

Wheels of Change in the Modern Age

In this book you will study the revolutionary changes that happened in North America and Europe from 1500 to 1815. This section will review material you learned last year. As you read, look for factors that you think helped cause political, social, religious, and economic change in Europe and North America.

How were nations changing?

Until 1517, all Christian Europeans belonged to the Roman Catholic Church. While the Church had faced criticisms before that time, it had always been able to quell dissent. By the early 16th century, the Catholic Church had become wealthy, powerful, and corrupt. To many people, the Church was straying from the teachings of Christ.

The Reformation ^{religion}

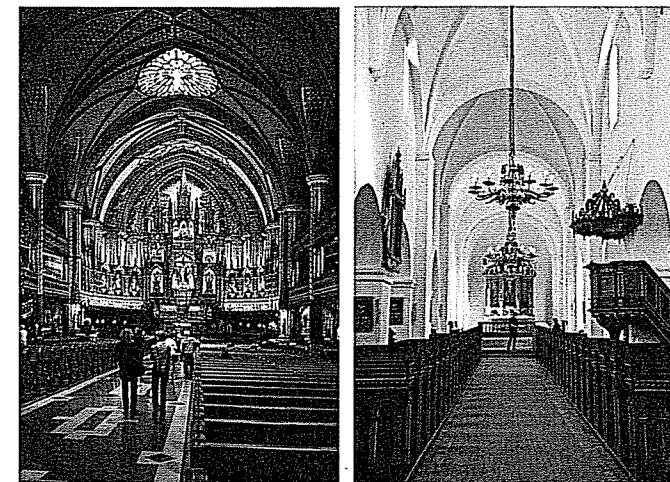
On October 31, 1517, Martin Luther, a German monk angry with the Catholic Church's failings, nailed his *Ninety-Five Theses* on the door of All Saints Church in Wittenberg. Thanks largely to the printing press, his ideas spread rapidly across Europe. The Protestant Reformation was born.

In general, Protestants believed that Christianity should be based on the word of God, which came from the Bible. All people should be able to read and understand the Bible themselves, and Protestants rejected the authority of priests and the pope. Protestants also felt that places of worship should be plain and unadorned, in keeping with the message of humility and poverty preached by Christ.

Revolution and the Church

The Catholic Church was faced with a revolution. It responded with its own Counter-Reformation. Many corrupt practices were outlawed and priests were better trained, but any dissent was ruthlessly punished.

By 1550, Europe was divided between Protestant and Catholic. Both sides firmly believed that they held the only true version of Christianity, and that it was their duty to eliminate the other version. An era of religious conflict began which lasted into the late 17th century.



- Protestant churches (right) were designed around the belief that nothing should interfere with the direct understanding of the word of God. Catholic churches (left) were designed to show power and authority.

Kings Gain Power ^{monarchies}

Before the Reformation, the pope had the ability to exercise control over kingdoms. Kings of newly Protestant lands, now freed from the authority of the pope, saw an opportunity to make themselves the supreme authority in their kingdoms. Catholic kings followed suit, and papal authority in non-religious matters lessened.

New Organization

By the middle of the 16th century, the nation-state had emerged as the new model for political organization. European kings began appointing people from the new middle classes to government posts. Because they were paid directly by the king, they were very loyal to him. This practice weakened the power of the nobles, who had previously held these types of positions. Kings also began to pay professional standing armies to fight for them, rather than rely on whatever military forces nobles might supply. All of this was paid for by the king's subjects through taxes. As a result, people began to see themselves as subjects of a national monarch, not the serfs of a particular noble.

Divine Right

Kings now began to make themselves the supreme authority in their kingdoms. They began to see themselves as having special "kingly" rights and responsibilities. Kings had the ability to make laws, preserve peace and order, and create alliances or declare war as they saw fit. As no one else in the kingdom could claim these special rights, kings began to see their authority as coming directly from God. In the 17th century this authority became known as the Divine Right of Kings.

nation-state a country that rules itself and can make treaties with other states



- Elizabeth I was both the Queen of England and the supreme head of the Church of England. To remind her subjects of her power, Elizabeth would go on tours of her kingdom. Her processions, like this one in the year 1600, were designed to be as lavish and impressive as possible. What sorts of tours and lavish processions do world leaders organize today?

