

## **AP European History Reading Guide 17**

- ❖ Natural philosophy
  - An early modern term for the study of the nature of the universe its purpose and how it functioned it encompassed what we would call science today
- ❖ Aristotelian theory of the universe
  - Motionless earth was fixed at the center of the universe and was encompassed by 10 separate concentric crystal spheres that revolved around it, in the 1<sup>st</sup> 8 spheres were embedded in turn the moon the sun the 5 unknown planets and fixed stars then followed 2 spheres added in the middle ages account slight changes in position stars over centuries beyond 10 sphere is heaven
- ❖ Ptolemy astronomy (epicycles ad deferent)
  - Planets moves in small circles called epicycles each which moved in turn along a larger circle or deferent, surprisingly accurate
- ❖ World of the celestial spheres
  - The sub lunar world
  - Perfect incomputable quintessence of 5<sup>th</sup> essence
- ❖ Sub lunar world
  - Made of 4 imperfect changeable elements
  - “Light” elements air and fire naturally move upwards
  - “Heavenly” elements water and earth naturally move downward
- ❖ Long term developments in European culture that ushered in the scientific revolution
  - Borrowing from Arabic scholars medieval university by 13 century had permanent universities philosophy law medicine theology free inquiry 14<sup>th</sup>-15<sup>th</sup> mathematics astronomy physics critical thinking renaissance many ancient works translations made renaissance funding learning artists with realism and geometry printing press exploration and navigation lead to many inventions
- ❖ Nicholas Copernicus
  - Drawn to intellectual and cultural renaissance studied astronomy medicine and church law at universities in bologna Padua and Ferreira felt Ptolemy occasionally inaccurate rules, bot professional astronomer or professor so limited instrument sand research time
- ❖ Copernican hypothesis (on the revolutions of heavenly spheres)
  - The idea that the sun not the earth was the center of the universe suggested large universe destroyed basic idea of Aristotelian physics brought many attacks from religious leaders especially protestants john Calvin martin Luther condemned him
- ❖ Tycho Brahe
  - Born into a prominent Danish noble family interested in astronomy established himself as Europe’s leading astronomer with detailed observations of the new star aided by generous grants from the king of Denmark built observatory kings death means new patron HRE Rudolph II and built new observatory in Prague for support he pledged create new

and improved table planetary motions compiled more complete and accurate data than ever before but no math skills, cant make and sense believed all planets except earth revolve around the sun and the sun and those planets revolve around the earth

- ❖ Johannes Kepler
  - Brahe assistant believe universe has mystical mathematical relationships Brahe findings not explained Ptolemy 3 new laws of planetary motion, orbits around sun and elliptical not spherical planets don't move at a uniform speed in orbits closer to the sun means move faster time planet to complete orbit is related to the distance from sun proved all mathematically pioneered optics improved telescope basis integral calculus and advances geometry horoscopes
- ❖ Galileo
  - Poor nobleman discovered 1<sup>st</sup> four moons of Jupiter devout catholic
  - Experimental method
    - Proper way to explore the workings of the universe was through repeatable experiments rather than speculation
  - Law of inertia
    - A law formulated by him that states that motion not rest is the natural state of an object that an object continues in motion forever unless stopped by some external force
  - Dialogue on the two chief systems of the world
    - Published in Italian lampooned traditional views of Aristotle and Ptolemy and defended Copernicus tried for heresy papal inquisition imprisoned threatened with torture, so renounced errors
- ❖ Isaac newton
  - United experimental and theoretical mathematical ideas of modern science interest in alchemy very religious law universal gravitation centripetal force acceleration study of optics Cambridge scientific inquiry
  - Principia
    - Mathematical principals of natural philosophy single explanatory system that could integrate Copernicus Galileo lay down 3 laws of motion
  - Law of universal gravitation
    - Newton's law that all objects are attracted to one another and that the force of attraction is proportional to the objects quantity of matter and inversely proportional to the square of distance between them
- ❖ Francis Bacon and the empirical method (inductive reasoning)
  - Reject Aristotelian/medieval method using speculative reasoning to build general theories new knowledge must be produced through empirical research formalize empirical method his work and prestige under James I led to widespread adoption experimental philosophy
- ❖ Rene Descartes
  - Discovery analytic geometry accept Galileo developed idea matter made up of identical corpuscles that collided together in an endless series of motions all occurrences of nature can be analyzed as matter in motion

