1) Academies of science start to develop
      (2) Government involvement in exploration and colonization (lots of new science related to exploration-navigation etc…) 

   E) Exploration
      (1) Government sponsored
      (2) Star charting, compass, and pendulum clock (navigation related-leads to several new discoveries

   F) Development of movable type
      (1) Share information between scientists-speeds up process (think internet today)
      (2) Limits duplication of work-can build on the work of others

*****similar to the internet today

II. Old science (Aristotle) *****

- Dominates (300 BC – 1500 Ad)
- effects all parts of society (the church, universities – everyone accepts Aristotle

- Deductive – when you move from the general propositions to the specifics
- based on syllogism (logic)
A) Specific beliefs (of old science)  
(1) **Ptolemaic theory**- planets evolve around the earth (aka geocentric theory)  
(2) **Crystalline spheres**- heavenly bodies are perfect  
(3) “**unmoved mover**”- all bodies were at rest until acted upon by an outside force  
(4) **Circular motion**- only possible continuous motion  
(5) Element 2 major types  
   (a) Heavy – land, rocks etc…  
   (b) Light – air/fire  

B) Scholasticism  
(1) Philosophy that attempts to prove religious beliefs through logic  
(2) St. Thomas Aquinas  
(3) Significance- because the old science gets incorporated into religion, the new science will be in conflict with religion (conflicts with the Catholic Church)

II) Important Authors: helped make new science popular with the non-science public  
1) Blasé Pascal (1628-62)  
   - Modern probability theory  
   - Major Book = Penses  
   - Extremely Religious

   A) “**Religious Wager**” (betting on the existence of God)  
      - Choices  
      (1) Bet there is no God and act accordingly  
         (a) If your wrong you have lost everything  
      (2) Bet there is a God and act accordingly  
         (a) If your wrong you lose nothing

2) **Michel d’ Montaigne (Skeptic)**  
   A) Extreme skeptic (discuss why skepticism is so important)  
   B) “**Que sais je? Rein**”  
      (1) What do I know? Nothing.  
   C) Significance = they are calling 1800 years of excepted knowledge into question

3) **Rene Descartes** (Devout Catholic)*****  
   - Analytical Geometry  
   - Wrote Discourses and Six Meditations
A) Main ideas

(1) **Cartesian Dualism**
   (a) Define - Divides what people know into the physical & the Spiritual. His Conclusion - what we know through our minds is more accurate than what we know through our senses

This is a very important philosophical argument - had been debated since Plato

(2) “**Systematic Doubt**” ****
   (a) Define – doubting any knowledge that can be doubted
   (b) Process-
      (1) Physical (senses) = information thru sense-all can be doubted
      (2) Spiritual (mind) = information gain thru reason-most can be doubted one thing is for sure = thinking can’t be doubted
   (c) Conclusion: The only thing we know for sure is that we are thinking (even if what we are thinking is wrong)

(1) “*Cogito ergo sum*”
   a  I think therefore I am”

(2) Spiritual is more certain than the physical
(3) Tries to prove the existence of God through deductive reasoning

4) **Sir Francis Bacon**
   - Books = Novem Organum and Advancement of Learning
   - Stressed – scientific Method = Inductive reasoning
   - stressed practical benefits for society
   - help make science and the scientific method popular with the non-scientific public

   A) Idols of Thought ( tried to explain why we believe untrue things )
      (1) Idols of Tribes
         (a) Refers to the reliance of simple solutions
      (2) Idols of the Cave
         (a) Refers to the blind acceptance of excepted thought
      (3) Idols of the Market Place
         (a) Refers to the blind acceptance of the views of others
      (4) Idols of Theater
         (a) Belief in what is popular is right

   B) **Key to Bacon**

   (1) **Scientific method and its practical benefits to society. ****

III) Scientists (Big 4 + 1))
   - Natural Law vs. Aristotle: each of the following scientist either directly or indirectly helped disprove part of the accepted science of Aristotle/
A) Copernicus (1473-1543)
- Developed a basic Telescope
- Wrote “On the Revolution of Heavenly Spheres”

