

3-2-imagery

Debate on Mental Imagery



- Are images a distinct type of representation?
 - Yes
- Kosslyn
 - Yes
- Pylyshyn
 - No
 - Analogue representations too vague
 - Imagery is epiphenomenal

Basic Questions



- Are images distinct from propositional representations?
- What is the relationship between imagery and perception?

3 Phases

- Imagery: Analogue or Propositional?
- Questioning Empirical Evidence
- Beyond Behavioral Data

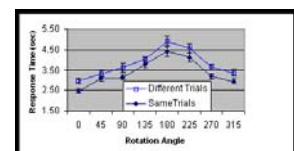
Propositional

- Discrete
- Symbols needed for relation
- Rules for combo
- Abstract
- Unambiguous
- No spatial medium
- No point-for-point correspondence

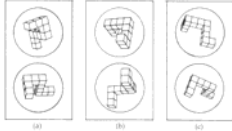
Analogue

- Not discrete
- No symbol for relation
- One rule for combo
- Concrete
- Ambiguous
- Spatial medium
- Point-for-point correspondence

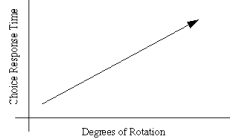
Cooper & Shephard



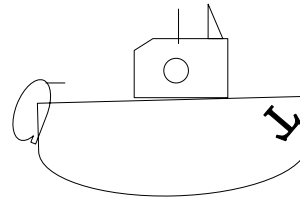
Rotations in 3-D



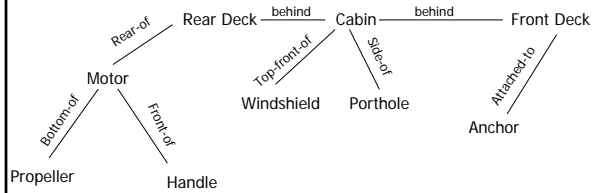
- Are 2 objects identical?
- Angular disparity and RT are linearly related
 - Rotation in plane
 - Rotation in depth



Kosslyn



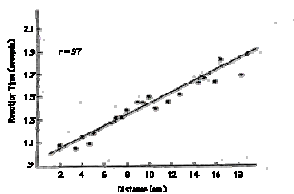
Propositional Structure



Map Experiment



Map Experiment



Descent into the ludicrous

- Posit “dummy” entries to mark off distance w/nodes for longer distances
- Problem? Propositional reps too powerful

Why propositionalists not just being perverse

- Success of AI (early on)
- Utility & Power of Propositions
- Parsimony of a single coding system

Imagery Debate

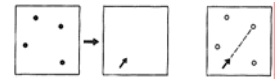
- Phase One: Analogue v. Propositional
- Phase Two: Questioning Empirical Evidence

Demand Effects

- Experimental effects that reflect what subjects think they're supposed to do rather than the nature of the cognitive process of interest

Finke & Pinker

- Would arrow point to dot?
- RTs increase linearly w/distance btw. arrow and dots
- Never told to scan in instructions
- No info to cause people to "fake" it



Experimenter Expectancy Effects

- When experimenters unconsciously lead subjects to produce expected results
- Intons-Peterson (1983)
 - Imaged v. Actual Displays
 - Imagery better/Perception better
 - RT still proportional to distance

Conscious Control

- Speed of Scanning (yes)
- Distance → Time to shift attention (no)
- Inherent Properties of Representation

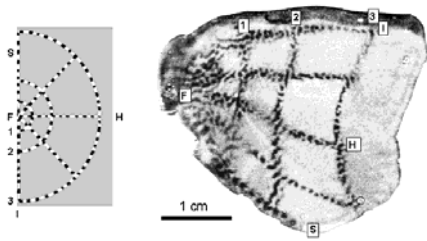
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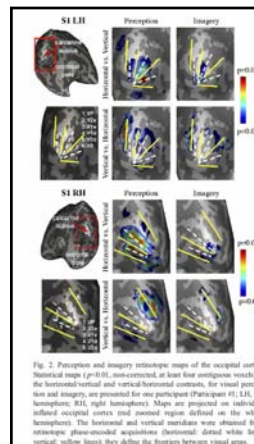
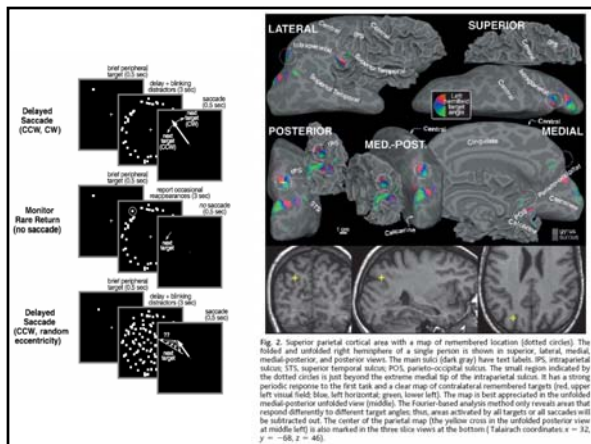
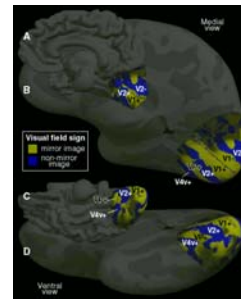
Beyond Behavioral Results

- Analogue representations very biologically plausible
- Hello visual cortex!

V1

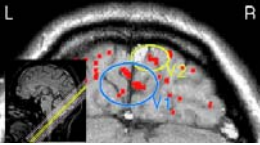


Retinotopic Areas



Klein et al. (2004) show clear evidence of activation in retinotopic areas during an imagery task.

Neuroimaging



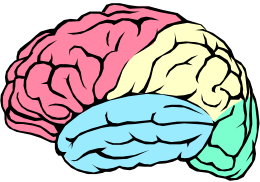
- Early PET Data
- More recent fMRI data
- Mental imagery activates visual cortex

Neglect Patients



- Trouble attending to left side of space
- Trouble imagining the left side of space

Lesion Study



- Indicate visual angle subtended by mental images
- Unilateral occipital lobectomy
- Angle $\frac{1}{2}$ original!
- Demand effect?