Chapter 18: Toward a New World View

1. The scientific revolution
    a. The scientific revolution of the seventeenth century was the major cause of the change in worldview and one of the key developments in the evolution of Western society.
        i. Only the West developed modern science; historians disagree as to how important to its rise were the non scientific economic, religious, and social factors.
    b. Scientific thought in the early 1500s
        i. European ideas about the universe were based on Aristotelian Medieval ideas.
            1. Central to this view was the belief in a motionless earth fixed at the center of the universe, known as the Ptolemaic or geocentric worldview.
            2. Around the earth moved ten crystal spheres, and beyond the spheres was heaven.
        ii. Aristotle's scheme suited Christianity because it positioned human beings at the center of the universe and established a home for God.
        iii. Science in this period was primarily a branch of theology.
    c. The Copernican hypothesis
        i. **Copernicus**, a Polish clergyman and astronomer, claimed that the earth revolved around the sun and that the sun was the center of the universe.
        ii. However, Copernicus still believed that all orbits were perfectly circular.
        iii. This heliocentric theory was a departure from medieval thought and created doubts about traditional Christianity.
        iv. He published ***On the Revolutions of the Heavenly Spheres*** in the year of his death, 1543.
            1. Protestants immediately and Catholics 70 years after condemned Copernicus.
            2. Soon after, an exploding star and a comet were seen, challenging Aristotelian ideas.
    d. From Brahe to Galileo
        i. **Brahe** set the stage for the modern study of astronomy by building an observatory and collecting data.
            1. Brahe still believed in a geocentric model in which the moon and the sun revolved around the Earth, while the other planets revolved around the sun.
        ii. His assistant, **Kepler**, formulated three laws of planetary motion that proved the precise relationships among planets in a sun centered universe.
            1. Kepler mathematically proved Copernicus's heliocentric model.
        iii. **Galileo** discovered the laws of motion using the **experimental method**--the cornerstone of modern science.
            1. He formulated the **law of inertia**, which was that an object continues in motion forever unless stopped by some external force.
            2. He also discovered that heavier weights do not fall any faster.
            3. He also applied the experimental method to astronomy, using the newly invented telescope.
                a. Discovered the first four moons of Jupiter.
            4. Galileo was tried by the Inquisition for heresy in 1633 and forced to recant his views.
            5. Galileo's contemporary, **Giordano Bruno**, was executed by the papal Inquisition in 1600 for arguing that there may be a plurality of worlds in the universe.

e. Newton's synthesis
    i. In his famous book, ***Principia*** (1687), **Newton** integrated the astronomy of Copernicus and Kepler with the physics of Galileo.
        1. He formulated a set of mathematical laws to explain motion and mechanics.
        2. The key feature in his synthesis was the **law of universal gravitation**.
    ii. Henceforth, the universe could be explained through natural laws, not theology.
    iii. Newton also pioneered differential calculus and the study of light.
    iv. He also became head of the British Royal Society, an organization committed to spreading the new spirit of experimentation.
f. Causes of the scientific revolution
    i. The scientific revolution was the product of individual genius--such as Newton building on the works of Copernicus and others.
    "I've seen farther than others, only because I've stood on the shoulders of giants." -- Newton
    ii. Also, medieval universities provided the framework for the new science.
    iii. The Renaissance's humanism stimulated science by rediscovering ancient mathematics and supporting scientific investigations.
    iv. The navigational problems of sea voyages generated scientific research and new instruments.
    v. Better ways of obtaining knowledge about the world improved scientific methods.
        1. **Bacon** advocated empirical, experimental research, also known as **inductive reasoning**.
            a. ***The Advancement of Learning (1605), Novum Organum (1620) and New Atlantis (1627)***
            b. In France, the debate over the new learning was known as the conflict between the ancients and the moderns; In England it was known as the "Battle of the Books."
        2. **Descartes** stressed mathematics and deductive reasoning (rationalism.)
            a. In ***Discourse on Method (1637)***, he wrote about **Cartesian dualism**, which is of an immaterial mind and a material body interacting with each other causally.
            b. His famous quote "I think, therefore I am" stripped away his belief in everything but his existence.
        3. The modern scientific method is based on a synthesis of Bacon's inductive experimentalism and Descartes's deductive mathematical rationalism.
    vi. After about 1630 (the Counter Reformation), the Catholic church discouraged science while Protestantism tended to be "proscience."
        1. In Protestant England, the forerunners of the Royal Society agreed to discuss only "neutral" scientific questions.
g. Some consequences of the scientific revolution
    i. A scientific community emerged whose primary goal was the expansion of knowledge.
    ii. A modern scientific method arose that was both theoretical and experimental and refused to base its conclusions on tradition and established sources.
    iii. Because the link between pure science and applied technology was weak, the scientific revolution had little effect on daily life before the nineteenth century.

