



Perception

Human Cognition



“We don’t see things as they are, we see things as we are.”

Perception

- Taking the sensory inputs, interpreting it and processing it meaningfully is a process known as **perception**.
- Perception is the process through which the information from outside environment is **received, selected, organized, and interpreted** to make it meaningful to you. This input of meaningful information results in decisions and actions.
- Perception may be defined as a process by which individuals organize and interpret their sensory impressions in order to give meaning to their environment.

- **Sensation** – An individual's ability to detect stimuli in the immediate environment.
- Sensation through sensory channels – Vision, auditory, Olfactory Perception, Haptic, and Gustatory.
- Data driven

From Sensation to Perception

Attention

Attention is the process that select certain input for inclusion in our conscious experience, or awareness, at any given time.

Attention

- It is essential to acquire knowledge
- Attention is not awareness
- “Act of directing one’s thought” towards a particular act or object
- Focus of upon one object
- Process which compels the individual to select some particular stimulus according to his interest and attitude out of the multiplicity of stimuli present in the environment.

Sharma R.N. 1967

Selective Attention

- The act of focusing on one information while simultaneously ignoring irrelevant information that is also occurring.
- Dichotic Listening Task



- *Stroop Task*

BLUE ORANGE YELLOW RED
PINK BLUE PURPLE
ORANGE BLACK PURPLE GREEN
BLUE BLACK YELLOW PINK RED
PINK ORANGE BLACK
BLUE

Mouse Top Face

Monkey Top Monkey

Divided Attention

- *Divided attention* occurs when mental focus is on multiple tasks or ideas at once. Also known as multitasking, individuals do this all the time.
- Divided attention does decrease the amount of attention being placed on any one task or idea if there are multiple focuses going on at once.
- *Divided attention outside the laboratory – cell phone usage while driving*

Automatic Versus Controlled Processing

- *Automatic Processing* – occurs without intention, occur without involving conscious awareness and it must not interfere with other mental activity.
- *Controlled Processing* – used for difficult task and ones that involve unfamiliar processes. It usually operates serially, require attention, is limited capacity and under conscious control.

Visuals are vital to online success.



Content with relevant images gets **94%** more views than content without.



94% equates to almost **double the views**, and the **boost is noticed across all topics and categories**.



Tweets with images on **Buffer** receive **150%** more retweets.

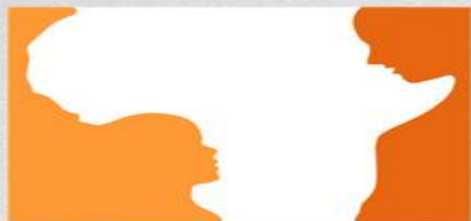
Form Perception

Figure and Ground

- The ability to distinguish an object from general background is the basic to all form perception
- Contour – are formed whenever a marked difference occurs in the brightness or color of the background
- Context in form perception

Figure and Ground





**Hope for African
Children Initiative**



snooty peacock

The **Hope for African Children Initiative** and **Snooty Peacock** logos capitalize on the principle of multi-stability to provide multiple perceptions.

