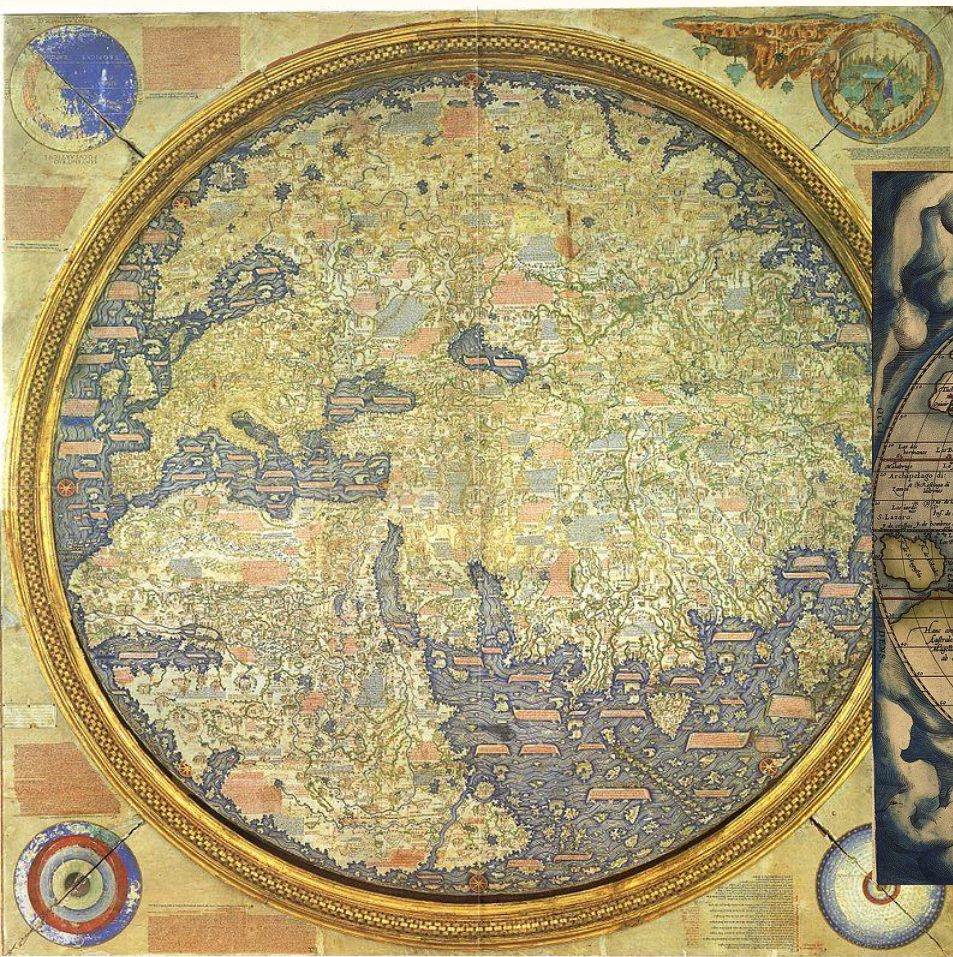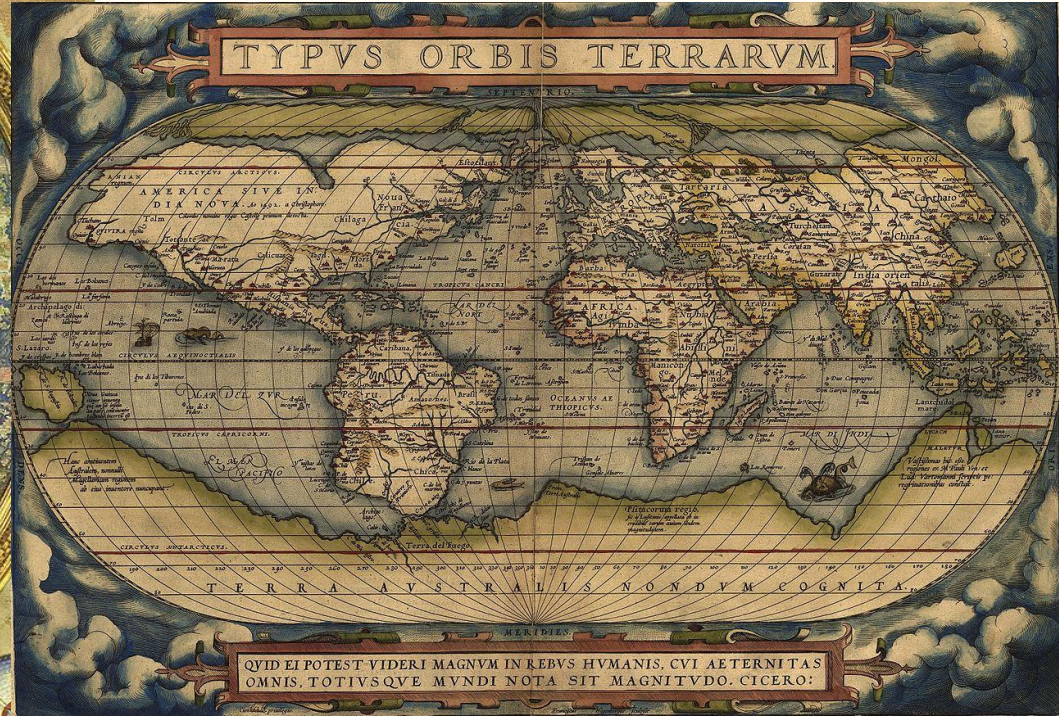# Science and Philosophy in Elizabethan England

