

- Visual Imagery - seeing in the absence of a visual image
- Mental Imagery - the ability to recreate the sensory world in absence of physical stimuli, occurs in other senses than vision
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- **Imagery in the History of Psychology**
- Early Ideas about Imagery
  - Wundt proposed that images were one of the three basic elements of consciousness, along with sensations and feelings.
  - He also proposed that because images accompany thought, studying images was a way of studying thinking.
  - Imageless thought debate - the debate about whether thought is possible in the absence of images - also, whether imagery uses spatial mechanisms
  - This debate lasted into the early 1900s but faded out when behaviorism replaced imagery as the central focus of psychology.
  - Watson (behaviorism) described imagery as mythological and unworthy of studying.
- Imagery and the Cognitive Revolution
  - In the cognitive revolution cognitive psychologists developed ways to measure behavior that could be used to infer cognitive processes.
  - Paivio - showed that it was easier to remember concrete nouns such as truck or tree that can be imaged, rather than abstract nouns such as truth or justice.
  - Paired associate learning (used by Paivio) - a learning task in which participants are first presented with pairs of words, then one word of each pair is presented and the task is to recall the other word.
  - Conceptual peg Hypothesis - concrete nouns create images that other words can "hang onto."
- **Imagery and Perception: Do they share the same mechanism?**
  - Shepard and Metzler's study showed that mental and perceptual images both involve spatial representation of a stimulus
- Kosslyn's Mental Scanning experiments
  - Mental scanning - When a person scans a mental image in his or her own mind.

- Kosslyn created an experiment where people were shown an image of a boat (the example in class) and asked about various features of the boat. Kosslyn found that it took participants longer to find parts of the boat that were farther from the initial point they focused on.
  - This was evidence for the spatial nature of imagery
- Pylyshyn proposed a different explanation

#### □ Is Imagery Spatial or Propositional? (Pylyshyn)

- Kosslyn interpreted the results of his research on imagery as supporting the idea that the mechanism responsible for imagery involves spatial representation
- Pylyshyn argued that the spatial experience of mental images is an epiphenomenon - something that accompanies the real mechanism but is not actually part of the mechanism.
- Pylyshyn proposed the idea of a propositional representation - one in which relationships can be represented by abstract symbols, such as an equation, or a statement such as "the cat is under the table."
- Depictive representations - are realistic pictures that resemble an object, so that part of the representation corresponds to parts of the object. Pg. 275
- Pylyshyn suggested that one reason scanning time increases as the distance between two points on an image increases is that participants are aware that it takes longer to travel longer distances, so they simulate this in the mind.
- Tacit knowledge explanation (above) - when unconsciously use knowledge about the world in making their judgments.

#### □ **Comparing imagery and Perception**

##### □ Size in the Visual Field

- EX: If you see a car from a long distance it only takes up a small portion of your visual field, so it is hard to make out any small detail such as the door handle etc. When you move closer, the car takes up more of your visual field and you can see details more closely.
- Kosslyn wondered if this was true for mental images as well.

- Experiment: participants were told to imagine an elephant and a rabbit where the elephant took up most of their visual field (much larger than rabbit). They were then asked to answer this question as quickly as possible “does the rabbit have whiskers?” Next, they were told to visualize a rabbit and a fly, where the rabbit took up most of the visual field. The result of these experiments was that participants answered questions about the rabbit more rapidly when it filled more of the visual field.
- Mental walk task (Kosslyn) - they were to imagine they were walking toward their mental image of an animal. Their task was to estimate how far away they were from the animal when the image began to become fuzzy. The results showed that participants had to move closer for smaller animals than larger animals, just like in real life.

#### ▯ Interactions of imagery and Perception

- Cheves Perky - did an experiment where she asked participants to “project” visual images of common objects on to a screen, and to describe the images. The participants didn’t know this, but Perky was back-projecting very dim images onto a screen. What Perky found was that the participants images matched the ones projected, but none of the participants noticed that there was an image on the screen. This gives support to the idea that there is connections between imagery and perception.

#### ▯ Is there a way to solve the imagery debate?

- Many psychologists that it is very possible that participants can be influenced by their past experiences with perception, so they could unknowingly be simulating perceptual responses in imagery experiments.
- A way to investigate this debate further: how does the brain respond to visual imagery?