Gestalts Approaches to Perception



Octavio Ocampo

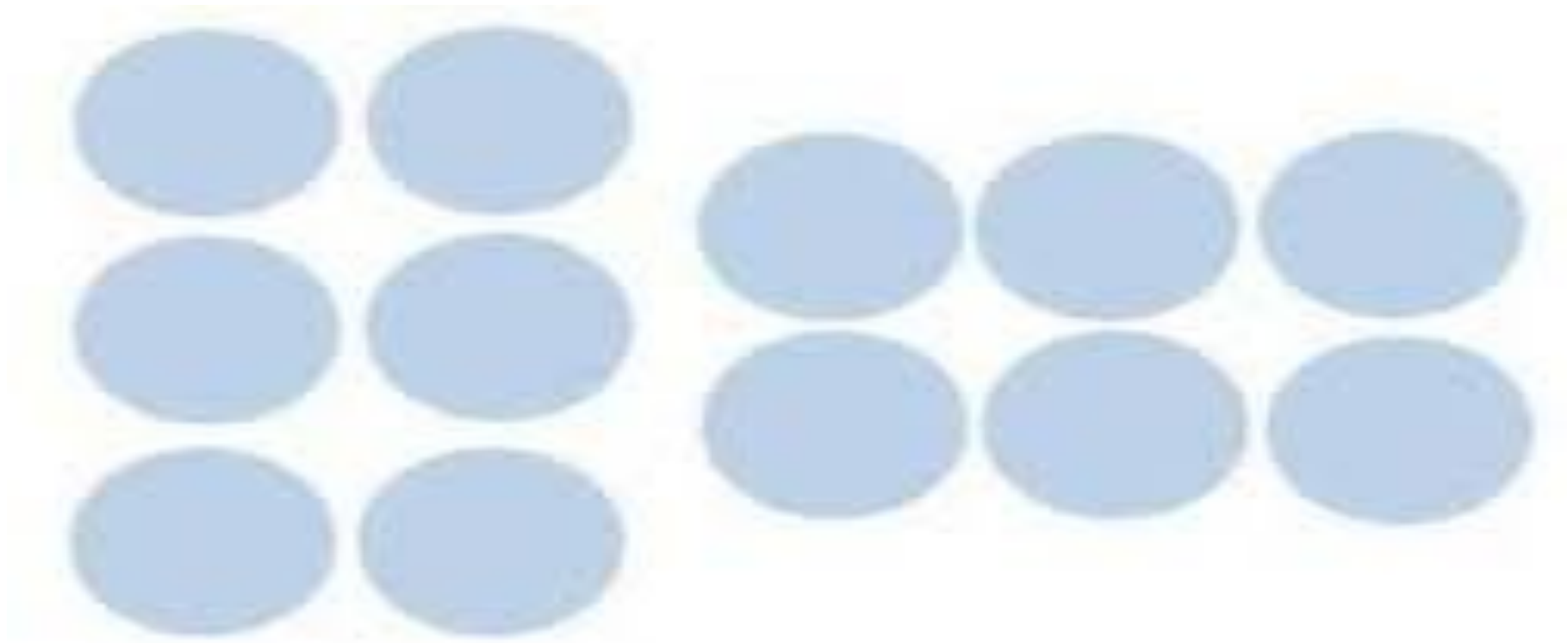
"The whole is greater than the sum of the parts"

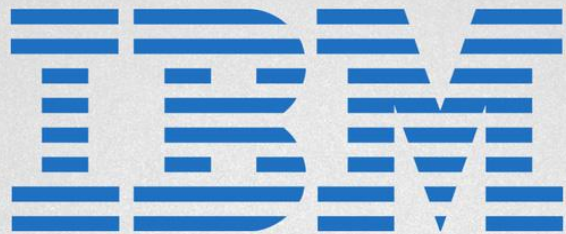
This phrase is often used when explaining Gestalt principles.

Organization in Form Perception

- law of Proximity
- Law of Similarity
- Law of Symmetry
- Law of Good Continuation
- Law of Closure
- Law of Pragnanz

