Francis Bacon (1561-1626)

- Promotion of science in Great Britain
- Inductive method
- Empirical generalization
- Avoid subjectivity in science by repeated, systematic observations

Thomas Hobbes (1588-1679)

- All knowledge is derived from observation.
  “There is no conception in man's mind which hath not at first, totally or by parts, been begotten upon the organs of sense.”

Thomas Hobbes (1588-1679)

- Mechanistic principles govern the universe: matter and motion
- Material monist
- Determinist

Thomas Hobbes (1588-1679)

- Materialism – cognition and mental processes are based on the same laws that govern physical objects.
  - Perception
  - Memory
  - Attention
Thomas Hobbes (1588-1679)
• principle of association: continuity, cohesion, interconnectedness of ideas
• Drives: “appetites” and “aversions”

Political and social writing
• Hedonism: principle of self-interest
• Free will is an illusion created by inherent conflicts between appetites and aversions

John Locke (1632-1704)
• Empiricist view of the construction of human knowledge
• The mind at birth is a “tabula rasa” (blank slate)
• There are no innate ideas

Locke’s Essay
• Where do ideas come from?
• Not innate, because even the most widely held beliefs are not shared by everyone.
• All knowledge comes from experience: sensation and reflection.
John Locke (1632-1704)

- Simple ideas and complex ideas
  - Simple ideas are the “building blocks” of thought; cannot be broken down or analyzed further

John Locke (1632-1704)

- Simple ideas and complex ideas
  - Some simple ideas come from sensation (color, taste, smell)
  - Some come from reflection (memories, thoughts, intentions)

John Locke (1632-1704)

- Simple ideas and complex ideas
  - Complex ideas are composites of simple ideas; the mind can form unlimited combinations of ideas

John Locke (1632-1704)

- Primary qualities – perceived attributes resemble the physical objects that cause them
- Secondary qualities – perceived attributes do not correspond to any physical properties

John Locke (1632-1704)

- Paradox of the basins
  - Does warmth reside in the water basin or in the mind?
  - Warmth is a secondary quality

John Locke (1632-1704)

- Physical realism
  - Physical objects stimulate the sense organs and cause the mind to form an accurate representation of external reality
- Copy theory of perception (Democritos, 460-370 BC)
Molyneux’s problem

“Suppose a man born blind, and now adult, and taught by his touch to distinguish between a cube and a sphere of the same metal, and nighly of the same bigness, so as to tell, when he felt one and the other, which is the cube, which the sphere. Suppose then the cube and sphere placed on a table, and the blind man be made to see: quaere, whether by his sight, before he touched them, he could now distinguish and tell which is the globe, which the cube?"
Locke’s contributions

- **Problem of personal identity**
  - “personal identity is the consciousness of being the same thinking being at different times and places.”

Locke’s political writings

- **Two Treatises on Government**
  - government as a social contract
  - all people are born equal
  - universal education as a right

George Berkeley (1685-1753)

- Born in Kilkeny, Ireland
- Lecturer at the University of Dublin
- Traveled to America, hoping to set up a new college in Bermuda
- Bishop of Cloyne for last 18 years of his life

George Berkeley (1685-1753)

- Dissatisfied with the prevailing metaphor of a clockwork universe
- Materialism responsible for decline in morals and religion
- Denied existence of matter (material world)

George Berkeley (1685-1753)

- Mental monism (idealism) denies the existence of a physical world distinct from our perceptions of it.
- *esse is percipi* 
  
  “to be is to be perceived”

George Berkeley (1685-1753)

- All we can ever know about the world comes from sensory perception.
- No “external reality” beyond our perceptions of the world.
George Berkeley (1685-1753)

- Problem: if perception determines existence, then do things cease to exist when we no longer perceive them?
- Do perceptions vary from one individual to another?

There was a young man who said, “God
Must think it exceedingly odd
If he finds that this tree
Continues to be
When there’s no one about in the quad”

Dear Sir:
Your astonishment’s odd
I am always about in the quad.
And that’s why the tree
Will continue to be
Since observed by
Yours faithfully,
God

George Berkeley (1685-1753)

- Human knowledge is based on ideas: sensory experience plus reflections of the mind

George Berkeley (1685-1753)

- Our psychological experiences reflect the world as it actually is
- distinction between primary and secondary qualities makes no sense

George Berkeley (1685-1753)

Principle of association

- An object is nothing more than a combination of its perceived qualities
- Apple=color+smell+taste+shape+size

George Berkeley (1685-1753)

- There are no abstract ideas
- Attributes are grouped together on the basis of contiguity and similarity

There are no abstract ideas.
George Berkeley (1685-1753)

1. the active mind or spirit, perceiving, thinking, willing
2. passive objects of mind, ideas derived from sensation, memory or imagination

Theory of vision

- An Essay Towards a New Theory of Vision (1709)
- Molyneux’s problem
- Distance perception is learned, not innate

Theory of vision

- Distance perception is not based on abstract geometrical relationships, but on learned associations between cues derived from different senses (visual & kinesthetic)
- eye movements (convergence and divergence)