

## Sensation and Perception



1. Sensation – Physical to Psychological
2. Perception – Making Sense of Sensation

Today's Music Selections:

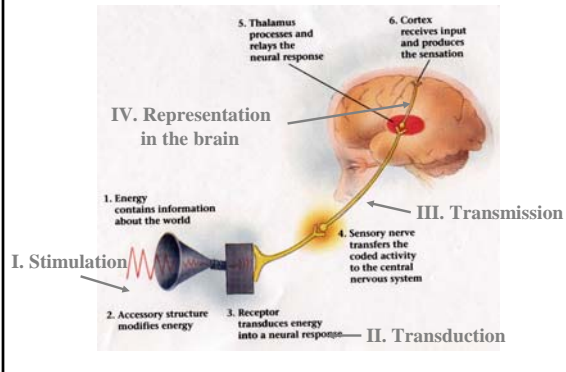
**Sensation** is the process by which important changes in the state of the world create changes in the state of the brain.

**Perception** is the process by which changes in the brain give rise to the experience of reality.

### Steps in the sensation/perception of a tree:

- 1) Distal stimulus: A real tree (converted by lens of eye into...)
- 2) Proximal stimulus: The flat retinal image of a tree (transduced by retinal cells into...)
- 3) Neural impulse, along the optic nerve (converted by occipital cortex into...)
- 4) Sensation: low-level experiences of green and brown (interpreted by perceptual "software" into...)
- 5) Perception: the conscious experience of a tree

## Stages of Sensation




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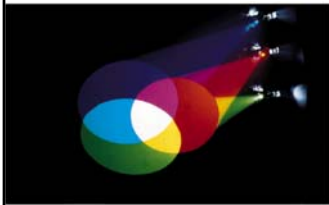
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## Color Vision



Additive color mixing

- All colors are created by 3 primary colors: Red, Green, and Blue

- Examples:
  - red + green = yellow
  - red + blue = purple
  - green + blue = cyan

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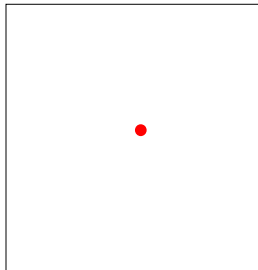
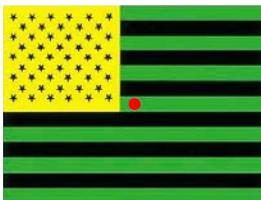
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## Opponent Process Theory




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# Perception

What and Where pathways  
Sensation + Theory = Perception  
Top-Down and Bottom-Up Processing

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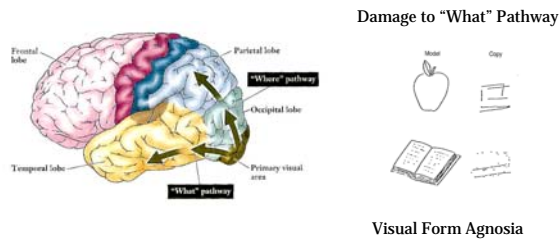
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## The What and Where Pathways



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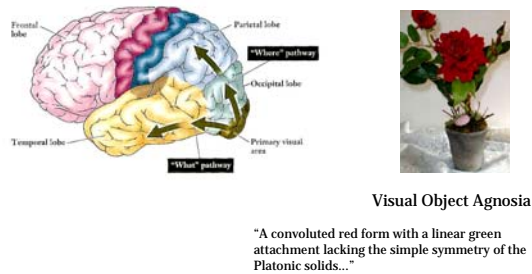
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## The What and Where Pathways



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Immanuel Kant

Sensation +  
Theory =  
Perception

“Perception without conception is blind” (1781)

“The world as we know it is a construction, a finished product, almost—one might say—a manufactured article, to which the mind contributes as much by its moulding forms as the thing contributes by its stimuli”

(Will Durant, 1926)

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Perception

“Top Down” Theory Testing



Sensation

“Bottom Up” Data Assembly

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Some Things You Cannot  
Sense Easily But That You  
*Can* Perceive

- Size and Shape Constancy
- Three Dimensionality
- Depth



Ponzo Illusion

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## Cue to Depth Perception

### Relative Height

Proximity to the horizon signals greater distance

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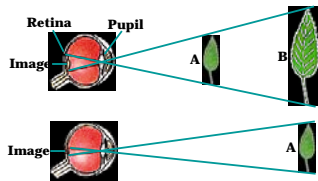
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## Perceived Size and Perceived Depth

- To perceive the size of objects accurately we must also perceive their distance accurately
- Many visual illusions occur simply because a particular image lacks sufficient depth cues



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## Sensation and Perception

### Key Ideas

1. Sensation is the process of bridging the physical and psychological
2. Parts of the brain are specialized for particular roles (i.e., What and Where pathways)
3. Perception involves making sense of sensation
4. Perception is a product of both bottom-up sensory process and top-down theories about the world

Next Time: [Perception and Attention](#)

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