

Chapter 5(a) Perception

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Perception

- ❖ Perceptual Organization
- ❖ Perceptual Constancies
- ❖ Depth and Dimension
- ❖ Perceptual Set
- ❖ The World of Illusions

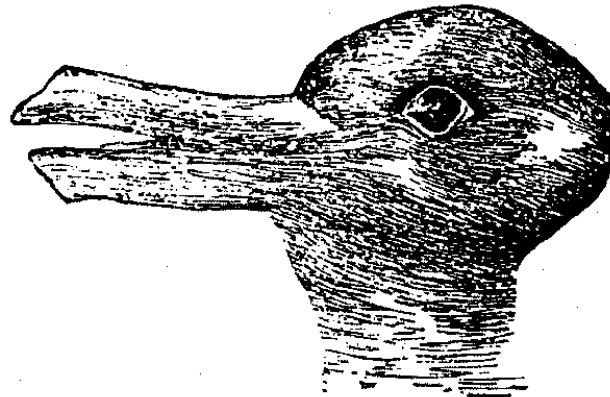
Reversible Figures

Drawings that one can perceive in different ways by reversing figure and ground.



Gestalt Psychology

School of thought rooted in the idea that the whole is different from the sum of its parts.



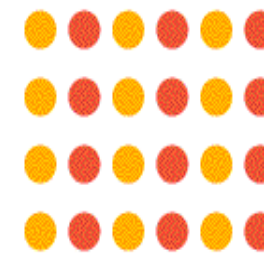
Gestalt Laws of Grouping

- **Proximity**
 - Seeing 3 pair of lines in A
- **Similarity**
 - Seeing columns of orange and red dots in B
- **Continuity**
 - Seeing lines that connect 1 to 2 and 3 to 4 in C
- **Closure**
 - Seeing a horse in D

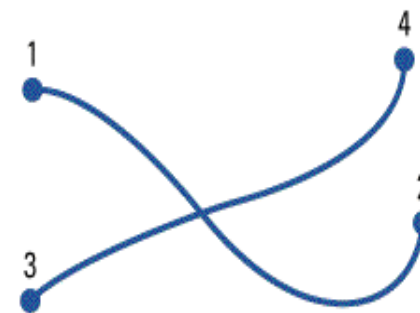
A. Proximity



B. Similarity



C. Continuity

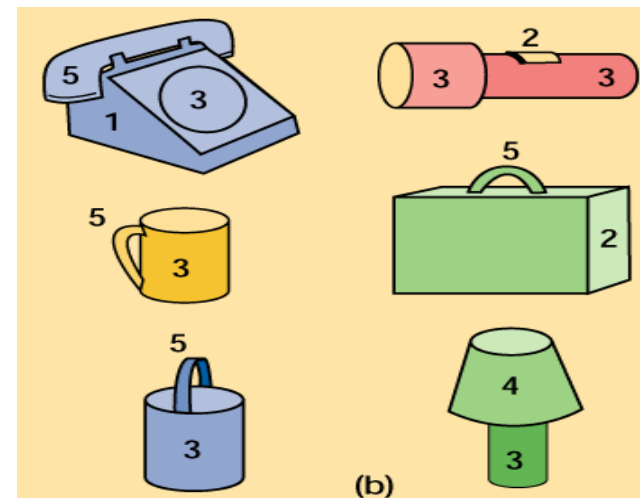
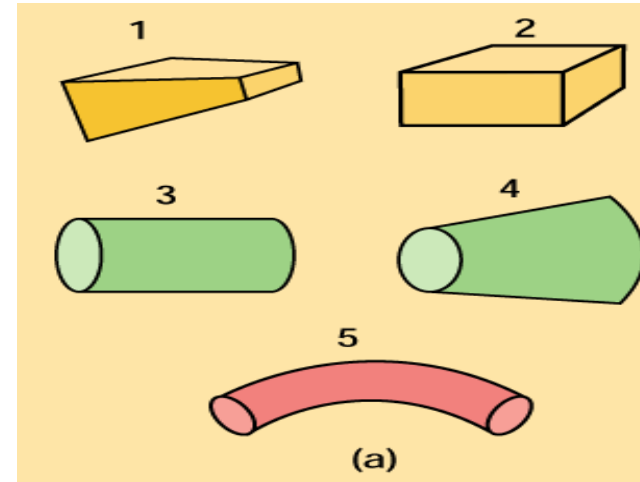


D. Closure



Identifying Objects

- Geons (geometric icons) are simple 3D component shapes.
- A limited number are stored in memory.
- Geons are combined to identify essential contours of objects.