(1) Sketches the moon
   (a) Significance – the moon had an irregular surface which violates the idea of crystalline spheres

(2) Hypothesis “Heliocentric Theory which violates the accepted theory (earth centered universe)

B) Tycho Brahe
- Danish Astronomer who builds observatory
- accumulates the most accurate data of the movement of the planets and stars
- Significance ↓↓ his assistant is more famous

C) Johannes Kepler (1571-1630)****
- Brahe’s assistant
  (1) Major Work = “Laws of planetary motion” (natural law)
    (a) Key Law: Planets have elliptical orbits

Accepted science was that all continuous motion must be circular
Elliptical orbits was the key break thru (that is when the heliocentric theory started to match observation)

D) Galileo (1564-1642)*****
(1) Major improvement in the telescope
(2) Laws of inertia (natural law)
   (a) Physical bodies are constantly in motion acted upon by an outside force
   (b) Opposition to Aristotle: accepted science was that bodies were at rest until acted upon by an outside force (for Aquinas and the Catholic Church the “unmoved mover”)

(3) Major Works- “Dialogue of two Chief Systems of the World” (1634)
   (a) Using his telescope, he publishes a series of planetary observations
   (b) Proves the heliocentric theory
   (c) Conflict with the Catholic church

(4) 1632 Papal Inquisition
   (a) Galileo publicly retracts his scientific beliefs
   (b) “yet it moves”

**1992 Pope John Paul II apologizes for the persecution of Galileo

E) Sir Isaac Newton (1542-1727)********
Major Works = “Mathematical principals of Natural Philosophy”
   - AKA “Principia Mathematica” (or just Principia)

(1) Develops laws of Gravity (Natural Law)
   (a) Significance – brings the heliocentric theory together
(2) “Science of Mechanics” = AKA Mechanical view of the Universe *****
(a) Belief that the physical universe operates like a machine
(b) Because of that we can discover how it works
(c) Based on natural laws (elliptical orbits, inertia, gravity etc..)
(d) As man discovers these laws he gains a sense of control
(e) *** PROGRESS ***

F) Other important Developments
(1) Vesalius – Structure of the Human Body
   (a) (1543) Used sketches from Da Vinci to outline the circulatory system
(2) Huygens = (1656) Developed Pendulum clock
(3) Leeuwenhoek – (1647) Magnification through glass
   (a) Forerunner of the microscope
(4) Harrison – Sea Clock
   (a) Develops concept of longitude

IV) Political/ Social sciences (science gets applied to society-social social sciences)
1) Major Concepts
   A) Empiricism*****
      (1) Define= belief that all knowledge is learned
      (2) “Tabula Rasa” = clean slate ***** (the mind is blank at birth-experience/education
         “etches knowledge” on the brain)
      (3) Significance
         (a) Nature vs. Nurture
            (1) Society is responsible for Good and evil

   B) Rationalism

      (1) Focuses on the ability of human reasoning to discover natural laws of society

   C) Social Contract Theory ****

      (1) Belief that government is formed voluntarily
      (2) People give up some freedom to a government that provides certain protections
      (3) Significance
         (a) Basis of Democracy

2) Two Major Political Scientist
   A) Thomas Hobbes (1588-1679)
      (1) Background
         (a) Lived in England during English civil war
         (b) Pro king
         (c) Tutored Charles II
(2) Major Work = “Leviathan” (1657)
   (a) Purpose – to discover the legitimate basis of government
   (b) Process
      (1) Starts with the concept of the State of Nature
         a Define – time period before government was created
         b Significance – man’s behavior in the state of nature is a way for writers to write about human nature
         c Hobbes view of Human Nature
            i. In general
               • Man is evil
               • In the absence of government man will be really bad
            ii. Specific Quotes
               • “Life in the state of nature is nasty, brutish and short”
               • “state of nature is the war or all vs. all”
               • “The cardinal virtues are force and fraud”
            iii. Significance
               • Life is so bad that people agree to form a government
   (2) Social Contract (Hobbes’ version)
      a People give up all of their freedom to an all-powerful government
      b Government protects order and stability (prevent chaos)
      c Government isn’t part of the contract (not limited by it)
   (3) Implications (of Hobbes’ beliefs)
      a Government power is absolute
      b Rebellion is never justified
      c Greatest evil is chaos
      d Goal = to create order and stability

