UNIT 3

INTRODUCTION TO ATTENTION

DEFINITION

- “Attention is the behavioral and cognitive process of selectively concentrating on a discrete stimulus while ignoring other perceivable stimuli. It is a major area of investigation within education, psychology, and neuroscience.”

- Your attention span is your ability to keep your mind focused on something through careful observing or listening. It can be just momentarily such as turning around after hearing a loud noise, or it may be for a sustained period of time such as playing a video game.

- Attention is often the beginning to other cognitive functions. You first must pay attention to something before you can process it for meaning and understanding.
- Attention is your ability to selectively filter out and focus on relevant information from the environment, without getting distracted. It is a cognitive resource that you can employ to focus on a single task or, as required, divide to handle more activities within a specific time frame, switching between tasks.

SELECTIVE ATTENTION

- “Selective attention is the process of focusing on a particular object in the environment for a certain period of time. Attention is a limited resource, so selective attention allows us to tune out unimportant details and focus on what matters.”

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. Examples are singing along to a song while driving, having a conversation while walking, or listening to music while grocery shopping.”

SUSTAINED ATTENTION

- “Sustained attention is the ability to focus on an activity or stimulus over a long period of time.. It is what makes it possible to concentrate on an activity for as long as it takes to finish, even if there are other distracting stimuli present.”

EXECUTIVE ATTENTION

- Executive attention is 3 particularly good at blocking out unimportant features of the environment and attending to what really matters. It is the attention we use when we are making steps toward a particular end.

CHARACTERISTICS OF ATTENTION

- Attention is selective.
- Attention has shifting nature.
- Attention has cognitive, affective and conative aspects.
- Attention has narrow range.
- Attention increases of clearness of the stimulus.
- Attention needs motor adjustment.

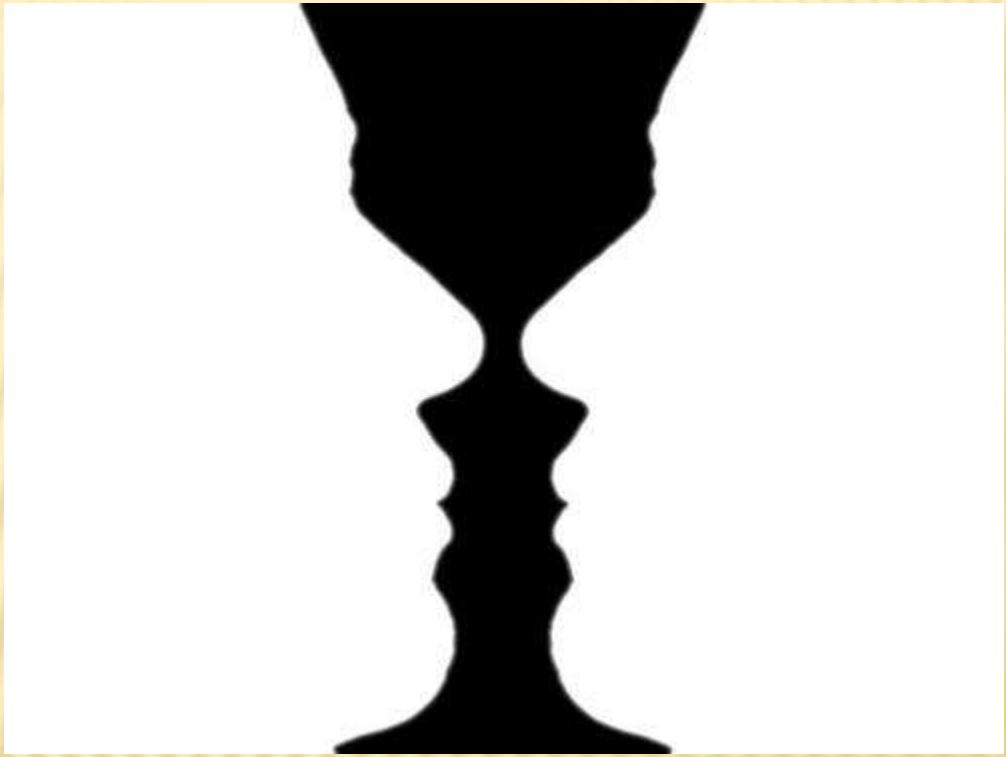
- Mobility
- Activeness/Alertness
- Readiness
- Purposiveness
- Inquisitiveness(to explore new things)

PERCEPTION

- Perception is the organization, identification, and interpretation of sensory information in order to represent and understand the presented information or environment.
- Our brains engage in a three-step process when presented with stimuli:

  Selection, Organization, and Interpretation.

RUBEN'S VASE



PERCEPTION PROCESS

1. SELECTION

- The first step of perception is the (usually unconscious, but sometimes intentional) decision of what to attend to.
- Depending on the environment, and depending on us as individuals, we might focus on a familiar stimulus or something new.
- When we attend to one specific thing in our environment—whether it is a smell, a feeling, a sound, or something else entirely—it becomes the attended/selected stimulus.

