

Philosophical Questions

Philosophy, the “love of wisdom,” is an essential component of cognitive science.

Today we are going to discuss four major philosophical problems that relate to cognitive science:

- The mind-body problem
- Free will versus determinism
- The nature/nurture debate
- What is consciousness?

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The Mind-Body Problem

Questions:

- How are mental properties related to physical properties?
- Are there separate physical and mental universes?
- If so, does the mind control the body, or vice versa?
- **Monism:** There is only one kind of substance.
- **Dualism:** Both mental and physical substances exist.
- **Functionalism:** Mental states are not just physical states, but also the functioning of those states.

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Monism

- **Idealism:** There is only the mental universe.
- e.g., George Berkeley (1685 – 1783).
- Everything exists only in God’s mind.
- Religious, mystical form of explanation.
- **Problem:** This view is not scientific, because it cannot be tested.
- **Solipsism:** Also assumes a mental realm only.
- The universe only exists in one’s mind.
- **Problem:** One separate universe per mind; this subjective view cannot be experimentally tested.

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Monism

- **Physicalism (materialism):** Everything is physical.
- e.g., Aristotle (384 – 322 B.C.), Democritus (460 – 370 B.C.), concept of atoms
- Attributes and interaction of atoms explain differences between things.
- Similarly, they explain differences between mind and body.
- The operations of the mind are the operations of the brain.

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Monism

- **Reductive Physicalism:** Neuroscience will eventually be able to account for and describe all mental phenomena.
- For example, one day the concept “fear” may one day be described by neurotransmitter changes in certain brain structures such as the amygdala.
- **Nonreductive Physicalism:** Mental phenomena are caused by physical processes, but have emergent, irreducible properties.
- Mentalistic descriptions are thus still necessary.

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Dualism

- **Classical Dualism:** The mind controls the body.
- e.g., Rene Descartes (1596 – 1650)
- Mind exerts control through pineal gland in the brain.
- Conforms to common sense: Feeling of hunger causes action of eating.
- **Parallelism:** Mind and body are isolated from each other.
- Synchronization by God or through some unknown force.
- **Problem:** Mystical, untestable theory.

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Dualism

- **Epiphenomenalism:** The body controls the mind.
- The mind is a side effect of the brain's operations.
- Contradicts common sense: Thoughts seem to come before actions.
- **Interactionism:** Mind and body affect each other.
- Thoughts can produce actions, and brain activity can produce thoughts.
- **Problem:** It is unclear how this influence takes place, in particular, immaterial causation.

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Dualism

Problems with Dualism:

- It does not explain what the mind is, only what it isn't.
- Postulating two separate worlds seems inelegant.
- The mental universe is clearly dependent on the physical, e.g., brain damage, drug use.
- Across species, brain size is linked with cognitive ability.

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Functionalism

- Currently most influential theory of mind.
- Two ways of classifying things: physical kinds and functional kinds.
- Physical kinds depend on material composition only.
- Functional kinds are identified by their actions or tendencies (e.g., all cars are of the same kind).
- In terms of physical kinds, minds are identical to brains.
- In terms of functional kinds, minds have a certain functionality that could possibly be built into any artificial or natural system.

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Functionalism

Implications of functionalism:

- The same mental state can be realized in different ways in two separate systems.
- For example, a PC and a pocket calculator can compute the same result in quite different ways.
- Similarly, two people thinking the same thought may have different brain processes operating.
- Consequently, mental states cannot be reduced to any particular physical state.

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Functionalism

Problems with Functionalism:

- There is currently no evidence that minds can exist apart from biological brains.
- It cannot account for qualia, i.e., what it is like to feel hungry or see the color red.

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