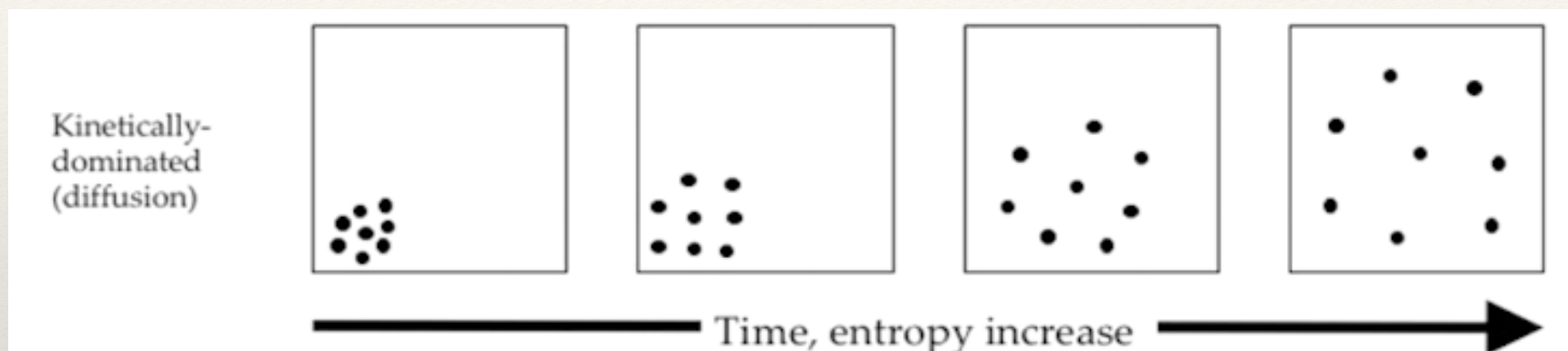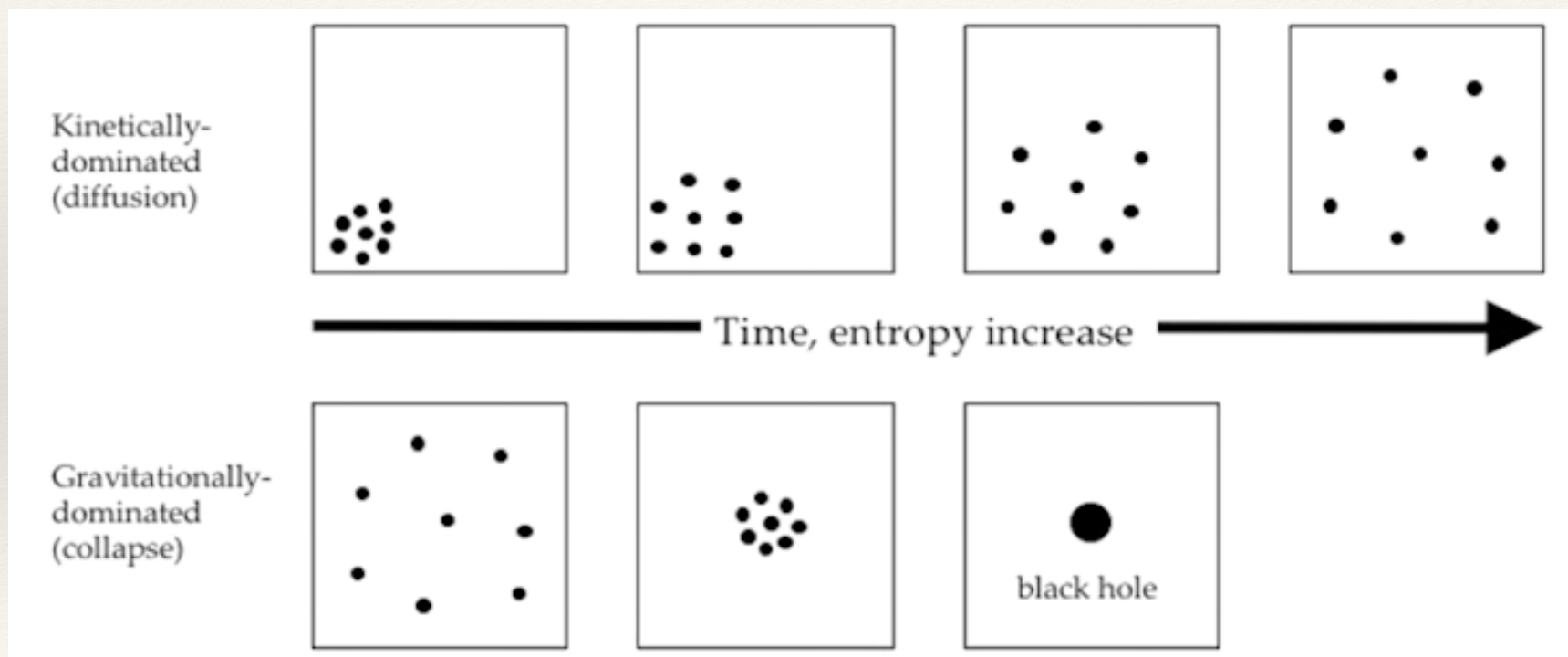