2. The Enlightenment
    a. The Enlightenment was an intellectual and cultural movement that tied together certain key ideas and was the link between the scientific revolution and a new worldview; these ideas

were:

i. Natural science and reason (**rationalism**) can explain all aspects of life.
    1. Head on conflict with established churches, which rested their beliefs on the special authority of the Bible and Christian theology.
ii. The scientific method can explain the laws of human society, leading to the development of **social science**.
iii. Progress--the creation of better societies and better people--is possible.
iv. However, the urban poor and the peasants resented the Enlightenment attack on traditional popular beliefs.

b. The emergence of the Enlightenment
    i. Many writers between 1687 and 1715 made scientific thought understandable to a large nonscientific audience.
        1. **Fontenelle** stressed the idea of progress.
            a. ***Conversations on the Plurality of Worlds (1696)*** is about a man and a woman having a conversation about astronomy, in which the man corrects her backward thinking and the woman rejoices.
        2. He was also cynical about organized religion and absolute religious truth.
            a. Since Louis XIV's absolutist France did not permit free speech, Fontenelle wrote ***Eulogies of Scientists****,* writing about the battle between scientists and priests.
    ii. During the Thirty Years' War (1618-1648), people believed in absolute religious truth. However, after Louis XIV's brutal expulsion of the French Huguenots, people began to ask whether ideological conformity was necessary or whether religious truth could ever be known.
        1. Skeptics such as **Bayle** concluded that nothing can be known beyond all doubt and stressed open mindedness.
        2. Bayle wrote the ***Historical and Critical Dictionary (1697)***, examining past religious beliefs and persecutions of the past and showing the variation of human beliefs.
        3. The growth of world travel led Europeans to look at truth and morality in relative, not absolute, terms.
            a. Turks shave their heads and let their beards grow.
            b. The Siamese turn their back on a woman to be respectful.
    iii. In his ***Essay Concerning Human Understanding***, **Locke** insisted that all ideas are derived from experience--the human mind at birth is like a blank tablet ***(tabula rasa***).
        1. Tabula rasa meant that the environment, meaning education and social institutions, determined human development for good or for bad.
        2. Locke's ideas rejected Descartes, who believed that all people are born with certain basic ideas and ways of thinking.

c. The philosophes and the public
    i. The **philosophes** brought Enlightenment ideas to the ignorant people and brought the Enlightenment to its highest stage of development in France.
        1. The French language was the international language of the educated classes of Europe, and France was Europe's wealthiest state.
        2. Intellectual freedom was possible in France, in contrast to eastern Europe.
            a. Although intellectual freedom *was* possible, it was not fully accepted. Authors of critical books were sometimes jailed or exiled, but not tortured or burned.
        3. The philosophes were committed to bringing new thinking to the **public**

(social and economic European elites), but not necessarily the **masses** (everyone.)
    a. **Jean le Rond d'Alembert (1717-1783)** made a sharp distinction between the public and the masses.
    b. A leading scholar has also concluded that the difference between the public and the masses was a great gulf.
4. In their plays, histories, novels, dictionaries, and encyclopedias, they used satire and double meanings to spread their messages to the public.
    a. **Montesquieu** pioneered this satirical approach in ***The Persian Letters*****,** which was about Persian travelers writing letters about European customs.