How were trade and agriculture changing?

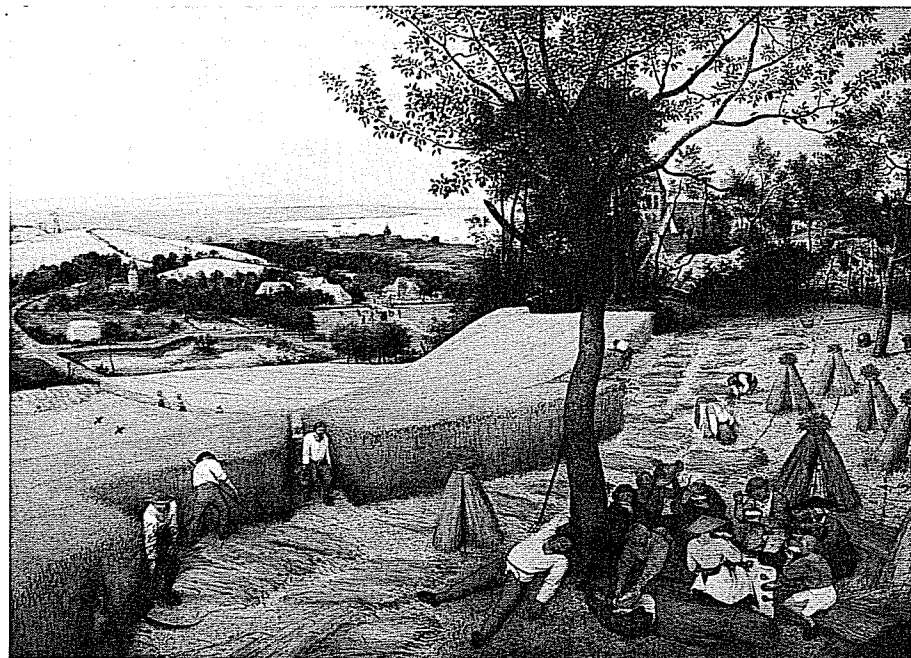
In the 14th century, the bubonic plague, also known as the Black Death, struck Europe. Spread by fleas and rats, the Black Death reduced the population of Europe by 40 percent. The labour shortage that followed changed the way work was done. Lords now had to pay agricultural workers for their labour. This change helped lead to a different style of agriculture across Western Europe.

New Farming Methods ^{agriculture}

Before the Black Death, most peasant farmers grew their crops on strips of land scattered over their lord's manor. This method was inefficient and produced small harvests. After the Black Death, farmers became wage earners. Small strip farms were consolidated, and in many cases the new, larger farms were used to grow a single crop that could be sold. Farmers also began to experiment with new farming techniques to improve crop yields, worked at improving the soil, and drained marshes to increase the amount of arable land. These developments would be the basis of the Agricultural Revolution in the 18th century.

Another change in agriculture that occurred in the 16th century was the introduction of new crops from the Americas. Maize (corn), potatoes, tomatoes, squash, beans, and tobacco changed what farmers grew in Europe. In many cases, the change was gradual, because people were initially suspicious of the new foods. Over time, however,

the potato became a staple food in Ireland, and the tomato took a central place in the diets of Italians.