Law of Proximity





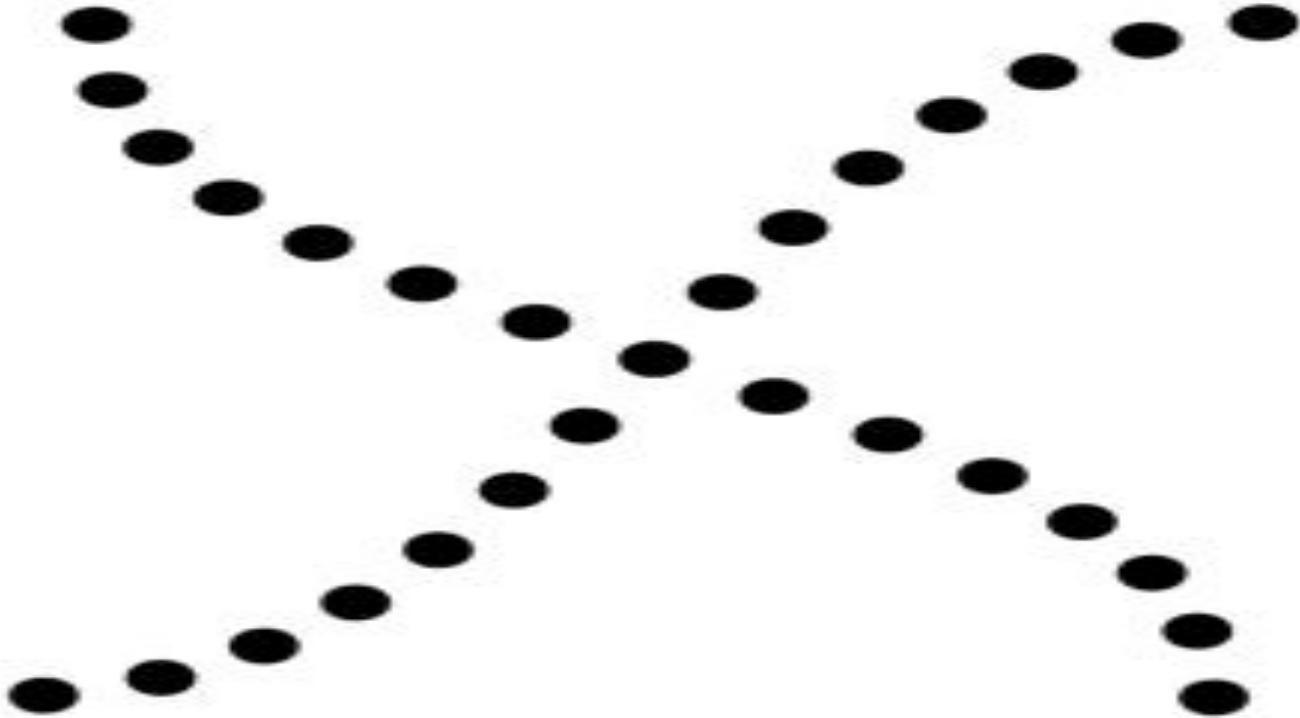
Our brain combines each of the **adjacent horizontal bars** to create a single image of the **IBM logo**.

Gestalt's principles in logo design: Proximity.

dm DesignMantic



Law of Good Continuation



Coca-Cola

Our eyes follow from the 'C' in Coca to Cola, continuing on from the C in Cola through to the 'L' and 'A' in the word.

Gestalt's principles in logo design: Law of Continuity.

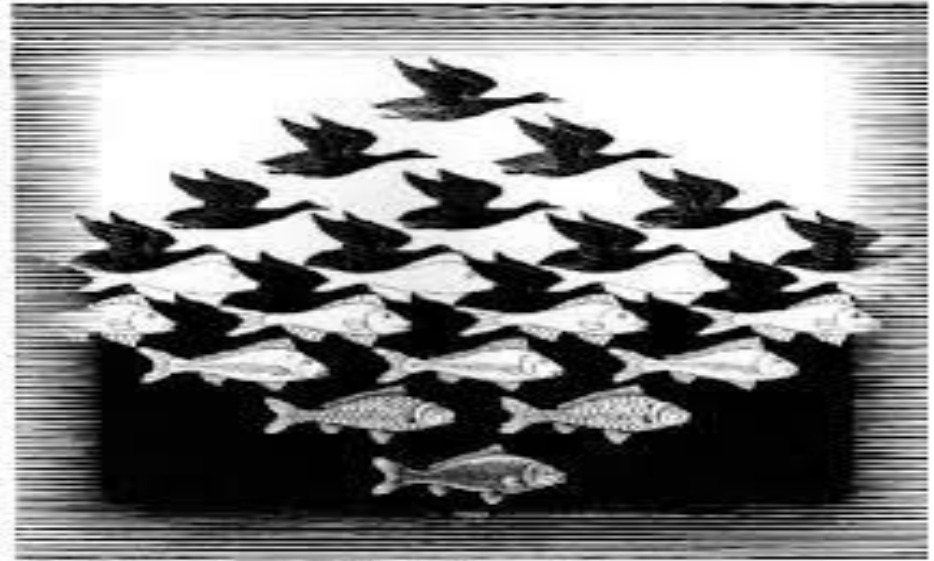
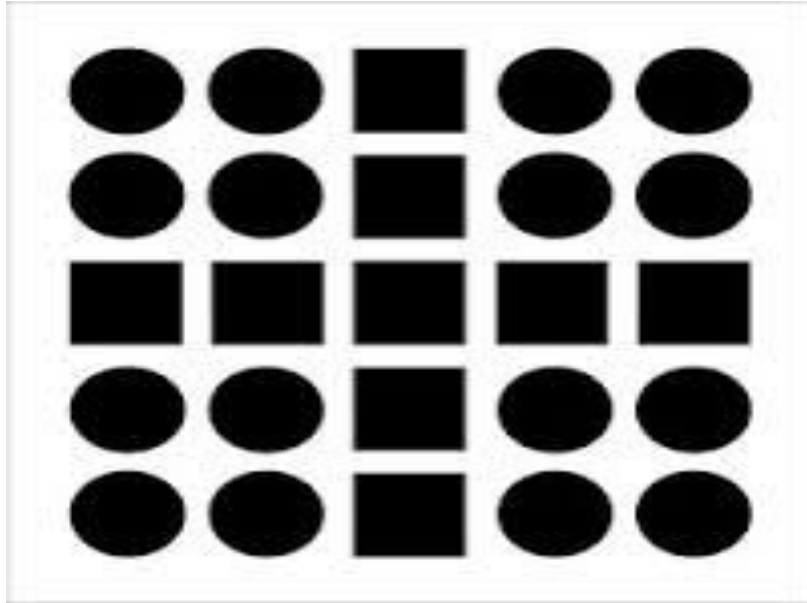
dm DesignMantic



