

The Philosophical Approach

What is the mind?

Mind-body problem

- Mind separate from body?
 - Immaterial/Non-Physical
 - Ghost in the machine
 - Direction of control
- Made of same stuff as body
 - Material/Physical

Monoism & Dualism

Monoism

Only one type of substance in universe

Aristotle early proponent of monoism

Clay Analogy

Clay is matter

Mind is form (shape of clay)

Dualism

Two types of substance in universe

Mind exists in world of forms

immaterial, eternal

Body exists in physical world

material, perishable

Plato early proponent of dualism

Monoism

Idealism: Universe is mental

World is a simulation like the matrix

Unfalsifiable because we can't get out of matrix

Physicalism/Materialism

Democritus (460BC): Things are made of atoms

Operations of mind are operations of brain

Identity theory: Mind is Brain

Eliminativism: mental states don't exist at all, only physical brain states

Evaluating Monoism

Neuropsychology: Broken brain = broken mind

Brain Stimulation: Active brain = active thoughts

ECT Therapy: Scramble electrical activity = reduced depression

Frat Party: Alcohol to brain = Different State of Consciousness

Criticisms

Some mental states can be described that don't match so well on to physical states

Mental states (e.g. pain) may map to a number of different physical states that vary between people

Dualism

Descartes: classical dualism

- Mind controls body

- Junction is pineal gland

 - geographic center of brain

 - not duplicated on both sides

- Example: When we feel hungry, we get up and eat

Substance Dualism

- Mind and body are fundamentally different

 - Body is made of atoms/matter

 - Mind is made of 'not really sure'

- Support with this argument

 - Minds can do X.

 - No physical object can do X.

 - Therefore, minds are not physical objects

Arguments against Dualism

One way control:

When we feel hungry, we get up and eat..

BUT WHAT MAKES US HUNGRY? GRELIN,
SECRETED IN BODY (STOMACH, PANCREAS)

Point of contact:

If mind and body are made of different stuff, how can
mind affect body?

No description of what substance of mind is

Property Dualism

Mind and body made from same stuff but with different properties

Brain has physical properties

gray, wrinkly, connected neurons, etc.

Brain has non-physical properties

sees red, feels pain, feels happy, etc.

Criticism: How do we measure these non-physical properties? Unreliable introspection that is filtered through language?

Functionalsim

Background: structural and functional kinds

Structural Kinds:

Water, Ice, Neuron, Salt , Brain

Functional Kinds:

Mousetrap, Bomb, Paperweight , Mind

Functionalism: A mind is something which function as a mind

Discussion

Can a computer have a mind?

Can a computer have consciousness?

Arguments against Functionalsim

Qualia: The subjective perception of a thing

Counterargument: How do we know if a computer lacks qualia?

Acquiring Knowledge

How much knowledge is hard-wired?

How much knowledge is learned?

Nativism: Much knowledge is innate

Plato believed learning is recollecting what is already
known in ideal world

Rationalism: Not born with specific knowledge, but born
with facilities that help us learn through reason
(Descartes)

Empiricism: Knowledge acquired through experience

John Locke is early proponent

Tabula Rasa (“Blank Slate”)

Simple ideas (“red”, “sweet”)

Complex ideas (“cherry” = red and sweet)

What is actually hard-wired?

Reflexes

- Structure of CNS predisposes baby to reflexes

- Reactions to sweet and foul smells

- Quite important for early survival of baby

- Origins may be explained by evolutionary theory

- Complex interactions between hard-wired and environment

- Some genes are expressed under certain environmental conditions

- Environment includes prenatal environment

 - Fetal alcohol and drugs

 - Sec hormones (e.g. testosterone)

Consciousness

Unitary or Divided?

Appears united but is this an illusion?

Brain process different parts of experience at different times but fuses them together

Easy problems

Define different states and map to brain area functioning

Hard problems

Describing subjective experience (qualia)

What's it like to be a dog?

The problem of measurement

Transferring consciousness 1 neuron at a time from brain to computer

Mind as emergent property

Reductionism:

whole can be explained by understanding its parts
does this work for a brain?

Emergence:

Whole goes beyond its parts

Criticism: It tells us nothing

Consciousness: One or Many

One?

Appears to be one

“Cartesian Theatre” where all information is brought to one central location where it is ‘perceived’

Criticism:

Information is not synchronous

Hard to find a brain region corresponding to central point

Even if we had a theatre, who would be watching? Homunculus? Infinite Loop!

Many

Multiple drafts theory (Dennett)

Different consciousness versions compete: one ‘wins’

May allow for different levels of awareness

Consciousness and Neuroscience

Theories

- Consciousness arises from many areas (Popper and Eccles)

- Consciousness neurons (Crick and Koch)

- Intralaminar nuclei of the thalamus

 - Connect to many sensory areas

 - May connect to cortical neurons for consciousness
in different modalities

- Churchland Theory: recurrent network

 - “hold” information over time

 - maintain activity without sensory input

 - explain why consciousness goes away during sleep

 - Not wedded to particular location: more

 - focused on recurrent network property

Artificial Intelligence and Consciousness

Strong AI: Artificial minds can be conscious

Weak AI:

- Consciousness is not physical

- Complexity needed for consciousness is practically impossible to replicate

- Response: Machines getting faster all the time

- Response: New learning algorithms that mimic human senses could be developed

Searle's Chinese Room

Man in room by himself. Man outside asks question in Chinese
Question is written on paper handed to man inside room
Man inside room has rulebook which maps questions to answers
Man uses rulebook to give “answers” and write symbols
Written answers go out to man in spoken form

Man inside does not understand Chinese even though he
manipulating symbols. He does not know what they “mean” and the
symbols lack intentionality.

According to Searle, machines are like the man in the room, they
cannot ‘understand; the way humans do.

Objections?