

**PSY 3360 / CGS 3325
Historical Perspectives
on Psychology
Minds and Machines since 1600**

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René Descartes (1596-1650)



French mathematician, philosopher, and physiologist

Contributions



- unification of algebra and geometry; Cartesian coordinate system
- theory of reflex movement
- mind-body relationship
- Cartesian method

Theory of reflex behavior



Skepticism

- distinguish true from false, and good ideas from bad, by calling into question any aspects of those facts or ideas that are not known for certain; in other words, by a process of *systematic doubt*.

Descartes' Method

1. Never accept anything as true unless it can be clearly shown as such (the skeptical approach).
2. Separate each complex problem into as many parts as you can, and solve each one separately.

Descartes' Method

3. Rank the problems that you face in order of difficulty, and tackle them by starting with the simplest and easiest, and gradually moving to the more difficult ones.
4. Make an exhaustive and systematic review of your conclusions and the process that led you to them, so that nothing will be left out.

Cogito, ergo sum

"I think, therefore I am"

- "Cartesian doubt" – systematically calls into question and challenges all assumptions and ideas, so that what is left is unquestionable and solid.

Cogito, ergo sum

"I think, therefore I am"

- The *Cogito* argument is that something must exist (a conscious agent) in order to do the thinking and doubting.

Cogito, ergo sum

"I think, therefore I am"

- Descartes extends the *Cogito* argument to argue for the existence of God and the external world
- *clear and distinct ideas*: God, perfection, infinity, unity, the axioms of geometry

Rationalism

- Some ideas are not invented or discovered, but inherent or innate. Their truth is self-evident, not derived from experience.
- Rationalism is the view that true knowledge is ultimately derived from a process of rational thought.

"Clockwork universe"

- Descartes' mechanistic view of the physical world: physical principles explain the workings of the physical world, as well as physiological processes of digestion, growth, respiration, and sensation in humans & animals.
- But the human mind lies *outside* the realm of the physical; not amenable to scientific study.

Rationalism

- **Rationalism** is the view that true knowledge is ultimately derived from a process of rational thought.
- **Nativism** is the view that some ideas are not invented or discovered, but inherent or innate. Their truth is self-evident, not derived from (or proved by) experience.

“Clockwork universe”

- Descartes held a mechanistic view of the physical world: simple physical principles could explain the workings of the physical world, the structure and physiology of animals, and reflexive processes like digestion, growth, respiration, nourishment, and sensation in humans.
- But the human mind lies outside the realm of the physical and is not amenable to scientific study.

The problem for dualism

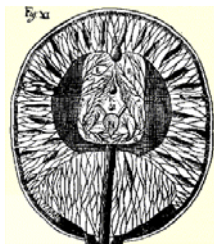
- If mind and body are fundamentally different entities, how do they interact?
- How do external objects and events leave their impressions on our awareness?
- How are thoughts, desires, and intentions translated into actions?

Interactionist dualism

- Rational decisions can lead to physical actions
- Events in the physical world are perceived by the mind
- Mind and body interact through a single pathway
- Special role of the pineal gland in the human nervous system

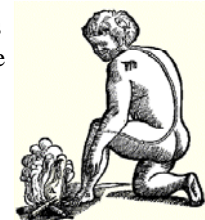
Hydromechanical theory of nerve transmission

- Theory of reflex behavior
- Theory of memory
- Emotions
- Sleep and dreams



Hydromechanical theory of nerve transmission

- William Harvey - circulatory system
- The primary sense receptors of animals and humans were like pressure plates that started the flow of **animal spirits** through a series of pipes



Theory of depth perception

- Doctrine of innate ideas
- Binocular vision
- Role of geometry



The “Ghost in the Machine”

- The mental and physical worlds are distinct.
- The body is constrained by physical laws of space and time; the mind is an abstract and non-material entity.
- Plausible mechanism for interaction?

Problem of other minds

- If the only thing we can be absolutely certain of is the existence of our own minds doing the thinking and doubting, how can we ever possibly know whether other people exist, have minds and thoughts like we do?
- Self-awareness is a **private** state

Les passions



- Theory of emotion
- Mind-body interaction
- Role of the pineal gland

Descartes moves to Sweden



Descartes' Legacy

- What problem for the study of mind and behavior was raised by Descartes' *Cogito* argument?
- Why should we care?

“By localizing the soul’s contact with body in the pineal gland, Descartes had raised the question of the relationship of mind to the brain and nervous system. Yet at the same time, by drawing a radical ontological distinction between body as extended and mind as pure thought, Descartes, in search of certitude, had paradoxically created intellectual chaos.” (Robert Wozniak)

Descartes

- **Nativism**: Some ideas are not invented or discovered, but inherent or innate. Their truth is self-evident, not derived from experience.
- **Rationalism**: True knowledge is ultimately derived from a process of rational thought.
- **Dualism**: Mind and body are distinct and different; simple physical principles explain the workings of the physical world, but the human mind lies outside the physical realm.