

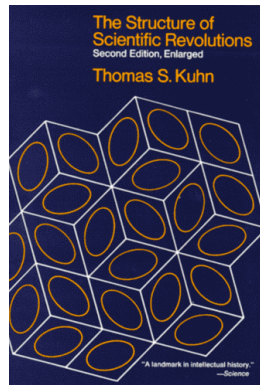
Scientific Revolutions

US 275 Scientific Ethics
John R. Hoffman
Arcadia University



Scientific Revolutions

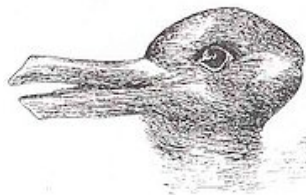
- Goal of Science:
 - obtain better explanations
 - “...more than one theoretical construction can always be placed upon a given collection of data.”



The Structure of Scientific Revolutions, 1962
Thomas Kuhn

Paradigm shifts

- Acceptance of new paradigm:
 - must re-evaluate prior findings
 - better construction
 - explains current observations
 - reliably predicts future observations



Science is continually advancing

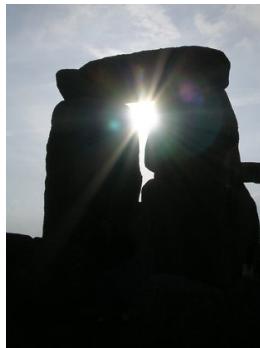
- as hypothesis are tested
 - being refined
 - to apply to more situations
 - to make better predictions



Unfinished Bound Slave (1519 - 1936)
Michelangelo

Order of the Universe: Stonehenge

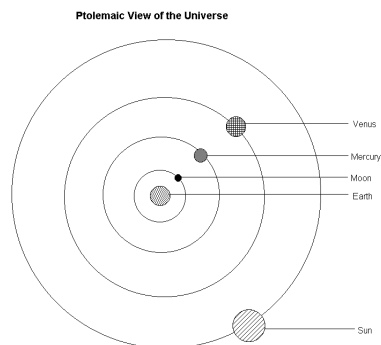
- Huge stones in series of rings
 - built about 2800 B.C.
 - 30 feet tall, 100,000 pounds
 - from quarry 20 miles away
- essentially giant calendar



View of the setting sun through one of the Stonehenge trilithons.
Kristian H Ressett, Wikimedia Commons

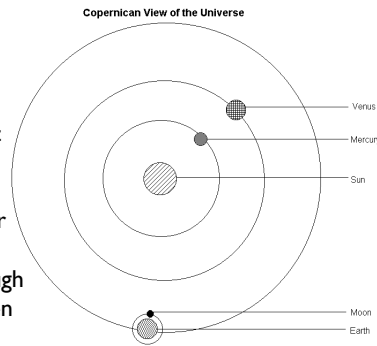
Order of the universe: Claudius Ptolemy

- Egyptian-born Greek astronomer (c. 100 AD)
- Geocentric:
 - planets, etc rotate around the earth.
 - successfully explained planet movements, eclipses, etc.
- theory lasted 1500 years



Order of the Universe: Nicolas Copernicus

- Polish Cleric (1473 - 1543)
- Heliocentric
 - kept most parts of Ptolemaic theory (circular orbits)
 - Sun rather than earth at center
 - instruments not accurate enough to measure differences between predictions



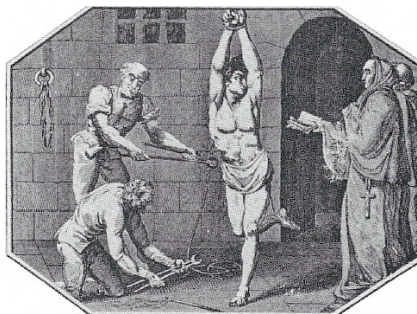
Consequence of Scientific Revolution... heresy

- Galileo Galilei
 - Italian astronomer
 - sentence to life in seclusion
- Giordano Bruno
 - Italian philosopher
 - burned at the stake



Order of the Universe: Why does Copernican view matter in metaphysics?

- Metaphysics
 - world/universe doesn't revolve around man
 - maybe man not as unique and special as thought
 - maybe god not as important



Two old priests showing the application of torture under the supervision of the Inquisition.
Wikimedia Commons

Order of the Universe: Why does Copernican view matter in value theory?

- **Ethics**

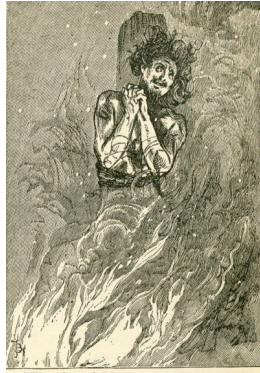
- Is it good?
- Is it moral?

- **Aesthetics**

- Is it beautiful?

- **Social/Political**

- Is it legal?



"They burned him to ashes at the stake."

from John Bunyan's *Pilgrim's Progress*, 1890
Wikimedia Commons

Order of the Universe: Why does Copernican view matter in epistemology?

- observational evidence supports view
- view allows for predictions to be tested



Hubble Space Telescope,
NASA

Any Questions?

Email me at:
hoffmanj@arcadia.edu



<http://www.viporbullkennels.com/images/animated-question-mark.gif>