## Stroop Effect

YELLOW

BLUE

GREEN

RED

## Stroop Effect

GREEN

BLUE

YELLOW

BLUE

## Depth Perception

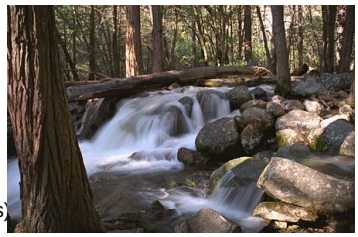
- Depth perception is difficult because we only have access to two-dimensional images
- How do we see a 3-D world using only the 2-D retinal images?
- Cue - stimulus characteristics that influence our perceptions
- We are able to see in 3-D because the visual system can utilize depth cues that appear in the retinal images

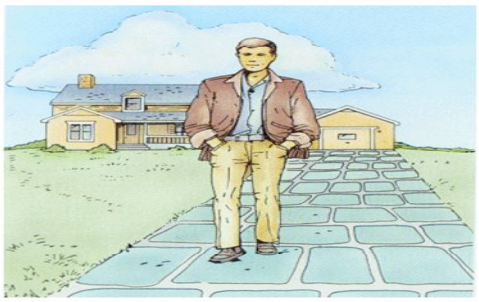
## Types of Depth Cues

- Depth cues are usually divided into categories, we will consider two types of depth cues:
- Monocular - depth cues that appear in the image in either the left or right eye
- Binocular - depth cues that involve comparing the left and right eye images

## Monocular Depth Cues

- Texture Gradients
  - Grain of item
- Relative Size
  - Bigger is closer
- Interposition
  - Closer are in front of other objects)





Interposition

## Continue..

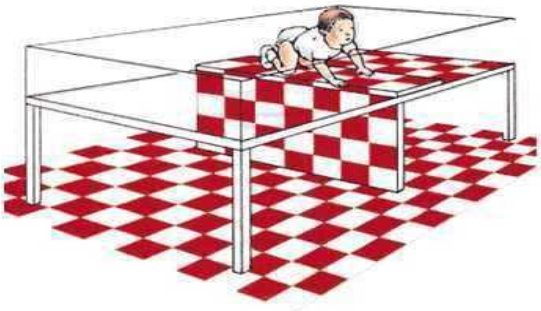
- Linear Perspective
  - Parallel lines converge in distance
- Aerial Perspective
  - Images seem blurry, the farther away
- Motion Parallax
  - Objects get smaller at decreasing speed in distance

## Binocular Depth Cues

- Binocular Convergence
  - Eyes turn inward as object moves towards you, brain uses this information to judge distance
- Binocular Disparity
  - Each eye views a slightly different angle of an object; Brain uses this to create a 3-d image

## Depth Perception

- Nature or nurture?
  - When would ability to perceive depth be important in terms of development?
  - Gibson & Walk (1960):
    - "Visual Cliff" Experiments
  - But, is evidence for nurture also.
    - "Use it or lose it"



## Object Perception

- Viewer-centered representation
  - Object is stored in the perspective seen
  - Store multiple views of object as seen under various conditions
  - Viewpoint dependent process
- Object-centered representation
  - Object is stored in a way that best represents the object
  - Viewpoint invariant process

## Theories of Perception

- Direct Perception theories
  - Perception comes from the stimuli in the environment
  - Bottom up processing
  - Parts are identified, put together, and then recognition occurs
- Constructive Perception theories
  - People actively construct perceptions using information based on expectations
  - Top down processing

## Gibson's Direct Perception (Ecological model)

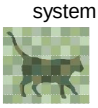
- All the information needed to form a perception is available in the environment
- Perception is immediate and spontaneous
- No top down processing is necessary
- Perception and action cannot be separated
- Perception guides action and action generates more new perceptual information
- Distal>Informational medium>Proximal stimulation>Perceptual obejct

## Bottom Up Processing Theories

- Template theories
- Prototype theories
- Feature theories
- Structural description theories

## Template Theory

- Basics of template theory
  - Multiple templates are held in memory
  - To recognize the incoming stimuli, you compare to templates in memory until a match is found
- Weakness of theory
  - Problem of imperfect matches
  - Cannot account for the flexibility of pattern recognition system



See stimuli

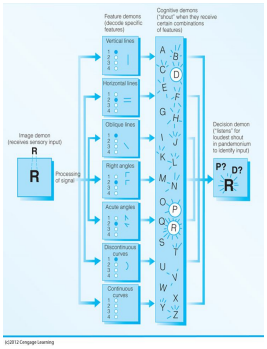
Search memory for a match

## Prototype Theories

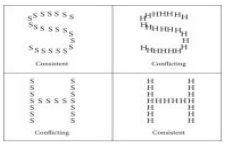
- Modification of template matching (flexible templates)
- Takes various instances of an object and abstracts out the common characteristics
- No match is perfect; a criterion for matching is needed

## Feature Theories

- Recognize objects on the basis of a small number of characteristics (features)
  - Detect specific elements and assemble them into more complex forms
  - Brain cells that respond to specific features, such as lines and angles are referred to as "feature detectors




## Global-Local Paradigm




- **Global advantage:** faster identification of the global letter than the local letter
- **Global-to-local interference:** disruptive influence from irrelevant global conflicting information on local identification

## Structural-Description Theories

- Biederman (1987)
  - Describes how 3D images are identified
  - Breaks objects down into geons
  - Objects are identified by geons and relationship between them

## Continue..

- Beiderman (1987) demonstrated the importance of the use of geons to recognize objects

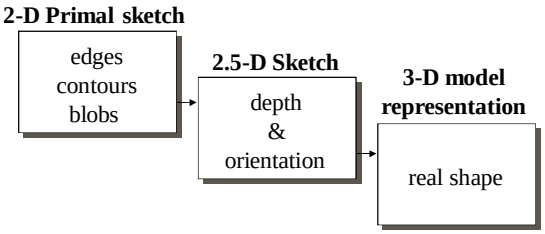
## Top-down Processing (Constructive Perspective)

- Perception is not automatic from raw stimuli
- Processing is needed to build perception
- Top down processing occurs quickly and involves making inferences, guessing from experience, and basing one perception on another

- Context effects

THE MAN RAN.

## Marr's Computational Theory




## Time Perception

- Time estimation is the ability to judge the duration or apprehend the passage of time by the order of occurrence of experience or by physiological rhythm

## Continue..

- The biological approach to time perception assumes that people have internal cycles that can be used to measure time
- According to *cognitive model*, temporal experience of passage of time depends upon the nature and extent of the cognitive processing performed by a person during a given interval

## Duration

**Methods**

- Verbal estimation
- Production
- Reproduction
- Comparison

Prospective → Experienced time

Retrospective → Remembered time

## Deficits in Perception

- Agnosia
  - Inability to recognize and identify objects or persons despite having knowledge of the characteristics of the objects or persons
  - Shows the specialization of our perceptual systems
- Prosopagnosia
  - Inability to recognize faces, including one's own
  - Cannot recognize person from face
  - Can recognize object**s**
  - Can discriminate whether two faces are same or different

## Continue..

- Simultagnosic
  - Normal visual fields, yet act blind
  - Perceives only one stimulus at a time—single word or object