ii. Montesquieu's theory of the separation of powers in ***The Spirit of Laws*** was extremely influential.
1. The book arose from Montesquieu's typical noble outrage at the triumph of absolutism under Louis XIV. He reasoned that in order to prevent despotism, power of the ruler must be checked by power of the nobles. But Montesquieu was not radical enough to give rights to the uneducated poor.
2. His ideas had a great impact on the constitutions of the United States in 1789 and of France in 1791.

iii. **Voltaire,** otherwise known as **Francois Marie Arouet**, challenged traditional Catholic theology and exhibited a characteristic philosophe belief in a distant, deistic God who let human affairs take their own course.
1. He opposed legal injustice and unequal treatment before the law.
2. He was influenced by his longtime companion, **Madame du Chatelet**, who was a scientist but who was discriminated against because of her sex.
    a. She translated ***Principia*** into France.
    b. She also explained Newton's complex mathematical proofs to Voltaire.
    c. "I would reform an abuse which cuts off, so to speak, half the human race. I would make women participate in all the rights of humankind, and above all in those of the intellect."
3. Voltaire mixed the glorification of science and reason with an appeal for better individuals and institutions.
"It is the man who sways our minds by the prevalence of reason and the native force of truth, not they who reduce mankind to a state of slavery by force and downright violence that claims our reverence and admiration."
4. He favored enlightened despotism, because he distrusted the masses.
5. He was skeptical of social and economic equality. The only equality he believed in was equality before the law.
6. Voltaire and most of the philosophes believed in a Clockmaker, distant God and hated religious intolerance.
"Crush the infamous thing." [The Catholic Church]
7. ***Candide*** was a satirical response to optimism, asserting that the best one can hope for is a private, inner solace. "One must cultivate one's own garden."

iv. **Diderot** and **d'Alembert** edited the ***Encyclopedia***, which examined all of human knowledge and attempted to teach people how to think critically and rationally.
1. At first, the Encyclopedia was banned from France, but its criticism of out-of-date social institutions and its exaltation of science and arts became widely

read.
2. The Encyclopedia spread the Enlightenment to Eastern Europe and the Americas.

v. The later Enlightenment thinkers
1. Atheist **D'Holbach** argued in the ***System of Nature*** that humans were completely controlled by outside forces, or in other words, **determinism.** Free will, God, and immortality of the soul were foolish myths.
2. Scottish **David Hume** argued that human ideas were merely the result of sensory experiences; thus, human reason could not go beyond what was experienced through the senses.
    a. Hume's ideas undermined the Enlightenment's emphasis on reason.
3. **Jean de Condorcet** transformed the Enlightenment's belief in gradual, hard-won progress into fanciful utopianism in his ***Progress of the Human Mind.***
    a. He identified 9 stages of human progress that had already occurred and predicted the 10th stage would bring perfection.
4. **Cesare Beccacia**, in his ***On Crimes and Punishment***, claimed that the accused should have certain basic rights and he argued against torture.
5. **Rousseau** attacked rationalism and civilization; he claimed that children must develop naturally and spontaneously, and in ***The Social Contract*** argued that the general will of the people is sacred and absolute.
    a. "All men are born free, but everywhere they are in chains."
    b. The **general will** reflects the common interests of the people, but is not necessarily the will of the majority; but rather may be the authentic, long-term needs of the people seen by a minority.
    c. He supported small-scale direct democracy, emphasizing the superiority of the "noble savage."
    d. His ideas appealed to both nationalists, democrats, and dictators.
    e. ***Emile (On Education)*** illustrates his stance on education; children should have free-structured education guided by their natural curiosity.
6. **Immanuel Kant** (1724-1804) was the greatest German philosopher of the Enlightenment.
    a. Separated science and morality into separate branches of knowledge.
    b. Science could describe nature, but it could not provide a guide for morality.
    c. "Categorical imperative" was an intuitive instinct, placed by God in the human conscience.
        i. Yet, both ethical sense and aesthetic appreciation in human beings were beyond knowledge of science.
        ii. Reason is a function of the mind and has no content in and of itself.