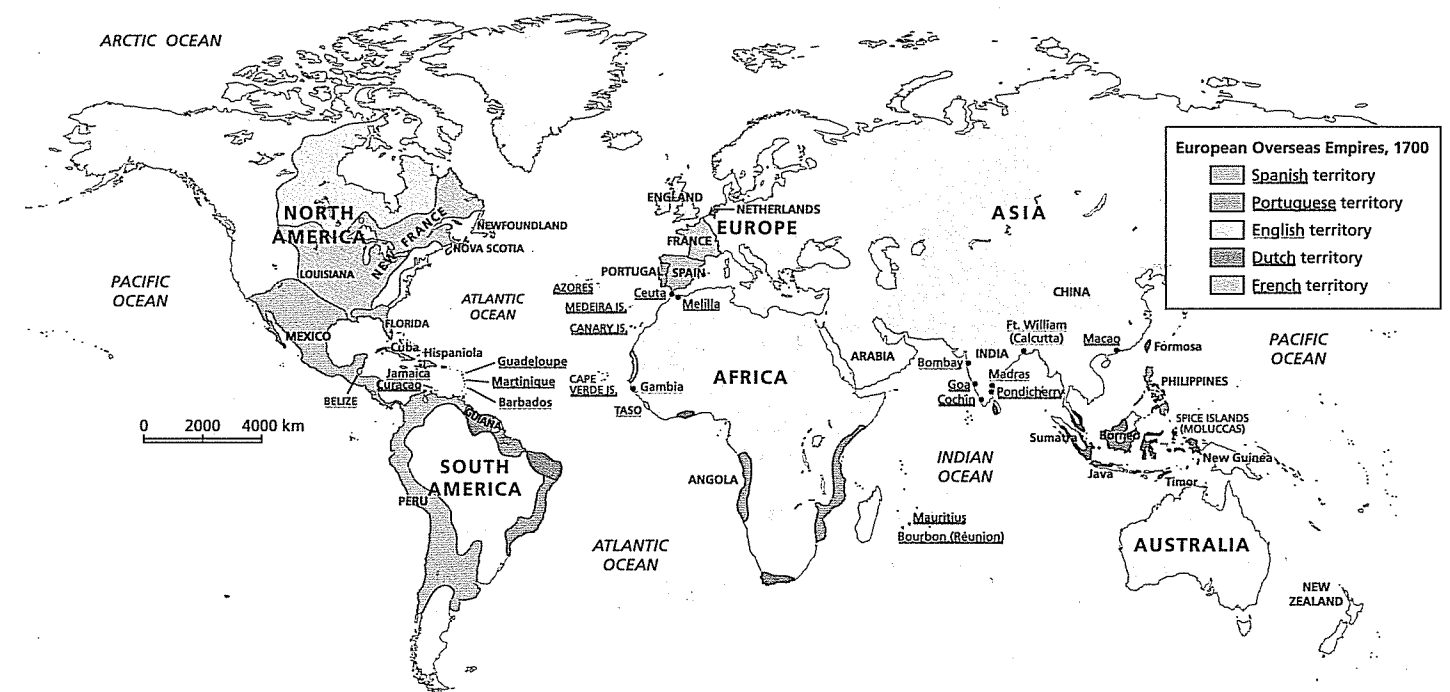
The Harvesters was painted by Pieter Bruegel the Elder in 1565. Bruegel painted scenes of everyday life, rather than portraits of important people or religious subjects. He was a careful observer and kept detailed records. How might historians use his paintings to get a sense of what life was like in the southern Dutch countryside?

Exploration and Trade ^{science}

When Europeans initially went on voyages of discovery in the 15th century, they were seeking new routes to Southeast Asia, which was the source of luxury items such as spices and silks. What Europeans had not expected was to find two completely unknown continents—the land we now know as North and South America.

Beginning in 1492, the voyages of Columbus led to lasting contact between Europeans and the Americas. In the 16th century, Europeans began to see the rest of the world as a source of wealth and power for their own nations. Europeans took direct control of these sources of wealth and created colonial empires. Trade continued, but within the empire and on the terms of the colonizing country.

Further wealth was acquired either by increasing a nation's colonial possessions, or by attempting to acquire other nations' empires by force. By the end of the 17th century, many European nations had overseas empires. European wars, formerly confined to Europe itself, became global conflicts. For example, wars between France and England would affect both Europe and North America.