- total quantity of motion in universe is constant depend on idea of vacuum is impossible every action has equal reaction = eternal chain reaction develop initial idea into philosophy
- Believe that god endow man with reason for a purpose that the rational speculation would provide a path to the truths of creation
- ❖ Cartesian Dualism
  - Descartes view that all of reality could ultimately be reduced to mind and matter
- ❖ Consequences of the rise of modern science
  - Rise of a new expanding social group – scientific community personal success depend new discoveries science became competitive
  - Governments intervened to support and sometimes direct research the new scientific community becomes closely tied to state and its agendas
  - Scientists develop critical attitude toward established authority inspire thinkers challenge and question traditions in other domains
- ❖ New scientific community and gender
  - Nature often depicted as a female veil secrecy needed to be stripped away by male experts “rational” methods approaching nature not question traditional inequalities between sexes scientific community raise barriers for women because the new academics were not acceptable for female members (initially did offer posts to women across Europe work as wax anatomical models, write treatises etc.)
- ❖ Scientific revolution and economics
  - More in late 18<sup>th</sup> century improvements techniques navigation facilitate oversea trade and help enrich merchant companies and states science had relatively few practical economic applications
- ❖ Role of religion in the development of science
  - Protestantism (particularly Calvinism) made scientific inquiry a question of individual conscience not religious doctrine catholic church suppressed scientific theories that conflicted with its teachings and thus courage scientific progress all western religions – catholic protestant Jewish oppose Copernicus catholic church initially less hostile than protestant/Jewish leaders and Italian scientists played crucial role scientific progress until trial of Galileo then counter reformation church became more hostile to science helped account decline of Italy protestant such as Denmark and Netherlands became prescience especially countries lacked strong religious authority protestant England conflicts so intense authorities could not impose religious unity on anything work of Bacon many followers during Oliver Cromwell’s commonwealth helped solidify independence of science bacon advocate experimental approach
- ❖ Galen’s explanation of the human body
  - Carried same authority to Aristotle’s account of the universe body contained four humors – blood phlegm black bile and yellow bile illness was believe to result from an imbalance of humors which was why doctors frequently patronized bloodletting to expel excess blood
- ❖ Paracelsus

- Swiss physician and alchemist was an early proponent of the experimental method in medicine pioneered the use of chemicals and drugs to address what he saw as chemical rather than humeral imbalances
- ❖ Andrea Vesalius (on the structure of the human body)
  - Flemish physician studied anatomy by dictating human bodies often executed criminals book had over 200 precise drawings revolutionize understanding Human anatomy
- ❖ William Harvey
  - English royal physician discover circulation of blood through the veins and arteries 1<sup>st</sup> to explain that the heart worked like a pump and to explain to function of its muscles and valves
- ❖ Robert Boyle
  - Irishman founded modern science of chemistry undertook experiments to discover the basic elements of nature which he believed was composed of infinitely small atoms, 1<sup>st</sup> to create a vacuum disproving Descartes's belief that a vacuum could not exist in nature discovered Boyle's law stating that the pressure of a gas varies inversely with volume
- ❖ Enlightenment
  - The influential intellectual and cultural movement of the late 17<sup>th</sup> and 18<sup>th</sup> century that introduced a new world view based on the use of reason and scientific method and progress
- ❖ Rationalism
  - A secular critical way of thinking which nothing was to be accepted on faith and everything was to be submitted to reason
- ❖ Pierre Bayle (historical and critical dictionary)
  - Dictionary printed in the Netherlands and in England
  - French Huguenot despises Louis XIV and found refuge in the Netherlands critically examined religious beliefs and persecutions of the past in his historical and critical dictionary demonstrating that human beliefs had been extremely varied and very often mistaken he concluded that nothing can ever be known beyond all doubt views known as skepticism
- ❖ Baruch Spinoza
  - Excommunicated by Jewish community in Amsterdam for controversial religious ideas came to believe that mind and body are united in one substance and that god and nature were two names for something envisioned deterministic universe in which good and evil were relative values few of his radical writings were published during his life time now recognized among most original thinkers of the early enlightenment
- ❖ John Locke
  - Insisted all ideas were derived from experience with his emphasis on question of knowledge Locke provided Systematic justification of Bacons emphasis on the importance of observation and experimentation
  - Essay concerning human understanding
    - Often viewed as 1<sup>st</sup> major text of the enlightenment set forth new theory that human beings learn and form their ideas one of dominant intellectual inspirations enlightenment