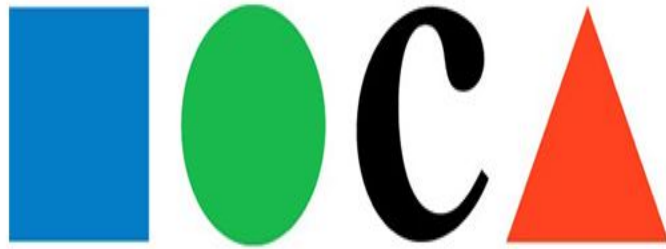
21st June, happiest day of 2013

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© Coca-Cola contains no pork. © Coca-Cola contains natural flavors. ©2013 The Coca-Cola Company.

Law of Similarity



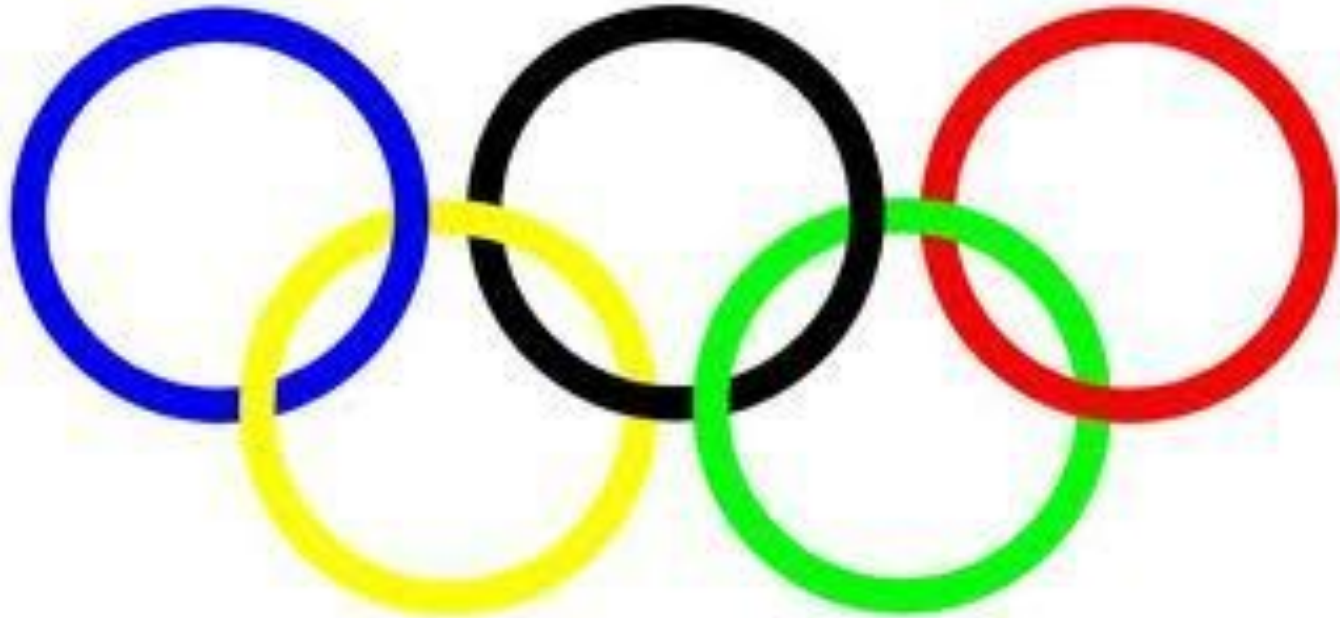
M.C. Escher: Sky and Water I 1938 woodcut