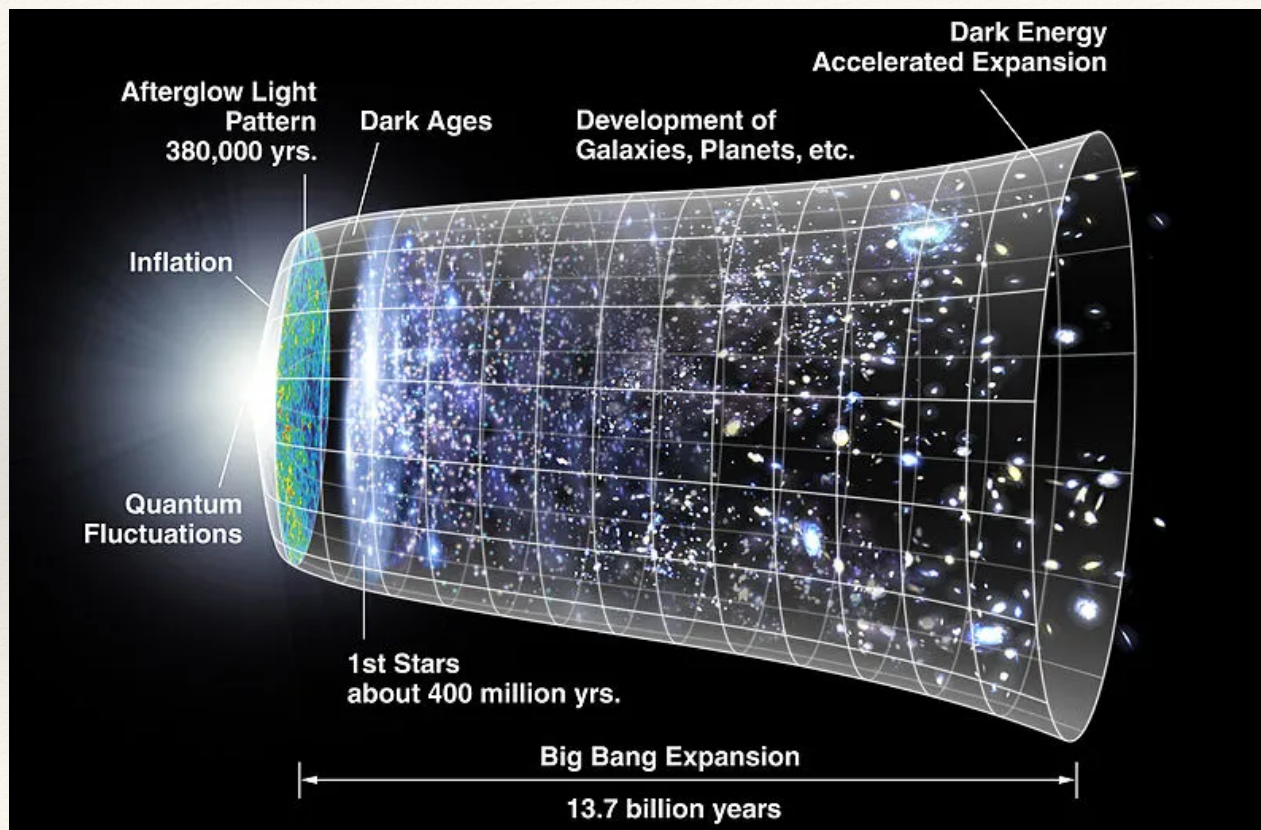