Enlightenment and Revolution, 1550-1789

Enlightenment scientists and thinkers produce revolutions in science, the arts, government, and religion. New ideas lead to the American Revolution.
Chapter 22

Enlightenment and Revolution, 1550-1789

SECTION 1  The Scientific Revolution
SECTION 2  The Enlightenment in Europe
SECTION 3  The Enlightenment Spreads
SECTION 4  The American Revolution
In the mid-1500s, scientists begin to question accepted beliefs and make new theories based on experimentation.
The Scientific Revolution

The Roots of Modern Science

The Medieval View

- Most knowledge in Middle Ages comes from Bible, Greek/Roman sources
- Supports geocentric theory—moon, sun, planets revolve around earth

A New Way of Thinking

- Renaissance prompts new ways of thinking (1300–1600)
- Scientific Revolution—new way of viewing natural world—based on observation, inquiry
- New discoveries, overseas exploration open up thinking
- Scholars make new developments in astronomy, mathematics
A Revolutionary Model of the Universe

The Heliocentric Theory

- Widely accepted geocentric theory challenged as inaccurate
- Copernicus develops **heliocentric theory**—planets revolve around sun
- Later scientists mathematically prove Copernicus to be correct

Galileo’s Discoveries

- Italian scientist **Galileo Galilei** makes key advances in astronomy
  - makes discovery about planet surfaces, supports heliocentric theory
A Revolutionary Model of the Universe {continued}

Conflict with the Church

- Church attacks Galileo’s work, fears it will weaken people’s faith
- Pope forces Galileo to declare his and other new findings are wrong
The Scientific Method

A Logical Approach

- Revolution in thinking leads to development of **scientific method**
  - series of steps for forming, testing scientific theories

Bacon and Descartes

- Thinkers Bacon and Descartes help to create scientific method
- Bacon urges scientists to experiment before drawing conclusions
- Descartes advocates using logic, math to reason out basic truths
Newton Explains the Law of Gravity

Newton’s Theories

• English scientist **Isaac Newton** develops theory of motion—states same forces rule motion of planets, matter in space, earth
• Motion in space, earth linked by the law of universal gravitation—holds that every object in universe attracts every other object
• Newton views universe as a vast, perfect mechanical clock
The Scientific Revolution Spreads

Scientific Instruments
- Scientists develop microscope, barometer, thermometer
- New instruments lead to better observations, new discoveries

Medicine and the Human Body
- Andreas Vesalius improves knowledge of anatomy
- Edward Jenner produces world’s first vaccination—for smallpox

Discoveries in Chemistry
- Robert Boyle argues that matter is made of many different particles
- Boyle’s law reveals interaction of volume, temperature, gas pressure
A revolution in intellectual activity changes Europeans’ view of government and society.
Section 2

The Enlightenment in Europe

Two Views on Government

New Ways of Thinking

- Scientific Revolution spurs reassessment of many prevailing ideas
  - Europeans seek insights into society during 1600s, 1700s
- Leads to the Enlightenment—a movement stressing reason and thought

Hobbes’s Social Contract

- Hobbes distrusts humans, favors strong government to keep order
- Promotes social contract—getting order by giving power to monarch
Two Views on Government \(\textit{continued}\)

**Locke’s Natural Rights**

- Philosopher **John Locke** says government gets power from the people
- Stresses that people have a right to overthrow an unjust government
The Philosophes Advocate Reason

Beliefs of the Philosophes

• The **philosophes** are French social critics in the mid-1700s
• Value reason, nature, happiness, progress, liberty

Voltaire Combats Intolerance

• **Voltaire**—influential philosophes, pen name of François Marie Arouet
• Publishes many works arguing for tolerance, reason
• Makes powerful enemies and is imprisoned twice for his views
The Philosophes Advocate Reason \(\textit{continued}\)

**Montesquieu and the Separation of Powers**
- \textbf{Montesquieu}—French writer who admires Britain’s government system
- Favors separation of powers to keep one body from running government

**Rousseau: Champion of Freedom**
- \textbf{Rousseau}—philosophe who favors individual freedom, direct democracy
- Views social contract as agreement by free people to form government

**Beccaria Promotes Criminal Justice**
- Italian philosopher Cesare Beccaria works to reform justice system
- Calls for speedy trials, greater rights for criminal defendants
Women and the Enlightenment

