External stimulus detected by receptors and transduced into neural messages representing characteristics of stimulus.

Input organized into meaningful patterns to try to achieve recognition.

**The Perception Regions of Brain Must:**

**Organize** the input from millions of receptors (“bottom–up processing”)

**Recognize or interpret** input in terms of your past experience, expectations, and context (“Top-down processing”) This means that perception is very individualized. What you experience is NOT just the result of sensory input.

**Perceptual Processing Tasks**

- Pick out the figure or foreground from the background
- Identify patterns, continuous lines, what things go together, “wholes” or the “Gestalt”
- Match input to your memories of past sensory experiences (recognition)
- Maintain that recognition even if angle of view, lighting, or distance changes (perceptual constancy)
- Distinguish depth, distance, 3-dimensions

**Figure/Ground**

Multiple cues (brightness, shading, borders, decoration) to identify the vase as the figure against the dark background.

Without enough cues, figure/ground task becomes more difficult.

**Face-Vase Illusion – A Reversible Figure**

(not clear what is figure vs ground)

**Necker Cube – Another Reversible Figure**

- Is the red dot at the front of the cube or the back corner of the cube? Can you make it switch?
What is your perceptual experience of this figure?

- The tendency to search for a figure is so strong, we sometimes see a figure when none is there.
- Our perceptual system is so skilled at identifying figures that it can often do so with very little or very ambiguous input.

Research of the “Gestalt Psychologists” Worked Out the Rules of Perceptual Organization Brain Uses (p 127)

Perception Depends on Context, Past Experience, Expectations or “Perceptual Set”

Closure

We see a whole face not 27 white lines
Perception Depends on Context, Past Experience, Expectations or "Perceptual Set"

Ambiguous Figures
- more than one possible interpretation
- perception can "flip" even though same stimulus is present
- we impose organization on the visual environment
- applies to everyday situations as well

http://mm1.uni.edu:8080/ramgen/1/walshrm/720X480/perceptext.rm

Monocular ("one eye") Cues or "Artist’s Cues" for Depth
- Relative Height
- Relative Size
- Texture Gradient
- Linear Perspective
- Aerial or Atmospheric Perspective
- Interposition
- Motion Parallax or Relative Motion

http://www.backmaskonline.com/oldrock.php

Relative Size & Height Cues

Interposition Cues
(one thing blocks view of another)

Texture cues

Parallel lines appear to converge on horizon)

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Distant things are fuzzier, less distinct

Motion Parallax

Binocular (2 eye) Cues for Depth

• Convergence of Eyes
  – As objects get close to us, our eyes point inward. Perception system uses muscle feedback as depth cue.
• Retinal or Binocular Disparity
  – Difference between what right eye sees and what left eye sees is used to determine depth perception and seeing objects as 3 dimensional.

Impossible Triangle

• Since our perception relies on certain cues, it can be mislead when those cues are mis-used

Ames Room

Perceptual Constancy

• We perceive that objects remain constant, even though the retinal image continually varies as we move or objects move.
  – Size constancy - perceive object as staying the same size as object moves closer or farther away
  – Shape constancy – perceive object as staying the same shape as our angle of viewing changes
  – Color constancy – see object as staying the same color as lighting changes or we put on our sunglasses