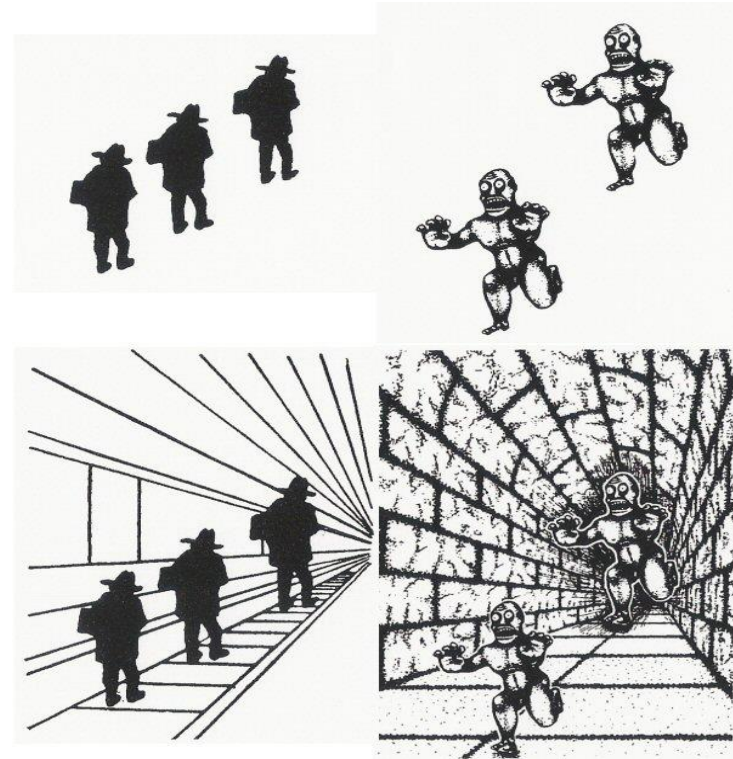


Perceptual Constancy

"Perceptual Constancy" is one of the most important concepts, which enables our brains to sort out conflicting sensory information to give us a clear picture of the world.

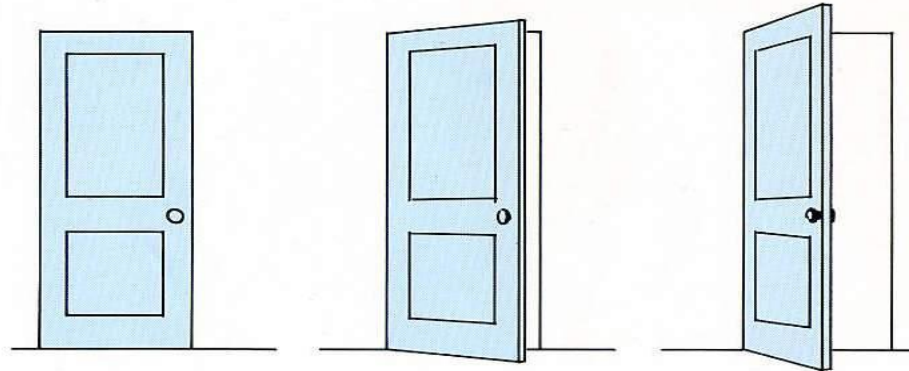
Size Constancy

When we look at any given image or object from any given distance, our minds are able to stabilize that image, and alert us to what the proper size of the object should be, even if it does not appear at that actual size.



Shape Constancy

The idea behind shape constancy is a fairly basic one, but it is important nonetheless. Basically, when we are looking at an object from different angles, we are still able to see the object as having the same shape.