Examine this map and determine which European nations had the largest empires. Where were the colonial possessions located? Why would there be fewer colonial possessions in Asia?

humanism a system or mode of thought in which human interests predominate

perspective the representation of objects on a flat surface so that they appear three-dimensional; for example, objects meant to be in the distance are smaller

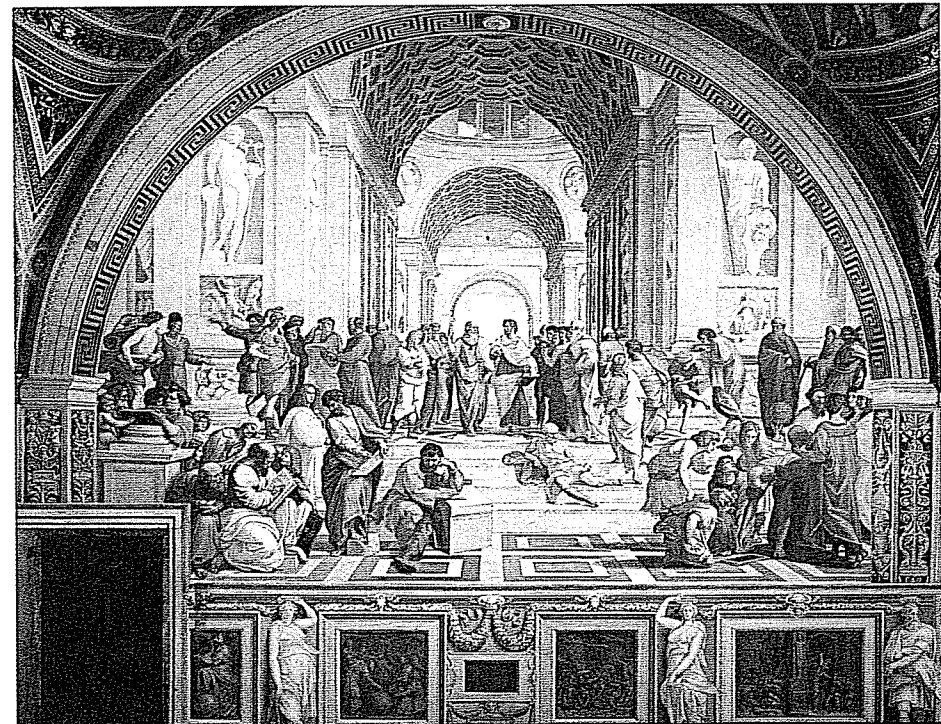
proportion showing things as the right size in relation to each other; for example, people are smaller than buildings

How did people see themselves and the world?

During the Renaissance, Europeans became more interested in the world around them, and how they fit into that world. Some began to value individual thought and experience over religious faith. Some also began to think that human beings were capable of doing almost anything they set their minds to.

This new way of thought, called **humanism**, could be seen in the artwork of the time. During the medieval period, art had been stylized and focused on religious themes. While many Renaissance artworks were religious in nature, they also focused on the everyday lives of ordinary people. Classical Greek and Roman themes were also popular, because Europeans were rediscovering the cultures of the ancient Greeks and Romans.

Renaissance artists developed techniques such as **perspective** and **proportion**, which allowed them to portray their subjects as realistically as possible. They also studied light, shadow, and human anatomy.



- *The School of Athens* was painted in 1510 by Italian painter Raphael. It had been
- commissioned by Pope Julian II, who saw himself as a humanist. This work reflects that
- interest, because it shows ancient Greek philosophers, not religious subjects. The use of
- perspective gives this fresco depth and reality.

Literature com. / literature

Literature during the Renaissance was also a departure from medieval styles, where the focus was almost always on religious matters.