d. Urban culture and public opinion
    i. The cultural transformation brought on by the Enlightenment was related to a growth in the market for books.
        1. Most of the new buyers of books came from the middle classes, the clergy, and the aristocracy; a tenfold increase in books resulted.
        2. Publishing in the fields of art and science grew the most; a majority of the new books came from publishers outside of France, largely the Netherlands and Switzerland.

3. Underground literature in pornography was of concern to the state because much of it centered on aristocratic immorality.
    a. France's censorship forced some books to be printed abroad and then smuggled back into the country.
    b. A favorite theme was the way that some beautiful but immoral aristocratic women used their sexual charms to gain power over weak rulers and high officials, thereby corrupting the process of government.
4. All of this resulted in a new emphasis from patriarchal, communal reading to individual and private reading (a "reading revolution"); some, like Kant, argued that freedom of the press would bring an enlightened age.
    a. Kant, like Voltaire, believed Frederick the Great of Prussia was an enlightened monarch because he permitted freedom of the press.

ii. Enlightenment ideas--including new ideas about women's rights--were spread in the salons of upperclass women.
1. The **salons** were often presided over by women.
2. **Madame Geoffrin**'s salon was famous; she was the unofficial godmother of the *Encyclopedia*, giving Diderot generous financial aid.
3. These salons seemed to have functioned as informal "schools" for women.
4. They supported the style of art called **rococo**, characterized by soft pastels, ornate interiors, sentimental portraits and starry-eyed lovers.
5. Some philosophes championed *greater*, but not *equal* rights for women.
6. The salons created an independent cultural realm freed from religious dogma, allowing a public opinion to form.

3. The enlightenment and absolutism
    a. Many philosophes believed that "enlightened" reform would come by way of "enlightened" monarchs.
        i. The philosophes believed that a benevolent absolutism offered the best chance for improving society.
        ii. The rulers seemed to seek the philosophes' advice.
        iii. The philosophes distrusted the masses and believed that change had to come from above.
4. Absolutism in central and eastern Europe
    a. Besides Montesquieu, most Enlightenment thinkers outside of England and the Netherlands believed in change from above.
        i. The philosophes distrusted the masses, viewing them as superstitious children.
    b. The most influential of the new style monarchs were in Prussia, Russia, and Austria.
    c. **Frederick the Great of Prussia**
        i. Frederick II used the **War of the Austrian Succession** (1740-1748) to expand Prussia into a great power by seizing Silesia.
            1. He attacked immediately after Maria Theresa's succession, violating the Pragmatic Sanction.
        ii. The **Seven Years' War (1756-1763) (French-Indian War)** saw an attempt by Maria Theresa, with the help of France and Russia, to regain Silesia, but it failed.
            1. Greatly admiring him, **Peter III of Russia** called off the attack on Frederick.
        iii. Frederick allowed religious freedom and promoted education, legal reform, and economic growth but allowed the Junker nobility to keep the middle-class from power in government.
            1. "I must enlighten my people, cultivate their manners and morals, and make

them as happy as human beings can be, or as happy as the means at my disposal permit.

2. Despite his reforms, he maintained the social structure.
    a. Condemned serfdom in abstract, but accepted it in practice in order to keep the nobility as an ally.
    b. Frederick allowed the repression of Prussian Jews--who were confined to overcrowded ghettos.
        i. He ignored **Moses Mendelssohn**, who wanted equal freedom and civil rights for Jews.