Museum of Contemporary Art



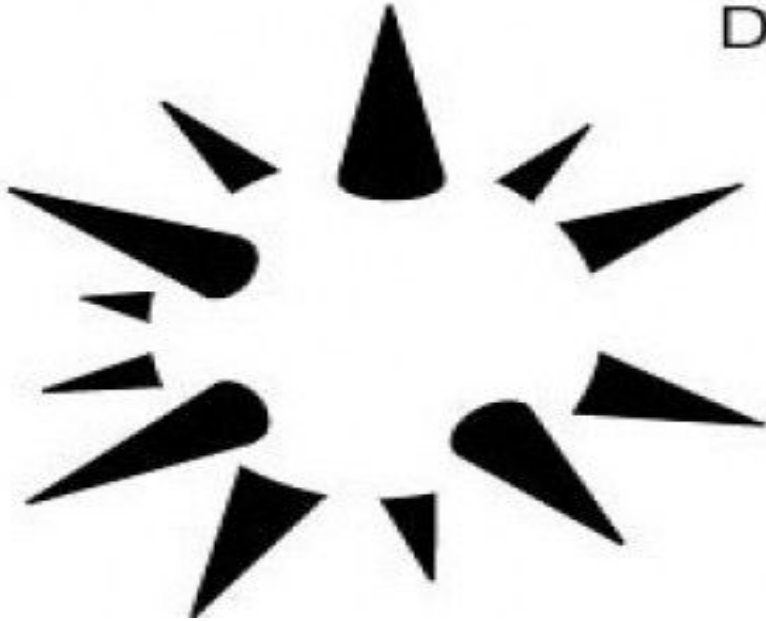
Law of Prägnanz



Law of Symmetry

C

D



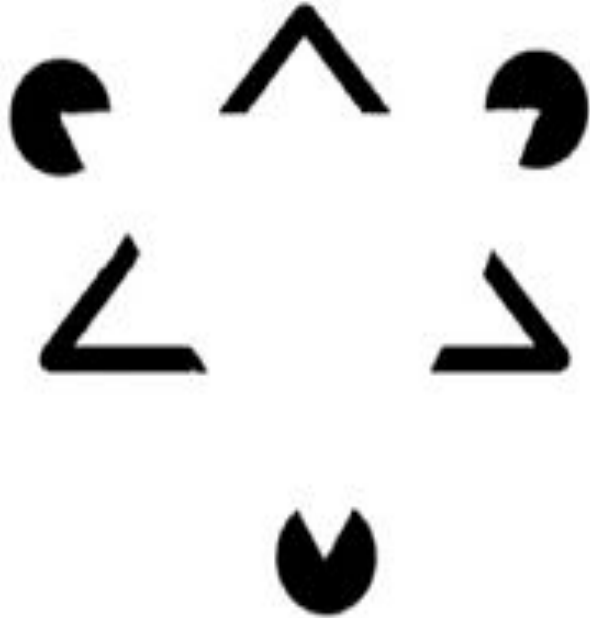
Law of Symmetry

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The SUN logo only constitutes a 'U' and an upside down 'U', arranged in a loop. However, when together, the reverted 'U's look like they are forming the word '**SUN**' on all the four sides of the quadrilateral.

Law of Closure





The **hidden arrow** in the FedEx logo is one of the most popular examples of the utilization of negative spaces.



**ONTARIO
SOCCER.**

EST. 1901

The five outer rings, representing the five stakeholders and the classic center trillium create a contemporary **3-D soccer ball**, even though there's no actual line there.