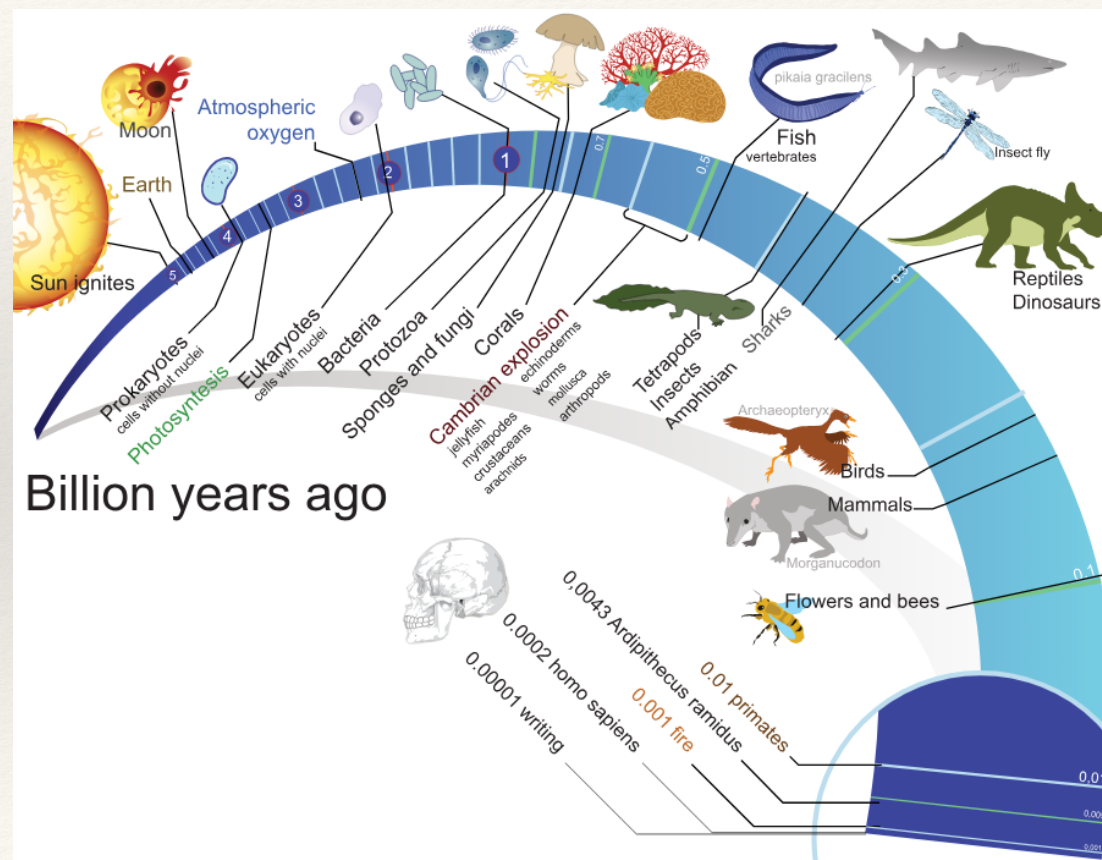# A brief history of humankind

