

UICL 2302

THINKING OF SCIENCE AND TECHNOLOGY





CHAPTER 2

2

DEVELOPMENT OF SCIENCE DURING THE MIDDLE AGES

OBJECTIVES OF CHAPTER 2

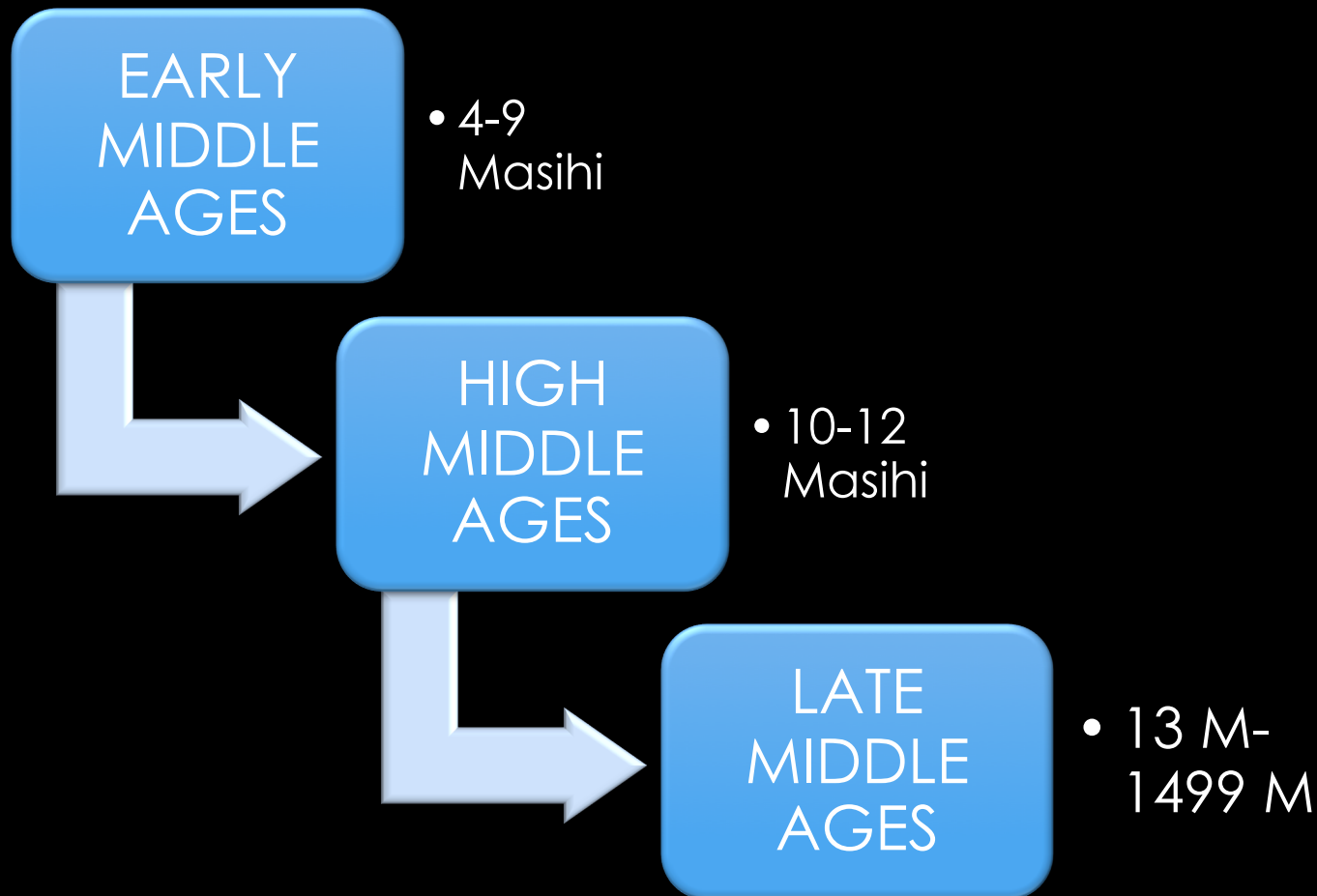
At the end of this chapter, students will be able to:


- Identifying the development of medieval scientific thought.
- Explain the clash between religionists and scientists (dualism in science).

