Philosophy of Animal Minds

Philosophical History

Can animals “think”?

Four important figures:
1) Aristotle (the first)
2) Descartes (the most detailed)
3) Hume (debated Descartes)
4) Darwin

Philosophical History

Animals are “irrational”
(largely because they can’t speak)

Agreed:
Chrysippus, Augustine, Aquinas, Leibniz, Kant

Slightly Disagreed:
Theophrastus, Porphyry, Galen, Gassendi, Locke

Aristotle
De Anima ~300 BC

Philosophical History

Animals can’t think
(because Language is Thought is Consciousness)

1) Animals can’t transfer skills (inflexible)
2) Animals can’t speak

Descartes
Meditations ~1650

Philosophical History

Animals can think and are rational
(because My behavior: Animal behavior as My thoughts: Animal thoughts)

David Hume (1739) “no truth appears to me more evident, than that beasts are endow’d with thought and reason as well as men” (p. 176)

Philosophical History

Mindless robot $\rightarrow$ Furred or feathered human

Descartes
Hume
"Psychology will be securely based on the acquirement of each mental power and capacity by gradation."

"...difference in mind between man and the higher animals...is one of degree, not of kind"

"Thought" is a continuum

Philosophical History

Living Things Evolved

On ants:

"Another time I found a very few of them passing along at intervals. I confined one of these under a piece of clay at a little distance from the line, with his head projecting. Several ants passed it, but at least one discovered it and tried to pull it out, but could not. It immediately set off at a great rate, and I thought it had deserted its comrade, but it had only gone for assistance, for in a short time about a dozen ants come hurrying up, evidently fully informed of the circumstances of the case, for they made directly for their imprisoned comrade and soon set him free. I do not see how this action could be instinctive. It was sympathetic help, such as man only among the higher mammalia shows."

Romanes

Mental Evolution in Man 1888

Modern View

Although, as we will see, no animal exhibits behavior that is identical to that of humans, contrary to Descartes’s argument:

many animals exhibit behavior patterns with many elements that approach that of humans,

suggesting a continuum of “thought”

Psychology

Modern History

Lloyd Morgan’s Canon

Clever Hans 1891
In no case may we interpret an action as the outcome of the exercise of a higher psychical faculty, if it can be interpreted as the outcome of the exercise of one which stands lower in the psychological scale.

Lloyd Morgan’s Canon

Behaviorism

1) The most important factor in behavior is experience.

“Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select—doctor, lawyer, artist, merchant, chief and yes, even beggarman and thief, regardless of the talents, penchants, tendencies, abilities, vocations, and race of his ancestors” (Watson, 1924)

2) Psychology must study observable & quantifiable behavior, not unobservable mental constructs such thought, mind, feelings, or consciousness.

Behaviorism

After repeatedly pairing the white rabbit with the loud noise, Albert began to cry simply after seeing the rabbit.

Anthropomorphism

An interesting feature of human psychology is that we imagine that everything thinks like us:

Dolls
Robots
Animals

There is no reason to assume that everything thinks like us, even if they look/behave somewhat like us (for example, robots).

Behaviorism

Thorndike’s Law of Effect

~1920

Behaviorism

Skinner

Associative Learning

~1950
Behaviorism

Can explain Ping Pong

Behaviorism

Can explain Reading

Behaviorism

Truths from the Behaviorist Era
- The quantitative methods of behaviorism infused rigor into psychology
- Conditioning is a powerful learning mechanism
- Many behaviors can be explained by associative learning
- But, not all behaviors can be explained by associative learning

We know that Behaviorism isn’t the whole story...

If behaviorism were the whole story, the birds would learn whatever songs they are exposed to – they don’t.

Colorless green ideas dream furiously.

We know that Behaviorism isn’t the whole story...

Full Rats
- Run through maze, ignore food
- Both find food on round 2 in maze

Hungry Rats
- Run through maze, eat food

Tolman, 1948
The Cognitive Revolution

Circa 1970

A Few Key Points:
1. The mind should be treated like information processor, not a black box.
2. The mind cannot be a Blank Slate because blank slates don’t do anything.
3. The mind is a complex system composed of many interacting parts (not a general-purpose association device).

Noam Chomsky

Influences on Animal Cognition Research from Biology

1) Genetics
2) Evolution (natural selection)
3) Niko Tinbergen’s Ethology

Genetics & Experience both important

Biological siblings—Reared together .47
Biological siblings—Reared apart .24
Unrelated children—Reared together .30
Same person (tested twice) .95

Biology inherited through Genes

Genes determined by Evolution

Morphology (structure) of our bodies tells us about evolutionary history (phylogeny)

Morphological differences tell us about functional differences

Common Ancestor

Genes determined by Evolution

Morphology (structure) of our bodies tells us about evolutionary history (phylogeny)

Morphological differences tell us about functional differences

Applies to brains too!

Homology vs. Analogy

Some things look alike because they evolved from a common path (homologous).

Some things look alike but did not evolve from the same path, they are similar by coincidence (analogous).

Cladistics

Skeleton made of cartilage
Breathe oxygen in water
Do not nurse young
Do not have hair

Skeleton made of bone
Breathe air
Nurse young
Have hair

Tool use for extracting prey:
Crows
Chimpanzees
Humans

Tinbergen’s Ethology

1) Proximate: What immediate events & mechanisms cause the animal to behave that way?
2) Ontogenetic: What past experiences and genetic biases cause the animal to behave that way?
3) Adaptation: What is the survival value for behaving that way?
4) Phylogenetic: What is the evolutionary history of the species that causes it to behave that way?

~1970
Conclusion
What philosophy has taught us
1) To ask whether animals can think
2) 'Thought' is a continuum (because of evolution)

What psychology has taught us
1) Anthropomorphism is not good science
2) Associations are important for learning
3) Cognition is more than association in humans & animals

What biology has taught us
1) Genes shape the body and the mind
2) Evolution plays a role in cognition
3) Behavior is complex and has many levels of explanation

“Intelligent”
Really depends on what you’re talking about
All animals are solving problems for their survival & reproduction (not
unnecessary problems)