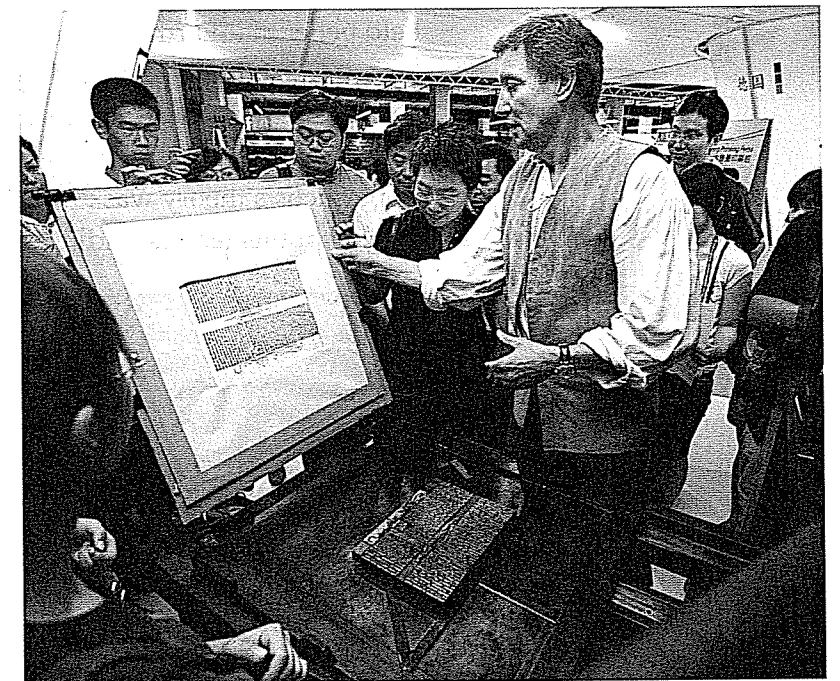
Authors now wrote about everyday life and historical events. Poets began to write sonnets about love. They also wrote books on how to think and act. One example is Niccolo Machiavelli's *The Prince*, which discussed ambition, glory, conquest, and politics. Renaissance rulers viewed Machiavelli's book as excellent practical advice.

Books were also being written for a far wider audience than ever before. More people were becoming literate. Authors began writing in the **vernacular**, rather than in Latin, which made their work accessible to more people.

The Printing Press

The printing press, which was developed by a German blacksmith named Johannes Gutenberg in 1450, had a huge impact on society during this time. Use of the printing press spread the ideas of humanism widely throughout society. Books were more affordable, and were therefore available to a wider audience. Schools and libraries were opened and made accessible to more people, although it was mostly wealthy boys who received formal educations. Illustrations were also widely printed. They spread new ideas among those who had not yet learned to read or write.

Between 1450 and 1500, at least 15 million books were printed in Europe. In the 16th and 17th centuries, the sheer number of printed books on a multitude of subjects contributed to a great upsurge in new ideas. These new ideas led to developments in all fields of study, including humanism, politics, and science.



- A demonstration of a reproduction Gutenberg press at the Beijing International
- Book Fair in 2007. Which do you think was the most influential way of
- spreading ideas—art, printing, or education?

vernacular the everyday language of people

What were the new ideas in science?

The activities of the humanists during the Renaissance increased people's interest in the world around them. Most scientific theories until that time had come from Greek and Roman thinkers centuries before. Renaissance thinkers began to wonder if these ancient writings were in fact correct.

The 16th and 17th centuries saw a flurry of scientific discoveries. Previous views about the natural world were made obsolete. Scientific discoveries also led to the creation of new tools, such as telescopes and microscopes. Innovations improved the lives of people in areas such as trade, farming, and industry. This combination of scientific discoveries and technological innovation would eventually lead to the Industrial Revolution.

Copernicus and Galileo

There was also a strong reaction against some new discoveries. In 1543, Polish astronomer Nicholas Copernicus proposed a theory that the sun was the centre of the solar system. This challenged the long-held belief that Earth was the centre of all creation. Copernicus's theory was initially accepted by many, including the Catholic Church, because it made more accurate calendars possible. However, in 1609, Italian astronomer Galileo Galilei confirmed through observation that Copernicus's theory was not a theory at all, but a scientific fact. When Galileo published his findings in 1610 and again in 1632, it seemed to the Catholic Church that he was challenging both the Bible and Church authority. The Church's response was to silence Galileo and ban his writings in all Catholic nations.