MIDDLE AGES

- The Middle Ages in Europe are a long history from 500 AD to 1500 AD (1000 years).
- It covers the time from the fall of the Roman Empire to the emergence of the Ottoman Empire.
- These were the times of castles and peasants, trade unions and monasteries, cathedrals (cathedrals) and Crusades.

TIMELINE OF THE MIDDLE AGES

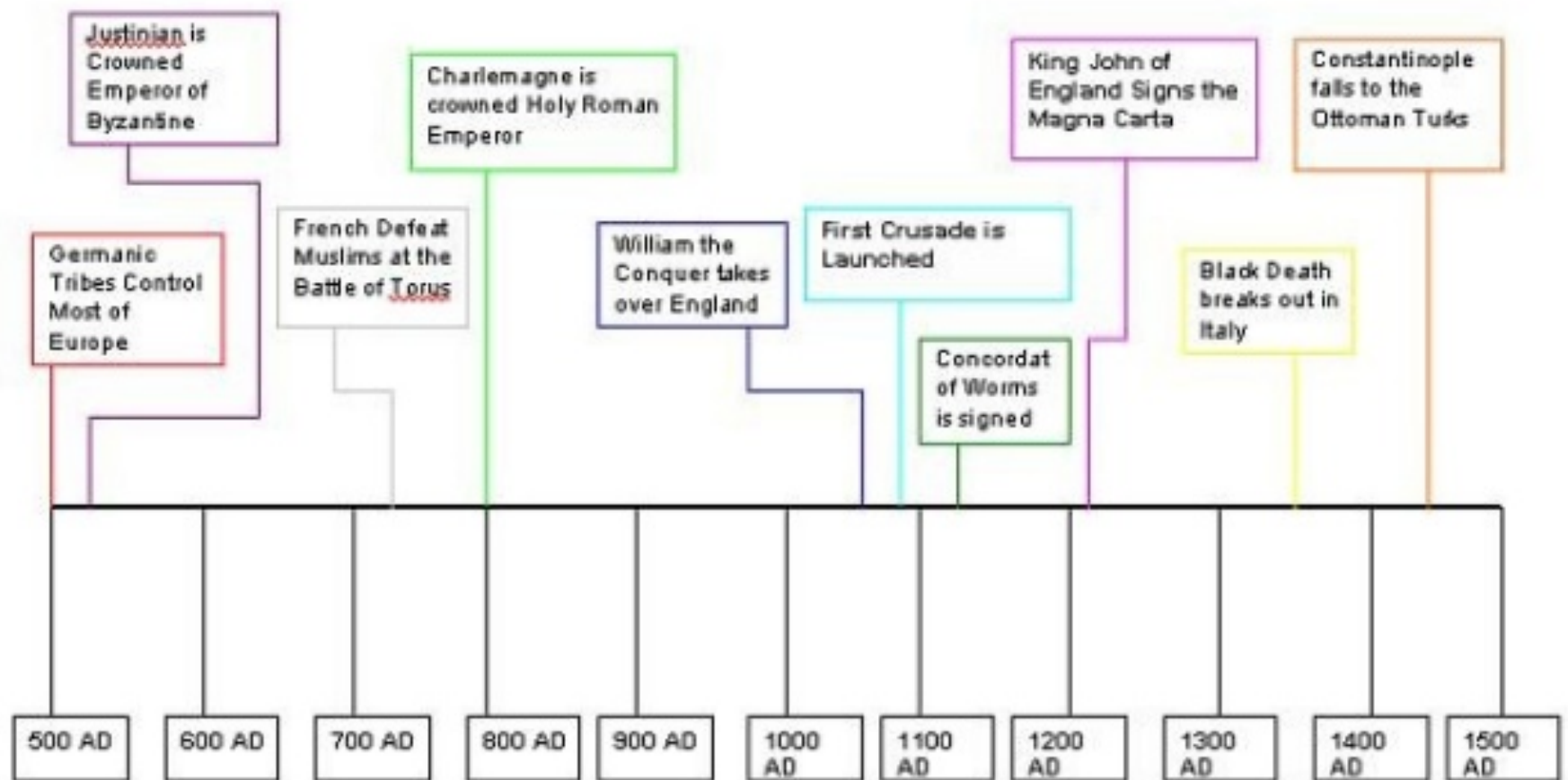




Timeline

- **Early Middle Ages:** 500 - 1000
- **High Middle Ages:** 1000 - 1250
- **Late Middle Ages:** 1250 - 1500

Middle Ages Timeline



THE DIVISION OF ERA

1. Classical Era
2. Hellenistic Era
3. Dark Ages
4. Renaissance
5. Enlightenment
6. Industrial Revolutions

1. CLASSICAL ERA (EARLY MIDDLE AGES)