Views on Women’s Education Change

- Many Enlightenment thinkers take traditional views of women’s role
- Prominent writer Mary Wollstonecraft urges greater rights for women:
  - argues women need quality education to be virtuous and useful
  - urges women to go into traditionally male professions like politics
- Some wealthy women use their status to spread Enlightenment ideas
Legacy of the Enlightenment

Role of the Philosophes
• The philosophes are not activists, but inspire major revolutions

Belief in Progress
• Scientific breakthroughs show human capacity to improve society

A More Secular Outlook
• New knowledge of the world leads people to question religious ideas
• Voltaire and others criticize beliefs and practices of Christianity
Legacy of the Enlightenment {continued}

Importance of the Individual

• People place more emphasis on individual rights, abilities
• Reason becomes a central concept for philosophers, rulers
Section-3

The Enlightenment Spreads

Enlightenment ideas spread through the Western world and profoundly influence the arts and government.
Diderot’s *Encyclopedia*

- Philosophe Denis Diderot begins publishing Encyclopedia in 1751 -set of books to which Enlightenment thinkers contribute essays
- Encyclopedia articles anger French government, Catholic Church
- Encyclopedia helps spread Enlightenment ideas across Europe
New Artistic Styles

Neoclassical Style Emerges

- Pre-Enlightenment art style is **baroque**—grand, ornate design
- Enlightenment style is **neoclassical**, based on Greek/Roman themes

Changes in Music and Literature

- Classical music emerges; lighter, more elegant than earlier style
  - led by composers such as Haydn, Mozart, Beethoven
- Novel emerges; works of fiction with detailed plots and characters
- Samuel Richardson’s Pamela considered first true English novel
Enlightenment and Monarchy

**Enlightened Despots**
- Spirit of the Enlightenment prompts rise of *enlightened despots*: monarchs who embrace Enlightenment values to strengthen their rule

**Frederick the Great**
- Frederick II, king of Prussia, reforms education and justice system
- Grants religious freedom, abolishes torture, fails to end serfdom

**Joseph II**
- Joseph II of Austria allows freedoms of worship and the press
- Abolishes serfdom, but the practice is reinstated after his death
Enlightenment and Monarchy {continued}

Catherine the Great

- **Catherine the Great**—enlightened ruler of Russia, 1762–1796
- Seeks to abolish capital punishment and torture, but effort fails
- Responds to peasant revolt by giving nobles more power over serfs

Catherine Expands Russia

- In foreign affairs, Catherine successfully expands Russian empire
- Gains port access for Russia by seizing northern coast of Black Sea
- Seizes large parts of Poland, increasing empire’s size
Enlightenment ideas help spur the American colonies to shed British rule and create a new nation.
The American Colonies Grow

- American colonies grow large and populous during 1600s, 1700s
- Colonies thrive economically through trade with Europe
  - Britain’s Navigation Act restricts that trade (1651)
  - Other trade laws add restrictions, taxes
- Colonists identify less and less as British subjects
Americans Win Independence

British–Colonial Tensions Arise
- Britain, American colonies win French and Indian War in 1763
- Britain taxes colonists to help pay war debts
- Colonists argue that British cannot tax them without their consent

Growing Hostility Leads to War
- Colonists protest tea tax with “Boston Tea Party” in 1773
- Colonists meet in Philadelphia to address British policies (1774)
- British and Americans exchange fire at Lexington and Concord in 1775

Continued...
Americans Win Independence *continued*

**The Influence of the Enlightenment**
- Colonial leaders push for independence, rely on Enlightenment ideas
- *Declaration of Independence*—document justifying colonial rebellion
- Leader *Thomas Jefferson* writes Declaration, uses ideas of Locke

**Success for the Colonists**
- Despite British military might, colonists have advantages:
  - motivating cause of freedom
  - French assistance
  - war’s expense for Britain
- British surrender at Yorktown in 1781; colonists win the war
Americans Create a Republic

A Weak National Government
- Articles of Confederation set government plan for new republic
- Articles create legislature only, no executive or judicial branches
- Result is weak national government fails to provide unity and order

A New Constitution
- Leaders call Constitutional Convention in 1787 to revise articles
- Group instead creates a new government under U.S. Constitution
- Constitution contains many political ideas of the Enlightenment
Americans Create a Republic *(continued)*

**The Federal System**
- Constitution creates three branches of government
- Provides *checks and balances*—ensures branches share power equally
- Promotes *federal system*—power divided between nation and states

**The Bill of Rights**
- Some fear too much national power, few protections of rights
- Leaders win support for Constitution by adding a *Bill of Rights*
  - ten amendments to Constitution that protect freedoms
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