Entropy

Entropy

The universe

Life on earth

Humanity
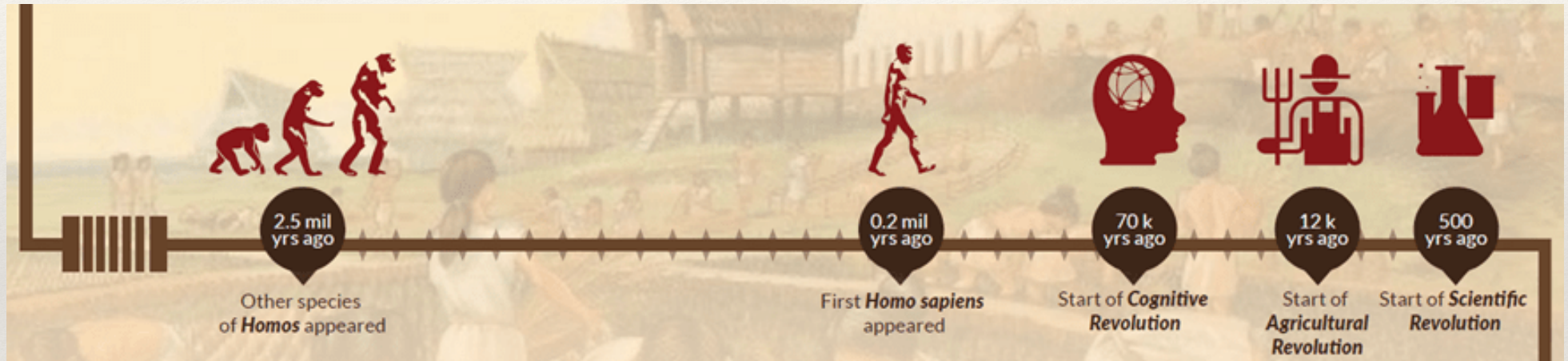
(Based on Sapiens, Yuval Noah Harari)

THE 3 KEY HUMAN REVOLUTIONS

The Cognitive Revolution
Sapiens flooded the planet as hunter-gatherers, changing our environment and social structures faster than any other species.

The Agricultural Revolution
We multiplied rapidly, but ended up with tougher lives and poorer nutrition. New imagined orders like peasants vs nobility, empires and gods emerged.

The Scientific Revolution
Science, imperialism and capitalism jointly brought more changes in the last 500 yrs than ever before. This revolution may well be the one that drives mankind to extinction.

(Based on Sapiens, Yuval Noah Harari)