B) John Locke
   (1) Essay concerning Human Understanding (1689)
      (a) Empiricism
      (b) “Tabula Rasa”
      (c) Significance (Implications)
         (1) Society is responsible for evil
         (2) Reforming society with natural laws is the solution

****many ideas in the Enlightenment are based directly or indirectly on Tabula Rasa
****man is capable of reason and learning from experience
(2) Two Treatise on Government (1690)
   (a) Background
      (1) Locke lived in England during the Glorious Revolution
      (2) Pro Parliament
   (3) Belief in natural Rights
      a Life
      b Liberty
      c Property

Significance of Natural Rights Concept
   (b) Process
      (1) State of Nature
         a In general
            i. Positive view of Human Nature
            ii. Most people will respect others natural rights
         b Specifics
            i. “man is rational and capable of learning form experience”
         c Problems are more limited in State of Nature
      (2) Social Contract (Locke’s version)
         a People give up limited freedom to a limited government to protect natural rights
         b If government fails to protect natural rights, the people have the right to overthrow the government
      (3) Implications (of his ideas)
         a Supports limited monarchy
         b Justifies revolution
         c Greatest evil is violation of natural rights
         d Purpose of government is to protect natural rights

****Locke has a major influence on Thomas Jefferson and the Declaration of Independence

Part Two = The Enlightenment
I) Social Aspects:
   A. Salons *****
      1. Define= parties given by aristocratic women which focus on enlightenment ideas and writers
      ****Ben Franklin/David Hume very popular at these
      2. Significance = role of women in the salons … 1st time women participated in a major way in a social movement
   B. Organizations that supported enlightenment ideas and reforms
      1. Freemasons – group that used architecture metaphors for God (Deists)-many founding fathers were freemasons.
      2. Illuminati – Italy – Galileo was member (Dan Brown does some stuff with the illuminati in Angels and Demons)
Both groups often had to meet in secret

C. Great Awakening
1. Define = Religious Revival (rises against a more secular age)
2. Example = Wesley Brothers develop – Methodist Church
3. Significance
   (1) Anti enlightenment movement

Pietism (another religious movement associated with this time period)

II) Minor Philosophes- Philosophers/ social and political writers

A. Denis Diderot
1. Encyclopedia – accumulation of the major works/writers of the enlightenment
   (1) Significance – many ideas support reforming society/government/economics – gave public access to the new ideas (hence feared by some in power)

B) Friends with Catherine the Great… She bought Diderot’s library and allowed him to publish his encyclopedia

B. Cesare Beccaria
- Essay on Crime and Punishment
- “Natural laws” of justice
1. Purpose of punishment
   (1) Deter crime not to get revenge
   (2) “harsh enough to make an impression but not harm the human body”
**anti torture/death penalty

2. Justice (Assigning Penalty )
   (1) “Must be swift in order to be effective”

3. Certainty
   (1) “Certainty is better than severity”

****If legal system was reformed based on these natural laws it would be improved (less crime)

****Beccaria (like many philosophes was against torture and the death penalty

C. 2 Very Minor Writers
1. Condorcet
   (1) “Progress of the Human Mind”
   (a) 10 stages of development
   (b) Stage 10 is perfection
   (c) He believe in would be achieved because of the French Revolution

Reign of Terror proved him wrong-committed suicide as a result

B) Baron d’ Hollbach
1. “Systems of Nature”
   a. “Atheistic Determinism”
   (1) Define= no God and Human Behavior is determined by society
(2) Significance- Anti Religious/ Societal factors cause human behavior-determinism becomes increasingly important.