Changing worldviews in the sixteenth century

- Often seen as transition between medieval and modern times
- By early 16th century: mystery of what was beyond the known world (Europe, Asia, and Africa) had been uncovered
- Regions previously described in supernatural terms became part of concrete world maps
- Changed the way that people began to see the world and their place in it

TYPVS ORBIS TERRARVM.

QVID EI POTEST VIDERI MAGNVM IN REBVS HVMANIS, CVI AETERNITAS
OMNIS, TOTIVSQVE MVNDI NOTA SIT MAGNITVDO. CICERO:

Ortelius's map Theatrum Orbis Terrarum (1570)

Fra Mauro map (1459)

From God's Design to Automatic Design

- Middle ages: the mysteries of the natural world were viewed as part of God's design → beyond the capacity of human intellect and reason → dangerous to try to control or alter the order of things
- Renaissance: change in perspective to the secular
- Secular Humanism and Science: not a conflict with Christianity → human learning and accomplishments increased the glory of the God that created them

- exploration
- rediscovery of the writings of the ancient Greek and Roman philosophers
- new methods of education
- the widespread distribution of books due to the development of the printing press
- new scientific techniques
- increasing trade and commerce
- growing cities
- rising middle class & rise of capitalism

Elizabethan England still in medieval model

- Most people accepted the medieval model of the world as a mystery
- Faith in a set order → feared chaos if God's design was disrupted
- Everything had its assigned role and rank (c.f. *Scala naturae*)
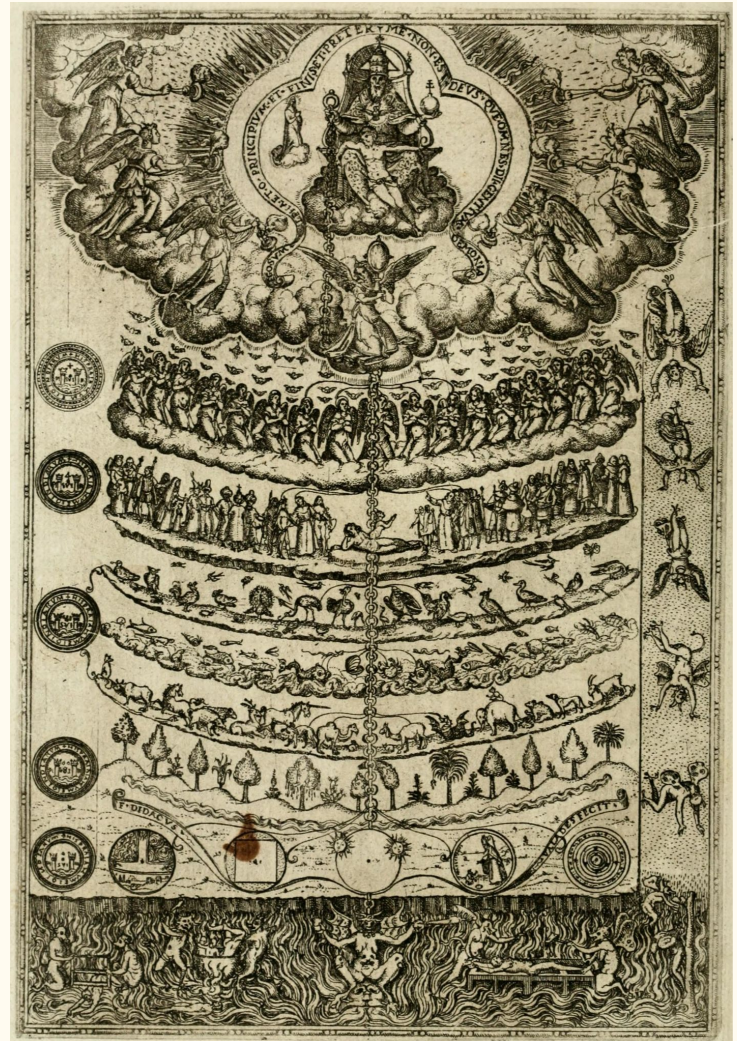
Design v. Chance

- Heliocentric model found majority acceptance early seventeenth century
- Many people already questioning medieval model by 1558 (Elizabeth's coronation)
- Before:
  - Looking at the sky and seeing the home of the angels, design, order
  - Human experiences part of a divine plan
- After:
  - Universe infinite, human position increasingly uncertain
  - New belief in chance, randomness
  - Also led to increased sense of control over daily life
  - New faith in the power of the individual to discover mysteries of the world

Changing trends at English Universities