- Tabula Rasa
  - The human mind of birth is like a blank tablet on which environment writes individuals understandings and beliefs human development is therefore determined by education and social institutions for good or evil
- Theory of sensationalism
  - The idea that all human ideas and thoughts are produced as a result of sensory impressions
- ❖ Philosophes
  - A group of French intellectuals who proclaimed that they were bringing the light of knowledge to their fellow creatures in the age of enlightenment reasons
    - French was international language of educated classes in the 18<sup>th</sup> century and France was wealthiest and most populous country in Europe
    - French intellectuals not free to openly criticize either church or state they were not as strongly restrained as intellectuals in eastern and east central Europe
    - French philosophes make it their goal to reach larger audience elites many of whom were joined together in the 18<sup>th</sup> century concept republic letters
  - Most radical works in manuscript form censors = plays novels histories philosophies dictionaries encyclopedia satire and double meanings
- ❖ Republic of letters
  - An imaginary transnational realm of the well educated
- ❖ Baron de Montesquieu
  - Relations men/women highly represented of the overall social and political system used oppression of women in Persian real described in letters from Uzbeks wives to symbolize eastern political tyranny rebellion his harem against cruel eunuchs he left in charge demonstrates despotism ultimately fail
  - The Persian letters
    - Influential social satire amusing letters supposedly written by two Parisian travelers Uzbek/Rica who as outsiders see European customs in unique ways and thereby allow Montesquieu a vantage point for criticizing existing practices and beliefs
  - The spirit of laws
    - Inspired example of the physical sciences set out to apply critical method to the problem of government result was a complex comparative study of republics monarchies and despotisms – a great pioneering inquiry in the emerging social schemes showing forms of government were shaped by history geography and customs focused on conditions that would promote liberty and prevent tyranny argued separation of powers with political power divided and shared by variety classes and legal estates holding unequal rights and privileges
- ❖ Parlements

- Frontline defenders of liberty against royal despotism
- ❖ Voltaire
  - Son middle class family wrote more than 70 volumes dies a millionaire when died early career turbulent arrested twice insulting noblemen had to move to England to avoid long prison time in France appreciate English liberties and institutions wrote various works praising England popularizing English scientific progress mixed glorification science and reason with an appeal for better individuals and institution reformer in social and political matters good monarch praises Louis XIV did not believe in social and economic equality in human affairs philosophical and religious positions move radical challenge catholic church and Christian theology believed in distant deistic god = clock maker hated all forms religious intolerance
- ❖ Madame du Chatelet
  - Gifted women from high aristocracy with passion for science Voltaire live in her country house at Ciry in Lorraine and becoming his long term companion studied physics and mathematics and published scientific articles and translations excluded royal academy of sciences because she was a woman
- ❖ Denis Diderot – encyclopedia the rational dictionary of the sciences the arts and the crafts
  - Greatest and most representative intellectual achievement edited by Denis Diderot and Jean le Rond d’Alembert from different areas with different interests two men find coauthors who would examine the rapidly expanding whole human knowledge set out to teach people how to think critically and objectively all matters
  - Survived initial resistance from the French government and catholic church contained 72,000 articles by leading scientists writers skilled workers and progressive priests treated every aspect of life as knowledge encyclopedias convinced greater knowledge would result greater human happiness made possible economic social and political progress widely read influential
- ❖ Enlightenment outside France
  - England/Germany conservative enlightenment try integrate findings scientific revolution and religious faith after act of union with England and Ireland Scotland freed political crisis = period intellectual growth Scottish enlightenment centered Edinburgh marked emphasis pragmatic and scientific reasoning stimulated creation 1<sup>st</sup> public educational system in Europe
- ❖ David Hume
  - Carefully argued religious skepticism had a powerful impact of home/abroad most important figurehead in Edinburgh building on Locke argue human mind is really nothing but a bundle of impressions, impressions originate only in sense experiences and out habits of joining these experiences together ideas ultimately reflect only sense experience rationalistic inquiry ended up undermining enlightenment faith in power of reason