III) 3 Major Non French Philosophes

A. Jeremy Bentham (1748-1832)
   1. Utilitarianism: Define= government policy should create the greatest happiness for the greatest number (add up all of those who would benefit and all of those who would be harmed-go with the policy with the best positive results)
      a. Associated with growth in democracy
      b. Legal/prison system reform
      c. Poor Relief (esp. for children) reform (welfare)

   1. Empiricist: all human behavior and knowledge is learned
   2. Relativist= anti enlightenment (did not see universal laws that applied to all societies
   3. Significance = Forerunner of Romanticism

   1. Dualism (divides knowledge into physical and mental) He believes physical is more accurate than mental (opposite of Descartes and most enlightenment writers who focus on the power of human reason)
   2. Enlightened is to think for yourself, to not do that-the opposite is “nonage”
   3. Categorical Imperative****: Define= Natural law of Human behavior that says you should act that the maxim of your action is a universal law”

***Meaning

Significance = a Natural law of human behavior

IV. Major French Philosophes
   A. Montesquieu (1689-1755)
   1. Background
      French noble = Bordeaux Parlement
      He is part of the Noble Resurgence / Feudal revival (Refers to the nobility reestablishing its power after Louis XIV)

   2. Minor Works :
      a. Persian Letters (Satirical criticism of the French Government (satire is used by authors to avoid censorship)
b. The Consideration of the Greatness and Decline of Rome: Compares Rome to Great Britain
   1. Britain has the power/ability of “self correction” – ability to recognize mistakes and make changes
   2. Significance= foreshadows his idea of checks and Balances

3. “Spirit of the Laws” (1748): Divides laws into 3 types
   a. Law of nations = international law
   b. Political law= criminal law
   c. Civil law = Regulates relationships between people

   a. “Nation’s laws are determined by its climate, quality of soil, situation and extent, principal occupations, religion, population, manners, and customs”

   1. Climate and size are the two points he focuses
   2. Significance
      a. Large nations w/ extreme climates will be Despotic = Dictatorship
      b. Median size with moderate climates will be Constitutional (limited) Monarchy
      c. Small (city states) will be Democracies

   ****Natural law = size/climate determines government and if it doesn’t follow the law it can’t work

This was an important part of the debate as the US Constitution was being developed—many thought it would be too big a country to be democratic.

3. Structure of Government (Separation of Powers)
   a. Monarchy =King=President
   b. Aristocracy=House of Lords= Senate
   c. Democracy=House of Commons= House of Representatives

Montesquieu had a big impact on the development of the US Constitution—did not have as big an impact on European government.

B. Voltaire (Francois Maria Arouet) (1694-1778)

1. Background
   a. Middle Class (Hates Aristocracy)
   b. Clock Maker-developed a village in Switzerland (you will or have read about this)
   c. Most popular writer of the Time Period

2. Early Political Work
   a. “Letters Concerning the English Nation”: supported France reforming itself along the British Model. Contrasted what he liked about England vs. what he did not like about France

   England vs. France

   Limited Monarchy vs. Absolute Monarchy
   Powerful middle class vs. powerful nobility
   Free Press vs. censorship
3. Later Political Works
   a. “Age of Louis XIV”: Supported Enlightened Despotism: Define = belief that best form of Government is one controlled by a well educated, well trained, well intentioned, all powerful monarch

   1. Based on the idea of Tabula Rasa
   2. Voltaire is friends with Fredrick “The Great” and Catherine “The Great” (Despots)

   b. Other Major works revolve around Religion

      1. In General
         a. Supports toleration
         b. Dislikes organized religion: Believes that organized religion Believes that Organized Religion “Supports superstition and fanaticism”

      1. Pamphlet - “Treatises on Toleration” Calais Affair Involves a murder in which a Huguenot father was accused of killing his son b/c he wanted to convert to Catholicism

         a. Significance = Voltaire proved the father was innocent and had been convicted b/c of the influence of the Catholic Church in the Courts

      2. Deism Define = belief the god created the universe based on natural law, but doesn’t effect the daily lives of humans

         a. Metaphor for God :“God is a great clock Maker
         b. ”Proves Deism with a syllogism