- Started in Ionia, Greece (12 cities)
- Prioritize logos so they are incompatible with myths
- Emphasize the cosmic element in science
- Famous figure is Pythagoras (582-496SM)

BIRTH OF SOPHIS

- Has wisdom
- Started by Protagoras (5th century BC)
- Key features:
- Teach rhetoric
- Humanism is the basis of thinking
- Relative - no real truth, no reference
- Skeptics - don't believe in everything
- Wear high fees

OPPOSITION SOPHIS

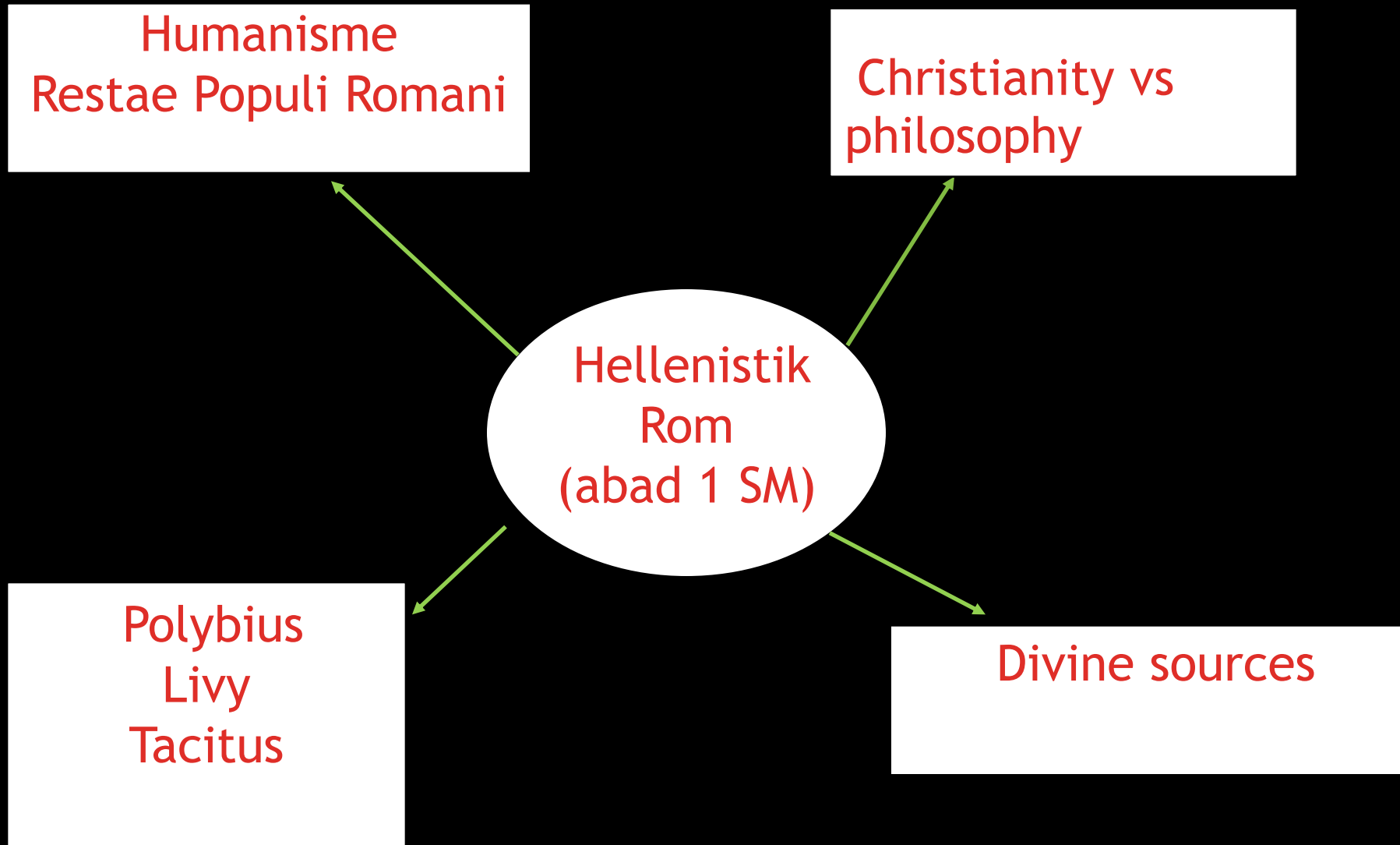
- Led by Socrates, Plato and Aristotle (SPA)
- Philosophy, reject pagan religion
- Herodotus
- Persian War, history as humanities
- Thucydides
- The Peloponnesian War: the removal of myths and legends