- Middle Ages: Oxford and Cambridge were centers of academic scholasticism → for training members of the Catholic Church
- Attendance dropped drastically under Henry VIII → fear to discuss Catholic beliefs
- By 1550 was filled again with students, but shifted from emphasis on Catholic church and doctrine
- Staffed by well-educated Humanists → many were Protestant theological and social reformers
- Still kept curriculum of philosophy, added new focus on Greek and Latin
- Students also were more commonly members of the nobility → not interested in church careers
- Many professions began to require degrees (such as serving in Parliament) → education with the view of statecraft

The Education of Elizabeth I

- Education took place at Hatfield (20 mi north of London) → where she lived as a child
- There she and her half sister Mary (along with other noble children) were educated → had the best tutors in the country
- Most came from Humanist tradition at Cambridge → among them Roger Ascham (1515–1568), one of the top Greek scholars in England
- Ascham came to Cambridge in 1530, stayed on after graduating
- Participated in radical Humanistic changes at the university

Ascham as Elizabeth's tutor

- 1548: Ascham invited to be Elizabeth's personal tutor → taught her languages, grammar, logic, religion, mathematics, philosophy, history, music… but stressed languages above everything else
- He would have her translate languages from their original into English and then translate them back into the original language
- She was very good at languages and was fluent in six by the time she was 11
- Trained her in the art of public speaking and she excelled

Influence on Elizabeth's reign

- Humanism focuses on philosophy as practical guide for ethical living
- Don't know Ascham's effect on Elizabeth but comparison with Henry VIII shows differences
- Henry viewed his actions and desires as divinely sanctioned and ordained
- Elizabeth used to her education to craft a careful public image of herself, choices, and actions → related them to her civic responsibility (not divine right)
- Ascham valued rhetoric and style → composure, intelligence, elegance
- Probably had influence on the culture of the Elizabethan court