            1. God can’t be both benevolent and all powerful

               Major premise: If God was all powerful he could prevent human suffering

               Minor premise: he doesn’t prevent human suffering

               Conclusion = he isn’t Benevolent OR

               Major premise = if god is benevolent he would prevent human suffering

               OR

               Minor premise = he doesn’t

               Conclusion = he isn’t all powerful

   ****the second is the conclusion that many Deists reach-see God as a creating force-created the universe based on natural law-but did not participate in daily lives.
3. “Candide” (1758) = Most popular work of the Enlightenment

a. Context = Written in the aftermath of a major natural disaster in Portugal. The Pope’s Response = “Patient Optimism”: Suffering of some is necessary for the benefit of mankind

b. Because of that everything is as God would have it be “Everything is as it should be”

c. Plot of Candide

1. Candide = Major Character: Male—Goes through a series of extreme highs and lows

2. Dr. Pangloss = Candide’s Mentor: Represents the pope’s patient optimism -“Everything is as it should be

C. Jean Jacques Rousseau (1712-78)

1. Background = Lower class orphan-1730s he is adopted by aristocratic woman Well educated- very popular in salons. Kind of an experiment in tabula rasa. He was the most influential writer of the enlightenment

2. “Discourse of Inequality”: key concept: “The Noble Savage”: positive view of man in the state of nature. All humans equal and it is society and greed that leads to inequality. (Not very popular)

3. Emile (Education and how it solves the evil created by society): based on the idea of Tabula Rasa (clean slate)-implication is that society creates evil-Education is the solution

   a. Rural Setting for schools: get away from evil of modern urban life (worship of nature.
   b. One on one teaching
   c. Emile = the student
   d. Rousseau = the teacher
   e. Education should be concrete
   f. Student centered
   g. Trial and error
   h. Self paced
   i. Significance :Importance of education : Influences us today – Montessori method

***goal of this education to create “citizens” vs. “selfish individuals” “love of others” vs love of self”

4. Social Contract (most important political work)

   “Man is born free, yet everywhere he is in chains ”Why—because governments are not legitimate

   1. Purpose of Book = discover legitimate basis of government
2. Process
   a. Rousseau’s view of man in the **State of Nature**
      
      Man is unhappy b/c we belong to nothing
      
      Alienation: intense loneliness
   
   b. **Rousseau’s Version of the Social Contract**
      
      People would give up all their freedom and all of themselves to an all powerful government
      
      Governments rules in the interest of the “**General Will**”
      
      Define = what a majority of the people would do if the knew what was best for themselves
      Also could mean = interests of a nation the present and future
   
   c. **Civic Religion**
      
      • Teaches citizens to worship their country as God
      • Purpose = create “Virtue” -Define = Virtue characteristic that causes people to care more about their country than themselves

   Implications (Totalitarian Government: government controls everything/no violation is acceptable—death penalty for all violations of the law.)

   d. Significance (of Rousseau)
      
      Influence on Robespierre
      Influence on Napoleon
      **Forerunner of Romanticism**
      
      ******future significance of the idea of the general will****

V. **Adam Smith and the Physiocrats (Political Economists)** Examples in France  Turgot, Quesnay, Necker

Cameralism(ists): focused on the importance of government accounting and the natural value of land.

**Adam Smith is the only really important economist from this time period**

   A. “**Inquiry into the nature and Causes of the Wealth of Nations**” (1776)
      
      Major Concepts
      
      1. Smith is opposed to Mercantilism
         
         a. Definition of wealth
         
         1. Mercantilism – Gold and Silver/ Money Surplus (Best way to accomplish this is to become Self Sufficient and a favorable balance of trade) **encourages savings and Producing all products possible**
2. Smith’s View - how much a nation can consume-best way to accomplish this is specialization (both labor and national) encourages spending and only producing some products.