- ❖ Reading revolution
  - The transition in Europe from a society where literacy consisted of professional and communal reading of religious texts to a society where literacy was commonplace and reading material was broad and diverse
- ❖ Salons and Salonnières
  - Number of talented wealthy women presided over regular social gatherings named after elegant private drawing rooms, salons (Parisian homes where philosophers and their followers met to discuss literature science and philosophy)
  - Hostess – salonnieres moderated the public's freewheeling examination of enlightenment thought
  - Create cultural realm free from religious dogma and political censorship diverse educated public debate issues and own ideas
  - Thinking critically about questions becomes fashionable
- ❖ Rococo
  - A popular style in Europe in the 18<sup>th</sup> century known for its soft pastels ornate interiors sentimental portraits and starry eyes love is protected by hovering cupids
- ❖ Coffee house culture
  - Help spread ideas (values scientific revolution and enlightenment) provide public space urban Europeans could learn and debate issues open all social classes and help development modern businesses
- ❖ Creation of new public sphere
  - Book clubs masonic lodges (groups freemasons secret egalitarian society exists across Europe) journals all play role in the creation public sphere – an idealized intellectual space that emerged in Europe during the enlightenment where the public came together to discuss important issues relating to society economics and politics
- ❖ Enlightenment ideas about race
  - Urge classify nature
  - Swedish botanist Carl von Linné argued nature organized god given hierarchy as scientists develop more elaborate taxonomy plants/animal species began to classify humans into ordered (hierarchical) races and investigate origin of race
  - Comte de Buffon argues humans originated with one species that then developed into distinct races from climate conditions
  - David Hume/Immanuel Kant popularize these ideas
  - Kant anthropology/geography share/elaborate Hume's ideas 4 human races all derived "white brunette" closest descendants in Northern Germany other descendants degenerate both physically and culturally
  - Europeans = top race others barbaric biologically superior scientific racism = legitimize justify the slave trade
  - Denis Diderot is the minority and criticizes and points out Europeans had started out as savage man whites non-European people had achieved high level of civilization

- Johann Gffried von Heider – criticize Kant argue humans cant be barbarian skin color for race
- ❖ Jean Jacques Rousseau
  - Committed individual freedom attacked rationalism and civilization = destroy individual
  - Early romantic movement
    - Basic goodness individual and unspoiled child had to be protected from the cruel refinement of civilization
    - Rebelled against the culture of the enlightenment late 18<sup>th</sup> century
  - Rigid division of gender roles
    - Women and men are radically different beings destined by nature to assume passive roles in sexual relations women should also be passive in social life their love displaying selves in public attend salons pull strings power = unnatural corrupt in politics and society reject social life Parisian women renounce frivolous ways
  - The social contract
    - Political theory
    - General will and popular sovereignty
      - Sacred and absolute reflecting common interests of all people who have displaced the monarch as the holder of sovereign power not necessarily will of the majority at times may be authentic long term need of the people as correctly foreseeing minority appeal democrats/nationalistic abused by dictators
- ❖ Enlightened absolutism
  - Term coined by historians to describe the rule of 18<sup>th</sup> century monarchs who without renouncing their own absolute authority adopted enlightenment ideals of rationalism process and tolerance
- ❖ Fredrick the great
  - Built on father (Fredrick William I)'s work when Maria Theresa Austria inherit Hapsburg dominions upon death Charles VI he invaded Silesia defying Prussian promises to respect pragmatic sanction that had guaranteed her succession she was forced to cede almost all of Silesia to Prussia = European great power 1756 Maria want back = alliance France Russia aim alliance during 7 years war = conquer Prussia and divide in end miraculously saved Peter III came to Russia throne call off attack against him
- ❖ Silesia
  - German Provence
- ❖ Tempered Fredrick's interest territorial expansion = consider more humane policies for his subjects might also strengthen state
- ❖ Legal system and bureaucracy under Fredrick the great
  - Tolerantly allowed subjects believe as they wish in religious and philosophical matters promote advancement knowledge improving country's schools permit scholars publish their findings Prussia's laws simplified torture prisoners abolished judges decided cases quickly and impartially Prussian officials famous hard work and honesty government



promote reconstruction agriculture and industry justified monarchy in terms of practical results nothing divine right of kings serfdom is okay accept and extend privileges nobility = backbone army Prussian state