2. HELLENISTIC ERA

- Hellenistic Greece was a time that followed the death of Alexander the Great in 323 BC and ended with the conquest of Greek lands by the Roman Republic in 146 BC.
- The Hellenic Age
- All knowledge is based on divinity
- The clash started between the church and the logos
- Humanism begins to advance:
- Human, rational, secular elements
- Birth of Polybius (203-120SM), Livy (59-BC-17M)

HELLENISTIK ERA

13



3. DARK AGES (EARLY-HIGH MIDDLE AGES)

- It began with the fall of Rome in 365 AD
- There are certain features: feudal in economic and social, the role of the church in general
- Theology is the foundation of knowledge
- Church vs science
- There is an acquisition for apostate law
- There is a dualism in science
- Main character: Thomas Aquinas (1225-1274 AD)

4. RENNAISSANCE (14-17M)

- The Renaissance was a time in European history covering the period between the 14th and 17th centuries. It is a continuation of the Middle Ages and is linked by the Enlightenment era to modern history. The first impression of the Renaissance was found in Italy and its arrival was to occupy most of Europe. It is considered by some scholars as the beginning of modern times.
- Start with the aftermath of the Crusades, understand the science, the governmental body in the East.
- Translation movement
- The fall of Constantinople (1453), began to study Greek & translate material into Latin. Started moving to Italy (Florence).
- 1492-Jews and Muslims are expelled and confiscated by technology, science, etc.

9 FACTORS OF RENAISSANCE

1. Economic change from feudal to free
2. R&D Role: Polo, Henry
3. Printing in Guttenberg
4. Intellectual development
5. Change the way we think and culture: clothes, the public begins to play a role
6. Art

7. Philosophy:

humanism; rational, secular elements

Reject religion

8. Religion:

Come to think of it

Protestant; free thinking, translating,
understanding, no general leader, no
matter the mood

9. Social; black death (1347-1350)

SECULAR: IN A SOCIAL ASPECT

- Free of religion
- Religion is not political
- The influence of religion is reduced in community life
- Religion is no longer important
- Science and rationalism are more important than superstition and religion

SECRETARY: IN A POLITICAL ASPECT

- Originally politics was controlled by religion
- Changed in 4 phases;
- separate from religion
- politics interferes with religion
- Political power is wider
- Politics dominates religion

5. THE ENLIGHTENMENT

- The Enlightenment Age was an intellectual and philosophical movement that dominated the world of ideas in Europe in the 18th century known as the "Century of Philosophy".
- The French Revolution (1789-99)
- Reject monarchy, feudal
- Fundamentally a democracy, equal, fair, free
- The role of Jews in developing new knowledge.