Early human developments

Collective learning

Agricultural revolution

THE SCIENTIFIC REVOLUTION IN EUROPE c. 1500 - 1700

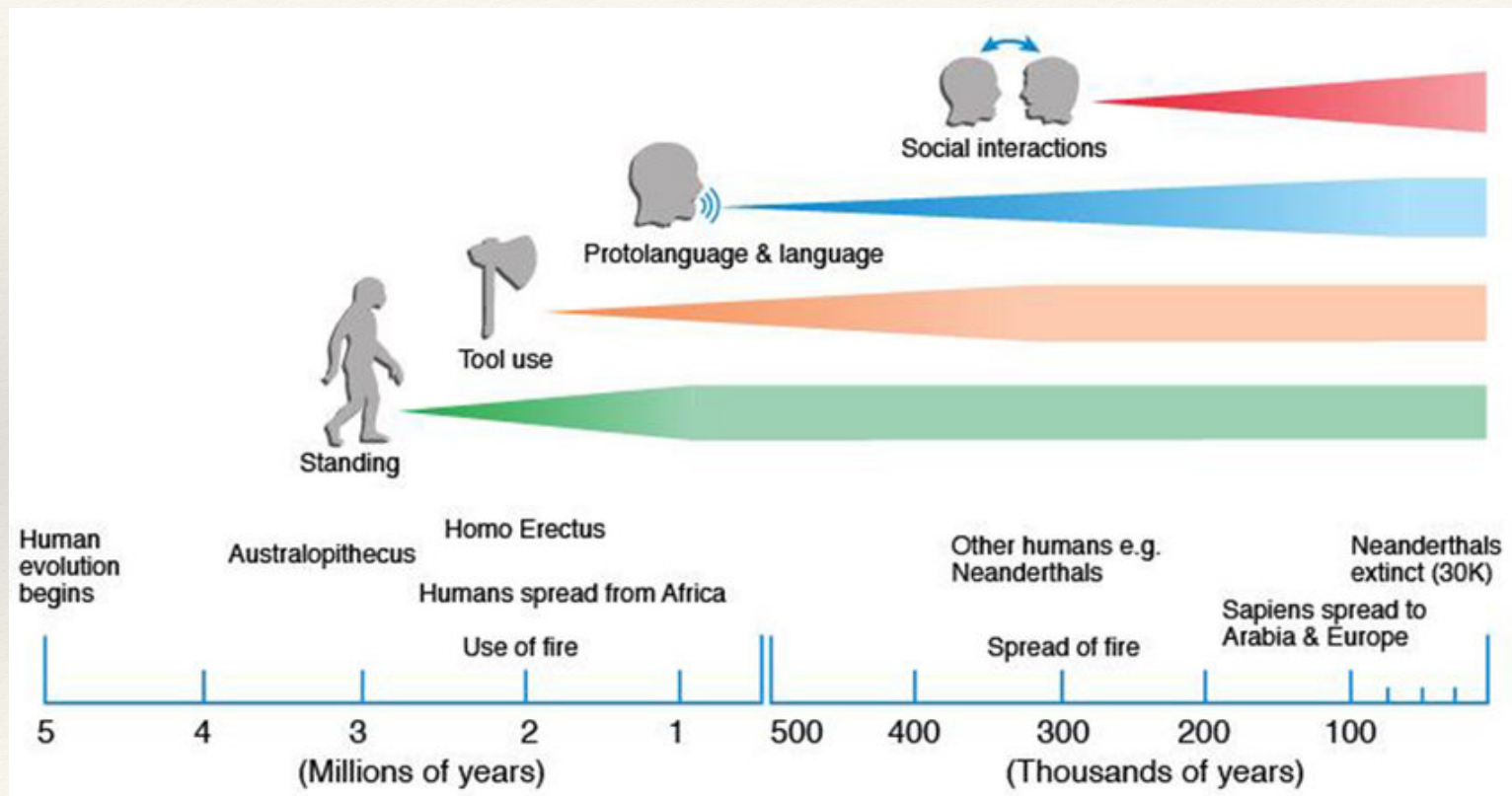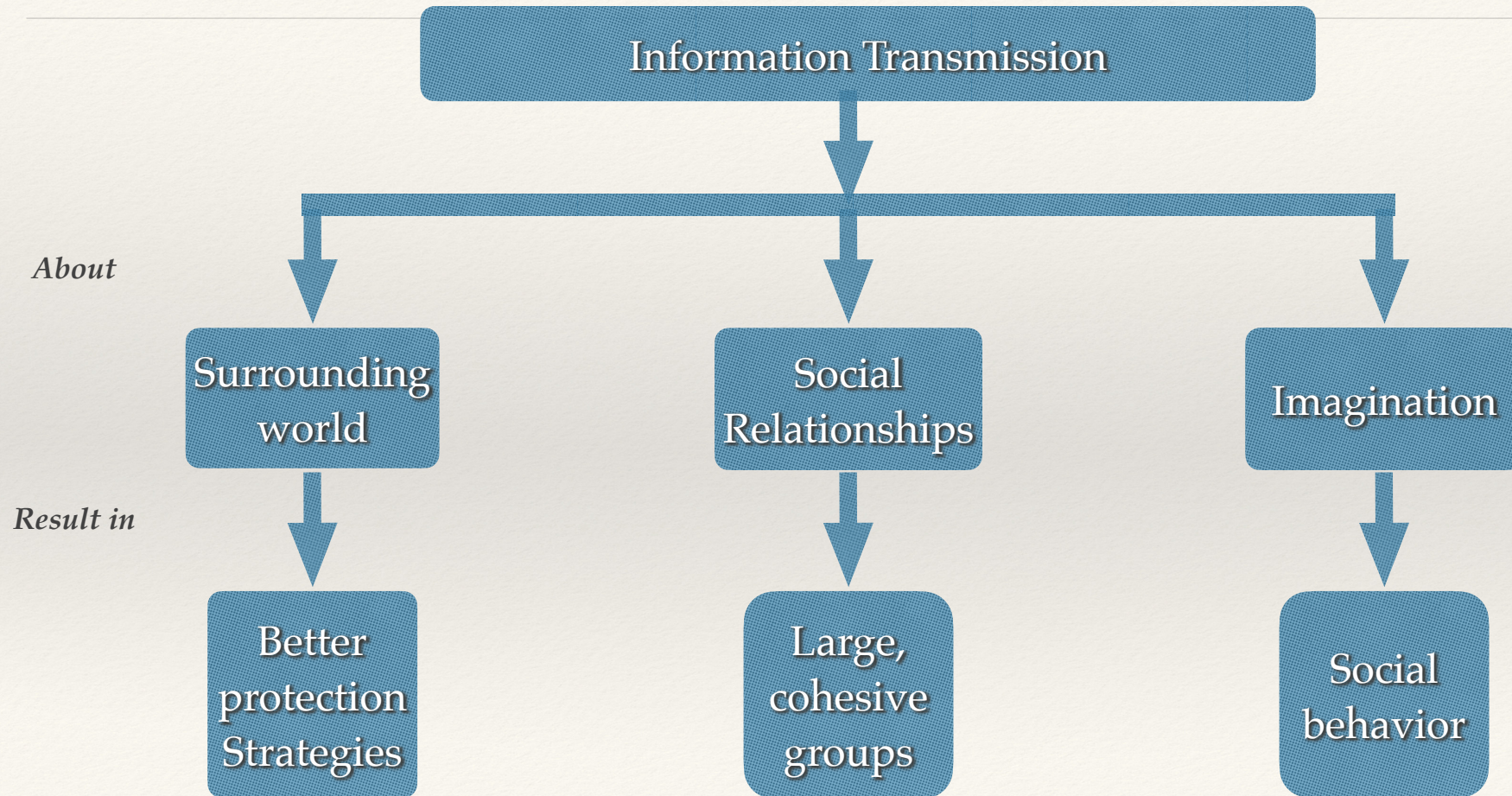