Galileo used the telescope to refine his views about the solar system. The word *telescope* comes from the Greek words "far" and "see." The word was in fact coined in 1611 by a Greek mathematician describing one of Galileo's scientific instruments during a presentation such as the one shown here.

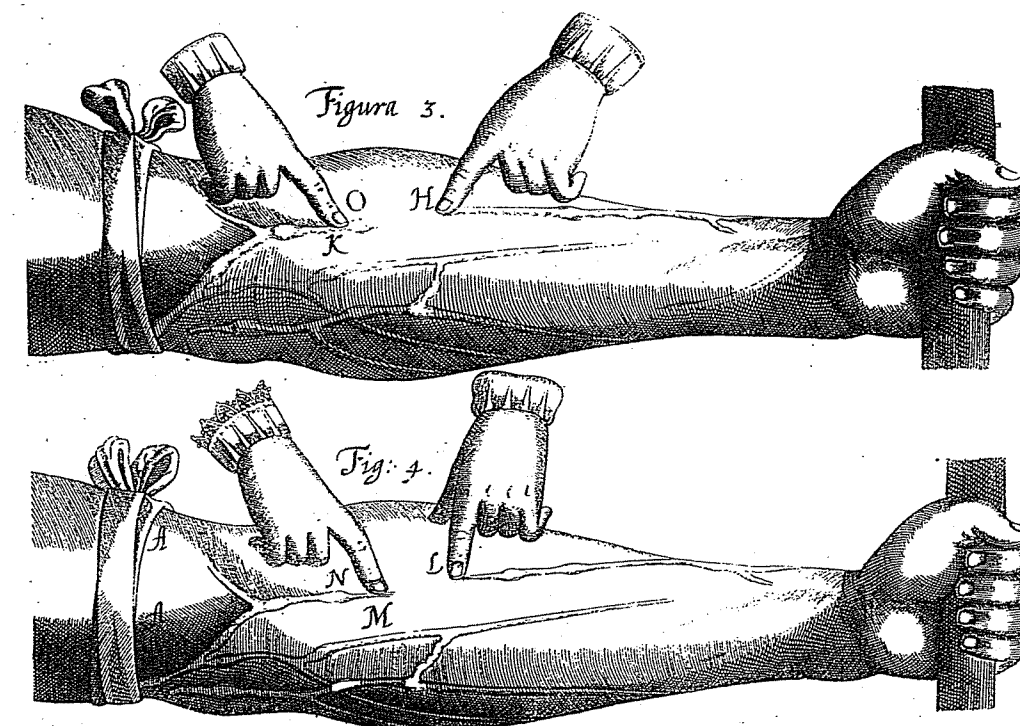
The Scientific Method

Scientists like Galileo used systematic methods in their studies. In the 17th century, English scientist and philosopher Francis Bacon proposed a method for scientific research. It is now known as the *scientific method*.

In 1628, English physician and anatomist William Harvey used the scientific method to discover how blood was circulated throughout the body. This was a problem that had puzzled doctors for over two thousand years. In the 1660s, Isaac Newton also used the scientific method to develop his laws of motion and gravitation, which gave a better understanding of how the physical world and the solar system worked. In fact, Newton believed that scientific discovery would eventually unlock all the secrets of the world—making religion no longer necessary to provide explanations about the mysteries of life.

The Scientific Method

- State a problem.
- Gather information about the problem through observation and experimentation. Record and analyze the data.
- Form a hypothesis, which is an assumption to be tested.
- Test the hypothesis through observation and experimentation. Record and analyze the data.
- Draw a conclusion. If the hypothesis is supported by the data, restate it as a theory. If not, reassess the data and form a new hypothesis to be tested.
- When describing one's findings, ensure that one's experiments can be repeated by a second investigator.



William Harvey's investigation of circulation included this experiment, which involved the direction of blood flow in the veins. He used a tourniquet to make the veins of the arm obvious, and then stopped the blood flow, demonstrating that blood in the veins flows only toward the heart, not away from it.