- ❖ Cameralism
  - View that monarchy was the best form of government that all elements of society should serve the monarch and that in turn the state should use its resources and authority to increase the public good
- ❖ Catherine the Great
  - German princess at 15 bride of heir Russian throne when husband Peter III came to power in 7 year war decision withdrew Russian troops from coalition against Prussia alienated the army profited from his unpopularity to form a conspiracy to depose her husband lover Gregory and 3 brothers murder Peter = empress absolute monarchy love enlightenment
- ❖ Three main goals during her reign
  - Continue Peter the Great's effect bring culture of western Europe to Russia Import western architects sculptors musicians intellectuals patron philosophes corresponding Voltaire
  - Domestic reform appointed special legislative commission prepare new law code, never completed no torture religious tolerance what improve education strengthen local government
  - Territorial expansion armies subjugated last descendant Mongols Crimean Tartars began conquest Caucasus
- ❖ Emeilan Pugachev
  - Cossack soldier sparks uprising of serfs as Senka Razin did century earlier proclaim himself true tsar issues orders abolishing serfdom taxes and army service 1000s join cause slaughter landlords/officials in southwestern Russia betrayed by own company captured/executed = gave nobles control serfs = extend serfdom more new areas formalized nobility's privileges position free nobles forever taxes and state service
- ❖ Partitions of Poland
  - Catherine's greatest coup armies scored unprecedented victories against Turks threatened disturb balance Boyar Russia and Austria in eastern Europe Frederick and Prussia obligatory came forward with the deal proposed Turkey be left off easily and that Prussia Austria and Russia each compensate by taking gigantic slice weakly rules Polish territory
- ❖ Maria Theresa
  - Of Austria sent out to reform her nation although traditional power politics has more important motivation for her than enlightenment teachings devout mother/wife inherit power from father Charles VI remarkable but old fashioned absolutist
- ❖ Three important reforms under her reign
  - Determined introduce reforms that would make the state stronger and more efficient introduced measures aimed at limiting papacy's political influence in her realm series administrative reforms strengthened central bureaucracy smooth out political differences revamped tax system taking even land or noble government sought to improve lot of agricultural

population reduce power of lords over hereditary serfs and particularly free peasant tenants

- ❖ Joseph II
  - Radical son Maria Theresa strong support change abolished serfdom decreed peasants would pay landlords in cash rather than through compulsory labor on their land violently rejected by nobility and peasants
  - Liberal edicts measures integrate Jews more fully into society military service higher education remove requirement some wear special clothing
- ❖ Moses Mendelssohn
  - Advocate for freedom and civil rights for European Jews in era reason tolerance and universality restrictions on religious grounds could not stand
- ❖ Haskalah
  - The Jewish Enlightenment of the second half of the 18<sup>th</sup> century led by Philosopher (Prussian) Moses Mendelssohn
  - Accompanied period controversial social change within Jewish communities in which Rabbinic controls loosened and heightened interaction with Christians took place
- ❖ Pale of settlement
  - A territory including parts of modern day Poland Latvia Lithuania Ukraine and Belonesia in which most Jews were required to live Jewish habitation was restricted to the pale until the Russian revolution
- ❖ What was revolutionary in the new attitudes toward the natural world?
  - Decisive breakthroughs in astronomy and physics in the seventeenth century demolished the medieval synthesis of Aristotelian philosophy and Christian theology. One of the most notable discoveries was that the sun, not the earth, was the center of the galaxy. Although early scientists considered their ideas to be in line with religions, their discoveries ran counter to long-held beliefs about the design of the universe by the Creator; therefore, Copernicus, Kepler, Galileo, and others were branded as heretics. Meanwhile, Bacon promoted the experimental method that drew conclusions based on empirical evidence, and Descartes championed deductive reasoning that speculated truths based on known principles. These two important methods eventually combined to form the modern scientific method that relies on both experimentation and reason. Following these early innovators, Newton devised the law of universal gravitation, which for the first time synthesized the orbiting planets of the solar system with the motion of objects on earth. These scientific breakthroughs had only limited practical consequences at the time, but their impact on intellectual life was enormous, nurturing a new critical attitude in many disciplines in addition, an international scientific community arose, and state-sponsored academies, which were typically closed to women, advanced scientific research.
- ❖ How did the new worldview affect the way people thought about society and human relations?
  - Interpreting scientific findings and Newtonian laws in a manner that was both antitradition and antireligion, Enlightenment philosophes extolled the

superiority of rational, critical thinking. This new method, they believed, promised not just increased knowledge but even the discovery of fundamental laws of human society. Believing that all aspects of life were open to question and skepticism, Enlightenment thinkers opened the doors to religious tolerance, representative government and general intellectual debate. One important downside of the new scientific method was that it led to the classification of human races, with white Europeans placing themselves at the top of a new racial hierarchy

- ❖ What impact did new ways of thinking have on political developments and monarchical absolutism?
  - The ideas of the enlightenment were an inspiration for monarchs, particularly absolutist rulers in central and eastern Europe who saw in them important tools for reforming and rationalizing their governments. Their primary goal was to strengthen their states and increase the efficiency of their bureaucracies and armies. Enlightened absolutists believed that these reforms would ultimately benefit the lot of ordinary people, but this was not their chief concern. With few exceptions, they did not question the institution of serfdom. The fact that leading philosophes supported rather than criticized Eastern rulers' policies suggests some of the limitations of the era. Christian and Jewish Enlightenment thinkers argued in favor of emancipating Europe's small Jewish population. Some reforms took place, but full reforms did not take place until the nineteenth century in the West and even later in the East.