PRINCIPALS OF VISUAL PERCEPTION

Perceiving Distance

- Retina is a two-dimensional surface onto which three dimensional world is projected
- Retina directly reflects height and width, but depth needs subtle pieces of information known as **depth cues**



Binocular Cues

Monocular Cues

Important Video Link - <https://www.youtube.com/watch?v=PkW04XGee24>

Binocular Cues

- **Disparity** – each eye see a slightly different image because they are about 6 cm apart (on average). Your brain puts the two images it receives together into a single three-dimensional image.
- **Convergence** – when looking at a close-up object, your eyes angle inwards towards each other (you become slightly cross-eyed).
- These binocular cues are most effective for objects up to 6 m away. After this, the amount of eye separation does not give a great enough difference in images to be useful.

Monocular Cues

- These are clues that can be used for **depth perception** that involves using only **one eye**.
- Depth perception allows us to perceive the world around us in three dimensions and to gauge the distance of objects from ourselves and from other objects.

Some of the common monocular cues

Elevation –Objects located closer to the horizon tend to be perceived as farther away, while those that are farther from the horizon are usually seen as being closer.



Relative Size – The relative size of an object serves as an important monocular cue for depth perception. Smaller objects are perceived to be further away.



Absolute Size and Familiar Size - Smaller objects, even if we don't know exactly how big they are, will look further away than a large object placed in the same spot.



Interposition – If one object positioned such that it obstruct the view of the other, overlapping object is perceived nearer.

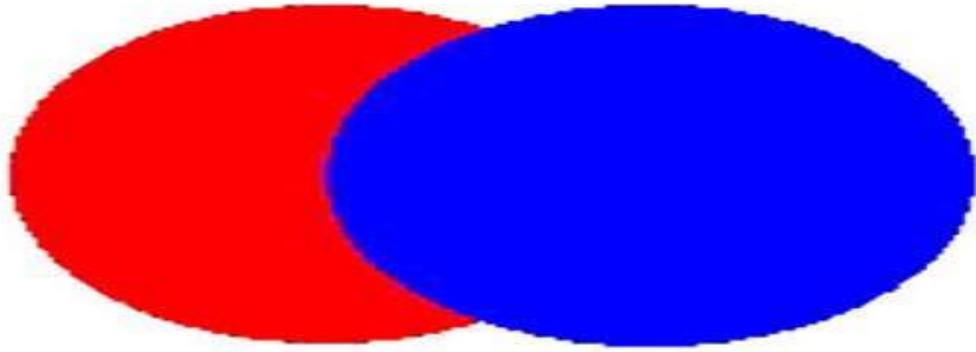


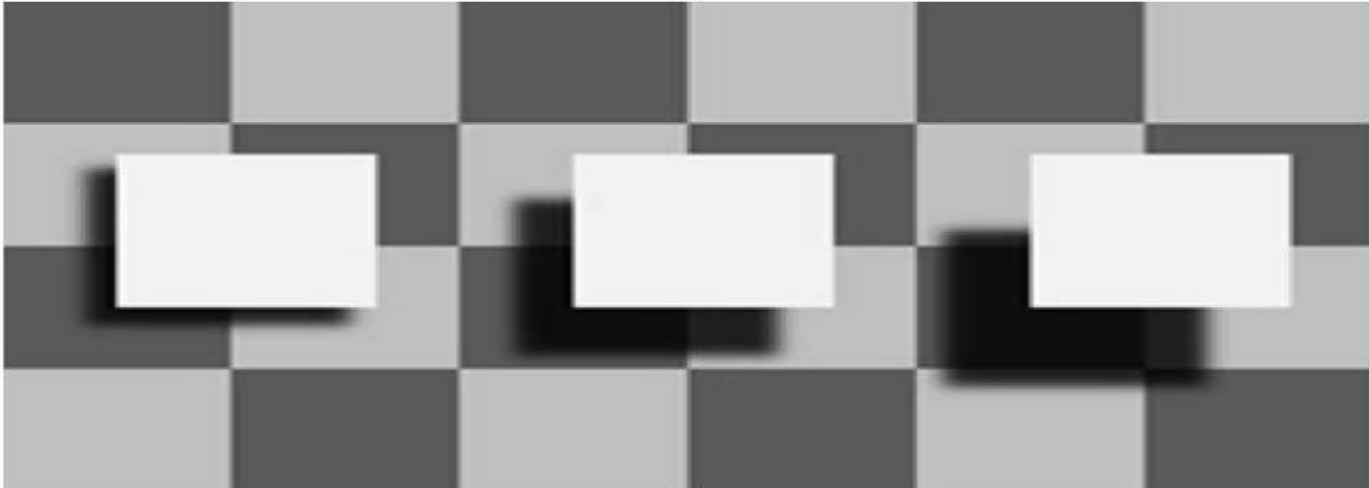
Figure 2. Interposition. The blue circle is reported to be closer since it overlaps the red circle.