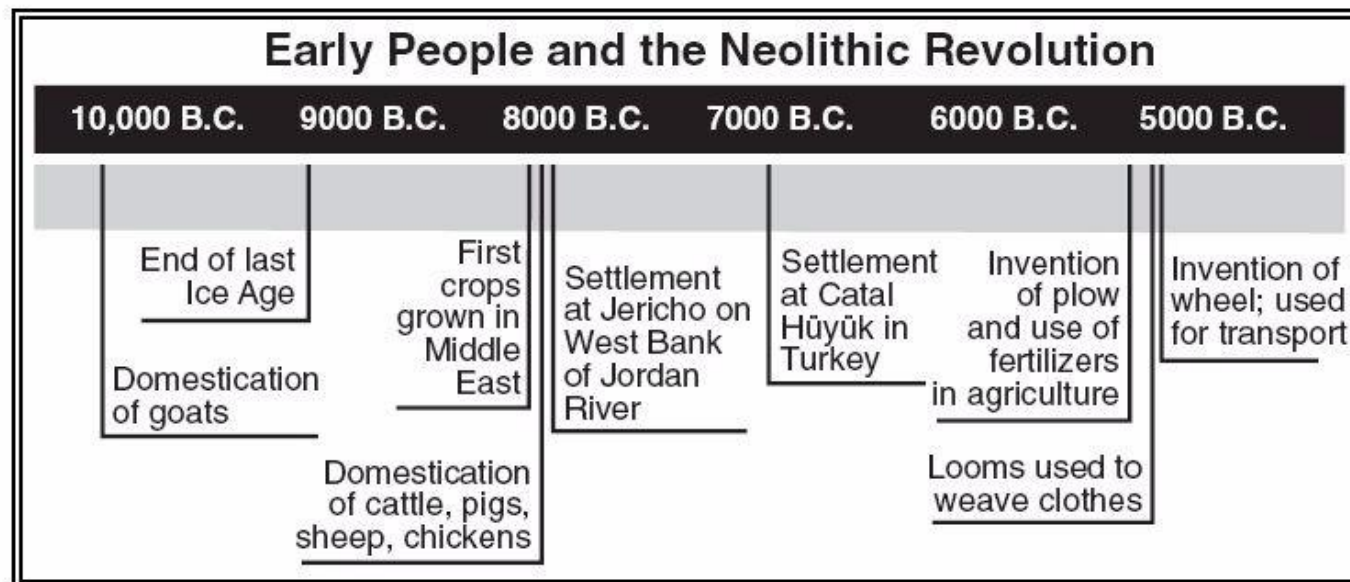**1614** S. SANTORIO METABOLISM, MEDICAL DEVICES