Discuss the significance of how wealth is defined-if national wealth is the goal of economic policy, then countries will strive to become wealthy (as it is defined during a particular time period)

b. Division of Labor

Define – workers perform one stage in the production of a product (as opposed to the domestic system in which workers make entire product)

c. “Invisible Hand” (Natural Law)******

- The driving force of economic history is self interest
- Smith sees this as positive, sometimes referred to as Enlightened Greed
- Every individual is constantly trying to explore the best way to employ their capital, in doing this they help society (though that was not their intention)

****Implications

- Competition is socially beneficial
- Leads to the belief in “Laissez Faire” Capitalism – little of no role for the government in the economy
- Leads to a belief in very limited Government-economic policy

Government Functions (very limited compared to modern government)

- Print money
- National Defense
- Law enforcement
- Infrastructure
- Tax
- Public education

V. Enlightened Despotism (Monarchy) Define = the best form of government is one ruled by an all powerful, well intentioned, well educated (trained) monarch. First introduced in Voltaire’s Book- Age of Louis XIV

A. General menu of Reform

1. Codify laws: Written laws-Significance – they are only truly fair when written
2. Improve infrastructure
3. Centralized power
4. Improve/reform bureaucracies (get government to work like a machine)
5. Some amount of Religious Tolerance  
6. Some Limitation of serfdom  
7. Modernize agriculture/industry

B. Austrian Empire  
1. Maria Theresa (1740-80)  
   Started to codify laws  
   As a woman struggled to stay in power  
   Raised her son to be an enlightened Despot  

2. Joseph II (1780-90) “Best example of an Enlightened Despotism (and its limitations)” Philosophy is the Legislator of my Empire”  
   a. Specific reforms  
   Abolished serfdom (Angers Nobles)  
   Taxed Equally (Angers Nobles/Catholic Church-both lost tax exemptions)  
   Religious Tolerance (Angers the Catholic Church)  
   Rejected the authority of the pope (Angers the Catholic Church)  
   Sold churches and used the money for Hospitals (Angers the Catholic Church)  
   Codifies laws  
   Limits censorship  
   Abolishes Death penalty  
   Limits use of torture  
   Made German the official language of the Empire (Angers Magyars-Hungarian Nobles)  

many reforms offend major groups/rapid-extreme reform-and he fails to develop political support

C. Prussia-Frederick “The Great” (1740-86)*******  

Background  
Friends with Voltaire and Mozart  
“1st servant of the State”  

“I must enlighten my people, cultivate their manners and morals, and make them as happy as human beings can be?”
Specific Reforms (did not reform serfdom)

Legal Reforms
- Codified Laws
- Protected private property
- Improved training for judges

Government Reforms
- Improved accounting
- Merit based Bureaucracy
- Developed public education for nobility

Limited Religious tolerance

**Promotes new Industries**

**Modernized Agriculture**
- New Farming Techniques
  - Crop rotation
  - Swamp reclamation

**Gains Silesia**

***Does not reform Serfdom, even though he has a great personal relationship with Serfs.***

D. Russia: Catherine “The Great” (1762-96)

Background
- Came to power by overthrowing her husband
- Great public image
- Very enlightened in an educational/cultural sense
- “Potemkin Village” = Show case town for foreign visitors

Early Reign (1762-72)
- Codified laws
- Religious toleration (limited)
- Improved education for nobles
- Considers whether to reform serfdom (forms a commission to study)

**Pugachev’s Rebellion (1773)**
- Peasant Revolt
- Significance – ends Catherine’s Reforms
Post Rebellion

- Eliminated taxes for nobles
- Gives land to nobles
- Gives nobles more power over their serfs

Foreign Policy

**Poland - 3 Partitions (1772, 1793, 1796)**

Caused by government structure and privileges of the nobility

- Liberum Veto – polish nobles had a veto over government action
- “exploding the Diet”: nobles refused to be taxed to protect Poland

Hence in defense of their liberty they lost their liberty (Historians love irony)

Ottoman Empire

- Defeats them
- Treaty of Katchuk Kuinardji (1774)
  - Gains Odessa = Warm water port
  - Right to protect Christians in the Ottoman Empire