Perspective - When parallel lines in a scene appears to be converge in the image, they are perceived as vanishing in the distance.



Shading and Lighting - Objects that are darkened and obscured may appear further off in the distance than those that are brightly lit.

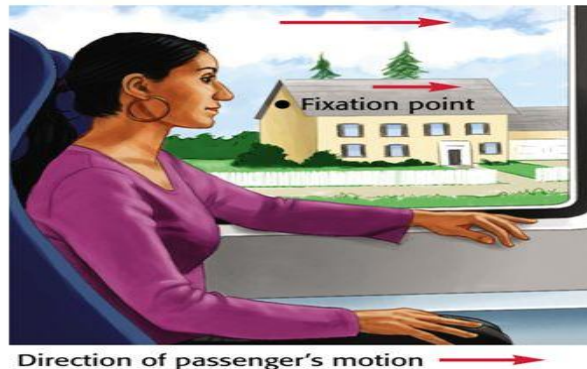
Cast Shadows



Motion Parallax - This visual clue allows you to perceive the fast moving objects in the foreground as closer than the slower moving objects off in the distance.

Monocular Cues

Relative motion:



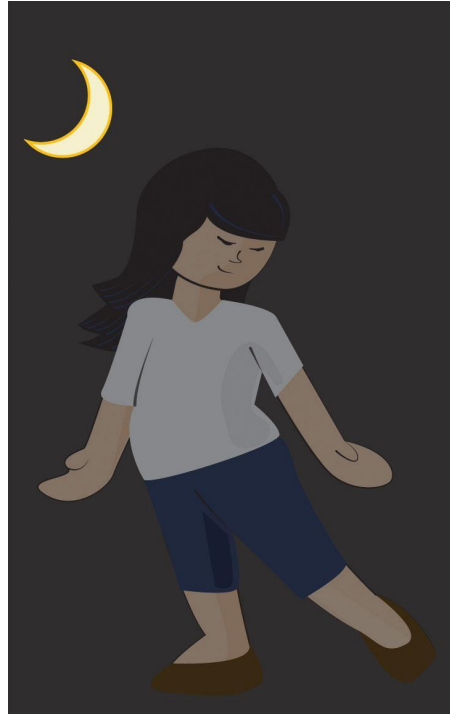
Perceiving Motion

- Perception of moving objects
- An object is perceived to be moving whenever its image moves across our retina
- **Stroboscopic Motion/Apparent Motion** – Motion perceived in the absence of physical movement of an image in front of the retina
- **Real Motion** – The movement of an object through all intermediated points in space.

Perceptual Constancies

- The tendency of animals and humans to see familiar objects as having standard shape, size, color, or location regardless of changes in the angle of perspective, distance, or lighting

Color and Brightness Constancy - The ability to recognize the color under different levels of light



Shape Constancy – Perceiving objects having unchanging shapes regardless of change in retinal image resulting from differences in viewing angle



Size Constancy – Perception of objects having constant size even when the distance from them varies



Recognition

- Match between visual input and mental representation of an object
- Global to local Processing
- Relevance of context
- Top-down and bottom-up processes

Abstraction

- Storing information in abstract form rather than exact – raw sensory information acquired by senses organs is stored in abstract categories
- Increases the storage and processing speed – faster to work with than raw information

Five Functions of Perception

- Determining which part of the sensory input to attend to – **Attention**
- Determining where objects/forms are – **Localization**
- Keeping appearance of objects constant – **Constancy**
- Determining what objects are – **Recognition**
- Keeping the critical information of objects – **Abstraction**

Perception in Social Context

- People think about and make sense of other people—how they form impressions, draw conclusions, and try to explain other people's behavior.
- PERCEPTION TO PERSPECTIVE
- <https://www.youtube.com/watch?v=iueVZJVEs&t=131s>
- Effect of Context
- Application in marketing industry – *Case Study of Diamonds*