d. Catherine the Great of Russia
    i. Peter the Great's youngest daughter Elizabeth named her weak nephew **Peter III** to the crown, who was arranged married to Catherine in 1744.
    ii. "I did not care about Peter, but I did care about the crown."
    iii. Peter rose to the crown in 1762, but was killed by Catherine's lover **Gregory Orlov** and his officers after Peter withdrew Russian troops from Prussia in the War of Austrian Succession.
    iv. Catherine II imported Western culture to Russia, supported the philosophes, and began a program of domestic reform.
        1. She funded and published Diderot's Encyclopedia when the French government banned it.
        2. "Peter the Great westernized Russian armies, but it was Catherine who westernized the thinking of the Russian nobility."-- McKay
        3. Catherine appointed a special legislative commission in an attempt to prepare a new law code. Though no unified code was ever produced, Catherine was able to restrict torture and allowed limited religious toleration.
    v. The **Pugachev uprising in 1773** led her to reverse the trend toward reform of serfdom and give nobles absolute control of their serfs.
        1. Pugachev declared himself the true tsar and issued "decrees" abolishing serfdom, taxes and army service.
        2. Pugachev's rebellion showed Catherine that the peasants were dangerous.
    vi. She engaged in a policy of territorial expansion and, with Prussia and Austria, carved up Poland.
        1. Catherine gains access to the Black Sea and takes the Ukraine.
        2. Catherine subjugated the last descendants of the Mongols, the **Crimean Tartars**.
        3. By 1700, Poland had become a weak and decentralized republic with an elected king. Further, all decisions continued to require the unanimous agreement of all nobles elected to the Polish Diet, also known as **liberum veto.**
        4. Catherine upset the balance of power between Prussia and Austria by defeating the Turks, leading to Frederick of Prussia offering a deal: Turkey let off easily and Prussia, Austria, and Russia carve out Poland in 1772, 1793 and 1795.
    vii. Catherine gave the new land to her faithful servants and her many lovers.

e. The Austrian Habsburgs
    i. **Maria Theresa** of Austria introduced reforms that limited church power, revised the tax system and the bureaucracy, and reduced the power of the lords over the serfs.
    ii. Her successor, **Joseph II**, was a dedicated reformer who abolished serfdom, taxed all equally, and granted religious freedom for Protestants and Jews.

1. In 1789, he decreed that all peasant labor obligations be converted into cash payments, in an attempt to help their barter economy convert to currency.

iii. Because of opposition from both the nobles and the peasants, Joseph's reforms were short lived.

iv. **Leopold II**, Joseph's brother, was forced to cancel Joseph's radical edicts in order to re-establish order.

f. Absolutism in France

i. Some philosophes, such as Voltaire, believed that the monarchy was the best system, while some of the aristocracy sought to limit the king's power.

ii. Favored by the **duke of Orléans**, who governed as a regent until 1723, the French nobility regained much of the power it had lost under Louis XIV.

1. The duke allowed the high courts of France (**parlement**) the right to evaluate royal decrees publicly in writing before the evaluations were registered and given the force of law.
2. Originally, the high-court judges had come from the middle class. However, the middle-class judges had become hereditary nobles, and acted against centralized government.
3. The Parlement of Paris won two decisive victories against taxation.
    a. Louis XV attempted to impose a 5 percent tax on *all* people to pay for the expensive War of Austrian Succession.
    b. After the Seven Years' War, the government tried to collect emergency taxes.
4. It then asserted that the king could not levy taxes without its consent.

iii. Under Louis XV, the French minister **Maupeou** began the restoration of royal absolutism by abolishing the Parlement of Paris and taxing the privileged groups.

1. Some philosophes applauded the reforms to counter a self-interested aristocracy.
2. However, most philosophes believed Louis XV was moving toward royal despotism.

iv. Louis XVI reinstated the old Parlement and the country drifted toward renewed financial and political crises.

g. The overall influence of the Enlightenment

i. In France, the rise of judicial and aristocratic opposition combined with liberalism put absolutism on the defensive.

ii. In eastern Europe, the results of enlightened absolutism were modest and absolutism remained strong.

iii. By combining state building with the culture and critical thinking of the Enlightenment, absolute monarchs succeeded in expanding the role of the state in the life of society.