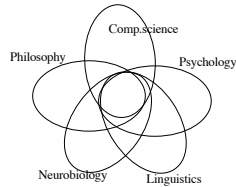


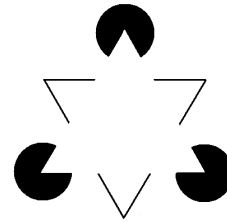
What is cognitive science?

- An interdisciplinary science of mind, brain and behavior.

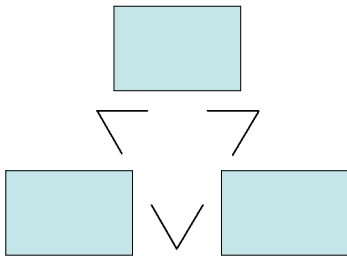
- Philosophy
- Psychology
- Computer science
- Neurobiology
- Linguistics



The world and the mind



The world and the mind



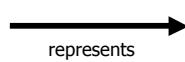
The information-processing view

- Representations
- Computations

- Best analogy: computers

Representations (concepts, schemas, symbols)

TREE



- A representation stands for something else; it is *symbolic*.
- The thing a representation stands for is called its *referent*.
- Representations are *intentional* entities.

Representations

- *Concepts*. Stand for a single thing or group of things. The word 'tree'.
- *Propositions*. Statements about the world. "Pine trees have needles."
- *Images*. Think of the US flag.

Representations

- *amodal* – they bear no necessary perceptual resemblance to the concept they represent. The systematic correspondence between the two domains may be a matter of convention (only).
- 2 main types: digital and analog

Computations

- Operations or transformations that are performed on representations.
- In math: addition, subtraction, etc.
- Broad categories of mental operations include sensation, perception, attention, memory, language, reasoning, and problem solving.

Alan Turing, 1950

- Goal of cognitive science: understanding intelligence
- A model of intelligence will enable us to create artificial intelligence



Path integration in desert ants

- A navigational problem:
Path integration:
update changing position relative to start
- Input: compass and odometer
- Output: estimate of straight-line direction