Color Constancy

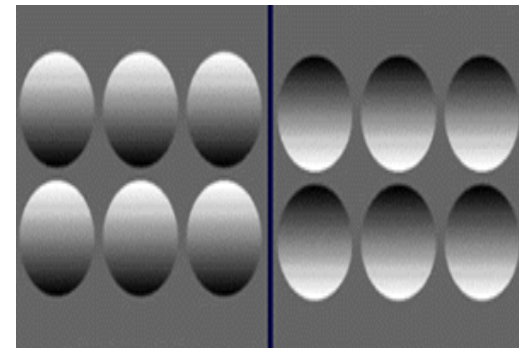
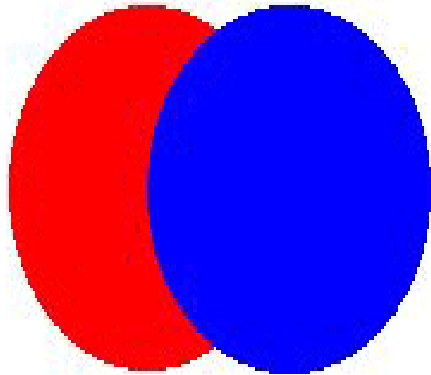
Color constancy is our ability to tell what the color of an object is even when the lighting conditions change from our original impression of that color. While color constancy is also related to our minds, many have suggested that part of our ability regarding color constancy comes from our experience of living in a world where we are always exposed to different colors and hues.

Depth perception

- Depth perception is the visual ability to perceive the world in three dimensions (3D) and the distance of an object.
- Monocular cues include size: distant objects subtend smaller visual angles than near objects.
- Binocular cues include stereopsis, yielding depth from binocular vision through exploitation of parallax.

Monocular Cues

Monocular cues provide depth information when viewing a scene with one eye.



Binocular Cues

- Binocular cues provide depth information when viewing a scene with both eyes.
- Stereopsis - refers to our ability to appreciate depth, that is the ability to distinguish the relative distance of objects with an apparent physical displacement between the objects.
- Convergence - a binocular oculomotor cue for distance/depth perception. two eye balls converge by virtue of stereopsis they focus on the same object.

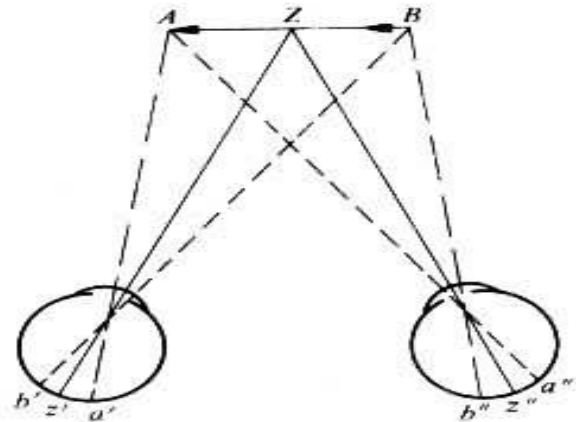


图1 平面物体所刺激的视网膜的相应部位

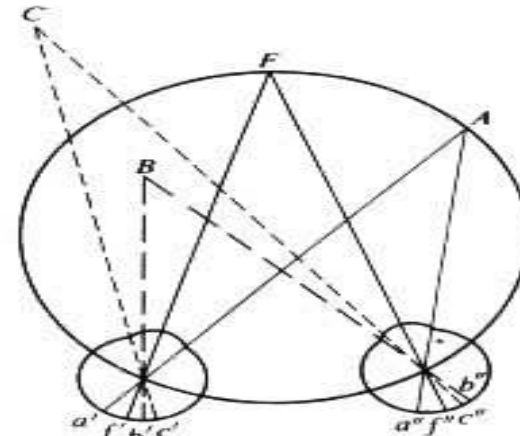
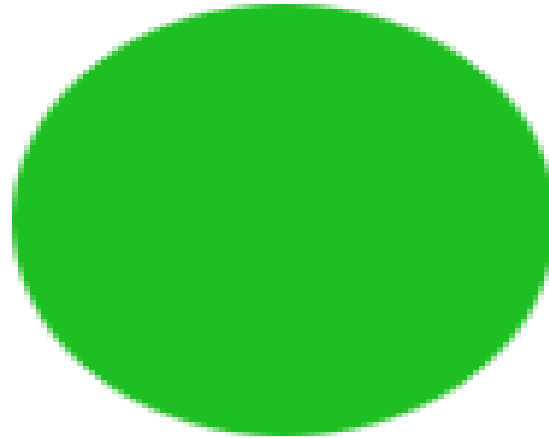


图3 同视界

Simple Test

- Hold your finger in front of the circle, between your eyes and the screen.







From Shepard, 1990.

