"Thinking"

1. Content of thought
2. Using that content
   - e.g., Judgments, Reasoning, Biases
3. Emotion and Cognition

Thinking

- Narrow Definition
  - Mental activities used to solve problems, judge information, and evaluate potential decisions
- Intimately tied to:
  - Memory
  - Learning
  - Emotion (will discuss later)
Useful starting point, organization of information used when “thinking”

Content of thought: Mental representations
- How information represented in the brain
- Information includes objects, events, states of affairs

Content of thought: Mental representations
- Can be “real”
- Can be “fantasy” or non-experienced
Mental Representation

- Analogical: capture some characteristics of that which they represent
- Symbolic: bear none of the characteristics of that which they represent

Mental Representations of Carpet

- Analog
- Symbolic: Carpet, Rug

Analogical

- Can you point to the top of the elephant’s head?
  - A. YES
  - B. NO
### Symbolic

- Can you point to the top of the elephant’s head?
  - A. YES
  - B. NO

### Mental representations

- Analogical, symbolic
- Not stored “randomly” or as independent pieces of information
- We impose order; we create shortcuts to storing and using information so that we think efficiently

### Imposing Order: Cognitive economizing

- Organizing and linking representations
- Influenced by experience and expertise
- Symbols
  - Simple (e.g., beer)
  - Complex (e.g., drinking and driving is dangerous)
    - Networks of related symbols—nodes—connected via associative links
    - More closely related symbols, stronger links
Symbols

- Organization very useful
  - Once node activated, similar, linked information also activated
  - Level of activation depends on strength of relation
  - Can make fast decisions based on activated links
  - Can “fill-in” gaps when information missing

“Rover is a dog”

- Rover barks
- Rover pants when he’s hot
- Rover chases cats
- Rover fetches
- Rover sleeps outside

“Rover is a dog”

- Rover has a throat infection can't bark
Back to the elephant…

How many legs does the elephant have?

A. Two
B. Four
C. Five
D. That’s not natural

Try again…How many legs does the elephant have?

A. Two
B. Four
C. Five
D. That’s not natural
Mental representation

- Most of time, organization is both effective and efficient
- But, errors may occur as a result of spreading activation or filling in gaps