1637 R. DESCARTES "COGITO, ERGO SUM" DEDUCTIVE REASONING

1673 A. VAN LEEUWENHOEK MICROBIOLOGY

■ 1558 Urdaneta discovers the sea route from Asia to the Americas

1618-1648 Thirty Years' War

1556 G. AGRICOLA MINERALOGY, MINING SCIENCES

1594 J. NAPIER LOGARITHMS

1630 G. GALILEI REFUTES ARISTOTELIAN SYSTEM

1660 M. MALPIGHI MICROSCOPICAL ANATOMY

1690 J. HEVELIUS STARS CATALOGUE

1562-1598 French Wars of Religion

1604 union of the crowns of England and Scotland

1639-1651 Wars of the Three Kingdoms on the British Isles

1530-1537 O. BRUNFELS BOTANICAL WRITINGS ON OBSERVATIONS

■ 1558 Elizabeth I is crowned

1600 W. GILBERT MAGNETISM STATIC ELECTRICITY

1620 F. BACON SCIENTIFIC METHOD

1647 J. HEVELIUS MOON MAP

1665 R. HOOKE MICROBES

1704 I. NEWTON SPEED OF SOUND, INFINITESIMAL CALCULUS

■ 1557 Spain declares bankruptcy

■ 1521 Edict of Worms

■ 1547 Ivan the Terrible becomes the first Russian tsar

■ 1600 British East India Company is founded

■ 1633 tulip mania in Holand

■ 1666 The Great Fire of London

■ 1669 first steam engine by T. Savery

1543 N. COPERNICUS HELIOCENTRIC SOLAR SYSTEM

1577 T. BRAHE VS. ARISTOTELIAN COSMOLOGY

1600 G. BRUNO COSMIC PLURALISM INFINITE UNIVERSE

1609-1619 J. KEPLER LAWS OF PLANETARY MOTION

■ 1632 Galileo is convicted of heresy

1660 ROYAL SOCIETY

1687 I. NEWTON LAWS OF MOTION, UNIVERSAL GRAVITATION

| 1525 | 1550 | 1575 | 1600 | 1625 | 1650 | 1675 | 1700 | 1725 |

1543 A. VESALIUS BOOKS ON HUMAN ANATOMY

1582 POPE GREGORY XIII GREGORIAN CALENDAR

1610 G. GALILEI OBSERVATIONAL ASTRONOMY

1628 W. HARVEY BLOOD CIRCULATION

1661 R. BOYLE MODERN CHEMISTRY

1677 E. HALLEY SOUTHERN STARS MAPPED

■ 1524-1525 German Peasants' War

■ Mercator 1569 world map

1580-1640 Spanish and Portuguese crowns are united

■ 1689 Bill of Rights

1542 L. FUCHS PLANTS' USES AS MEDICINES

1591 F. VIETA ALGEBRA NOVA

1608 H. LIPPERSHEY REFRACTING OPTICAL TELESCOPE

1657 C. HUYGENS PENDULUM CLOCK

1680 G. BORELLI BIOMECHANICS

1520-1566 reign of Suleiman the Magnificent

1566-1648: Eighty Years' War between Spain and the Netherlands

■ 1527 Rome sacked by mutinous troops of Charles V

1585 A. PARÉ FIELD SURGERY FORENSIC PATHOLOGY

1619 C. DREBBEL COMPOUND MICROSCOPE

1653 B. PASCAL TRANSMISSION OF FLUID-PRESSURE

1657 O. VON GUERICKE VACUUM PUMP

1705 E. HALLEY COMET PERIODICITY

■ 1532 Church of England breaks away from the Catholic Church

■ 1597 Romeo and Juliet is published

■ 1637 the first public opera opens in Venice

■ 1683 the Ottomans are defeated in the siege of Vienna

1585 S. STEVIN DECIMAL SYSTEM FRACTIONS

1643 E. TORRICELLI PRESSURE, BAROMETER

1655 J. WALLIS DIFFERENTIAL CALCULUS

1673 G. LEIBNIZ MECHANICAL CALCULATOR, INFINITESIMAL CALCULUS

■ 1550-1551 Valladolid debate on rights of the Indigenous people of the Americas

■ 1621 the Mayflower reaches North America

Top inventions

Ian Barbour's views of technology

- ***Technology as Liberator***
  - Higher living standards (*medicines, sanitation, drugs, nutrition, reduced manual labor*)
  - Opportunity for choice (*mobility, birth control,…*)
  - More leisure (*education, arts, entertainment, sport,…*)
  - Better communications (radio, TV, phone, email,…)

- ***Technology as Threat***
  - Uniformity (*standardized products, lack of individuality)*
  - Narrow criteria of efficiency (*efficiency is defined in terms of quantity where human values are overlooked*)
  - Impersonality (*people feel like cogs in a well-oiled machine*)
  - Uncontrollability (*technology takes on a life on its own; we lose control*)
  - Alienation (*from the process of work, the product of work*)

- ***Technology as Instrument of Power***
  - Technology and power (*technology is neither good nor evil*)
  - Redirection of technology (*political structures can redirect technology to do more good*)
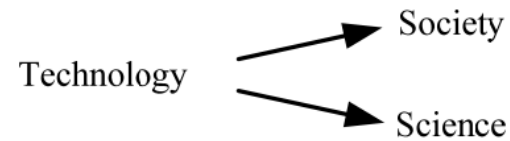 - Social construction of technology (*science, society, and technology are mutually reciprocal in influence*)
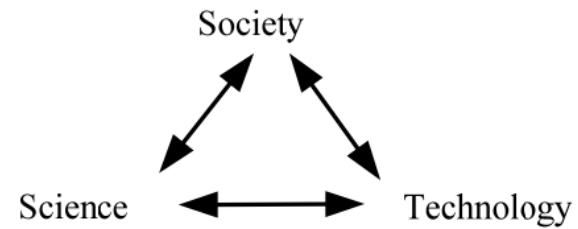
Ian Barbour's views of technology
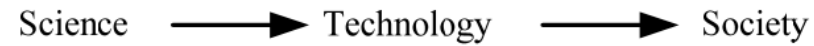
Kranzberg's laws of technology

❖ Technology is neither good nor bad; nor is it neutral.

❖ Invention is the mother of necessity

❖ Technology comes in packages, big and small

❖ Although technology might be a prime element in many public issues, nontechnical factors take precedence in technology-policy decisions.

❖ All history is relevant, but the history of technology is the most relevant.

❖ Technology is a very human activity – and so is the history of technology.[