THE ROLE OF EUROPEAN FIGURES

- Charles Darwin (1809-82): evolution
- Karl Marx (18-1883): material
- Sigmund Freud (1856-1939):
psychology

COLONIALISM

- Colonization or colonization was associated with the dispersal of tens of millions from Western European countries around the world.
- In many settlements, Western settlers made up the majority of the population.
- Examples include America, Australia and New Zealand. These colonies are sometimes called 'neo-Europes'.
- Elsewhere, Western settlers formed a minority, often dominant in their area.

- When Britain first settled in Australia, New Zealand and many other small islands, they often regarded the area as terra nullius. which means 'plain land' in Latin.
- Due to the absence of European agricultural techniques, the land was considered unmanaged and therefore uninhabited, despite its indigenous population.
- In the 19th century, laws and ideas such as the Mexican Colonial Law and the fate of the United States Manifest encouraged further colonization in America.
- It is a process by which the power demineralization system organizes the land around it and its components.

INDUSTRIAL REVOLUTION 1-4

MAJOR ACHIEVEMENTS

1ST PHASE

- Textiles
- Steam power
- Iron making
- Invention of machine tools.

2ND PHASE

- Huge productivity increase
- Usage of electricity

3RD PHASE

- Automation
- Computer
- Electronics

4TH PHASE

- Internet web
- Space system

INDUSTRIAL REVOLUTION

TRANSFORMING INDUSTRIES AND INNOVATION



INDUSTRY 1.0

Mechanization, steam power, weaving loom



1784



INDUSTRY 2.0

Mass production, assembly line, electrical energy

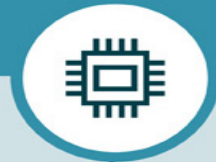


1870



INDUSTRY 3.0

Automation, computers and electronics



1969



INDUSTRY 4.0

Cyber Physical Systems, internet of things, networks



TODAY

CLASH BETWEEN RELIGIONISTS AND SCIENTISTS

SECULARISM

- Individualism
- Liberalism
- Empiricism
- Relativism
- Rationalism
- Humanism

3 CRITERIA OF WESTERN CIVILIZATION (REASON-INDIVIDUAL RIGHTS-S&T)

1) REASON

- knowledge is acquired through reason. partly against religion
- it took 200 years to recover and was accepted in the west

2) INDIVIDUAL RIGHTS

- to recognize the principles of individual rights
- Individual duty is not to serve the government but the duty of the government is to control the individual
- The right to live, to be free and to enjoy life
- Slavery and the Nazis were opposed in the name of illogical and contrary to individual rights.

3) SCIENCE & TECHNOLOGY

- The success of the two elements brings to the advancement and improvement of science and technology to the industrial community
- Two elements that liberate people from religious and national groups
- Then progress in all areas was achieved.

- Humans understand the laws of nature and create new products.
- Wealth is used for new creations and designs and helps productivity
- Wheelchairs, electric candles
- Humans are finally in control of the universe.

CRITERIA OF WEST MODERNISM

- 1) THE POWER OF GOD IS DENIED IN THE WORLD
- 2) RELIGIOUS AUTHORITIES LIMITED
- 3) RASIONALISM ACCEPTED WIDELY
- 4) EMPIRICAL CONSIDERED AS SOLE SOURCE OF KNOWLEDGE
- 5) INDIVIDUALS ARE FREE
- 6) UNIVERSAL Values are respected
- 7) HOLD ON LAW AND CONSTITUTIONS
- 8) WOMEN AND CHILDREN'S RIGHTS RESERVED

END