## The Seventeenth-Century Scientific Revolution
## Mathematics and Rhetoric in the Service of the Counter-Intuitive

I.  Three Ages of Explanation

   A.  Ancient Greece—observation, logic, and common sense
   B.  Age of Authority
       1.  Medieval Christendom (reintroduction of logic)
       2.  Renaissance
   C.  Scientific Revolution (hypothesis formation and testing)
       1.  experimentation
       2.  measurement
       3.  mathematical reasoning

II.  Study of Motion

   A.  Mykołaj Kopernik (Nicholaus Copernicus) (1473–1543)
       1.  Studied at universities of Kraków, Bologna, and Padua
       2.  *On the Revolution of the Heavenly Spheres*—1543
   B.  Niccolo (Tartaglia = Stammerer) Fontana (1543–1607)
   C.  Giovanni Benedetti (1530–1590)
   D.  Tycho Brahe (1546–1601)  (Uraniborg)
   E.  Johannes Kepler (1571–1630)—Three Laws of Planetary Motion
       1.  Planets move in elliptical orbits
       2.  Line joining sun to planet sweeps out equal areas in equal times
       3.  Time planet takes to orbit sun varies proportionately with distance
   F.  Galileo Galilei (1564–1642)
       1.  Law of Inertia
       2.  *Dialogue on the Two Chief Systems of the World*—1632
       3.  Conflict between Old and New, between Authority and Reason
           a.  Giordano Bruno (1548–1600)
           b.  Domenico Scandella "Menocchio"
   G.  Isaac Newton (1642–1727)
       1.  *Principia mathematica*—1687
       2.  Unified Field Theory

III.  Theories of Thought

   A.  Deductive method—René Descartes (1596–1650)
   B.  Inductive Method—Francis Bacon (1561–1626)

IV.  Influence on the Enlightenment

   A.  Fontenelle (popularized the views of Descartes)
   B.  Voltaire (popularized the views of Newton)