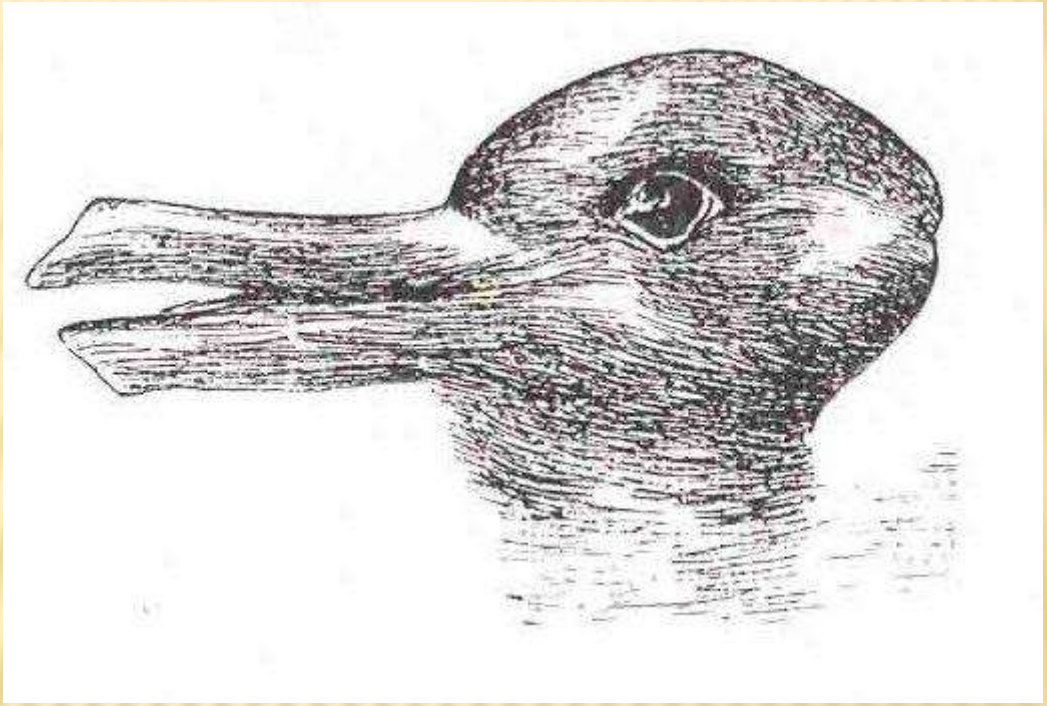
2. ORGANIZATION

- Once we have chosen to attend to a stimulus in the environment (consciously or unconsciously, though usually the latter), the choice sets off a series of reactions in our brain.
- This neural process starts with the activation of our sensory receptors (touch, taste, smell, sight, and hearing).

- The receptors transduce the input energy into neural activity, which is transmitted to our brains, where we construct a mental representation of the stimulus (or, in most cases, the multiple related stimuli) called a percept.
- An ambiguous stimulus may be translated into multiple percepts, experienced randomly, one at a time, in what is called —multistable perception.ll

3. INTERPRETATION

- After we have attended to a stimulus, and our brains have received and organized the information, we interpret it in a way that makes sense using our existing information about the world.
- Interpretation simply means that we take the information that we have sensed and organized and turn it into something that we can categorize.



GESTALT LAWS

- The Gestalt laws of grouping is a set of principles in psychology first proposed by Gestalt psychologists to explain how humans naturally perceive stimuli as organized patterns and objects.
- Gestalt psychology tries to understand the laws of our ability to acquire and maintain meaningful perceptions in an apparently chaotic world.

- Essentially, gestalt psychology says that our brain groups elements together whenever possible instead of keeping them as separate elements.

FIGURE GROUND ORGANIZATION

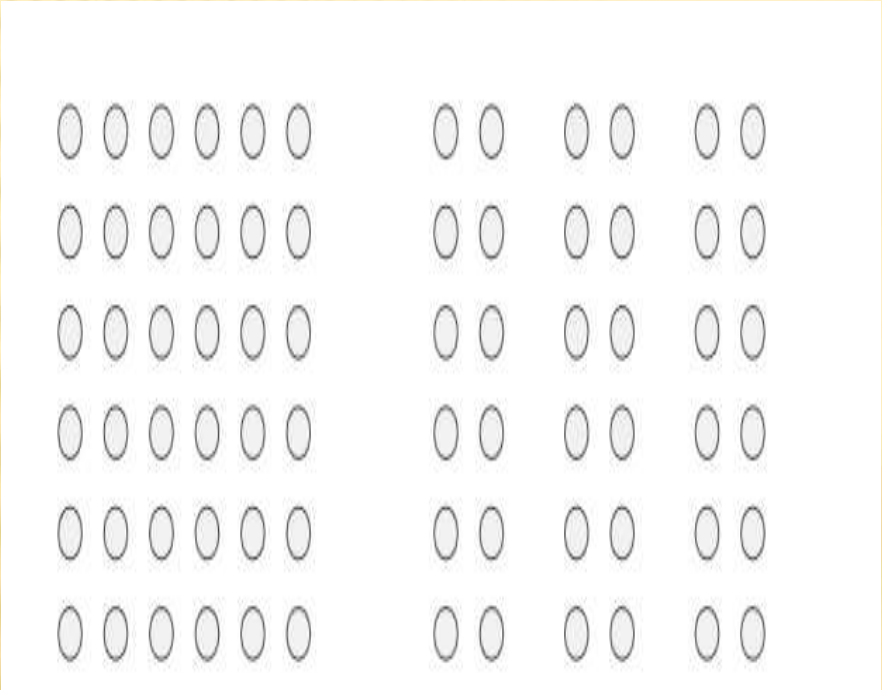
- *"The Gestalt psychologists proposed that the simplest organization involves grouping some sensations into an object, or figure, that stands out on a plainer background."*
- Figure-ground organization is organizing a perception so that part of a stimulus appears to stand out as an object (figure) against a less prominent background (ground).

- Figure, which has a definite shape and a location in space.
- Ground, which has no shape, seems to continue behind the figure, and has no definite location.
- The figure–ground relationship helps clarify the distinction between sensation and perception.

LAWS OF GROUPING

- *"Laws of Grouping: Simple principles describing how we tend to group discrete stimuli together in the perceptual world."*

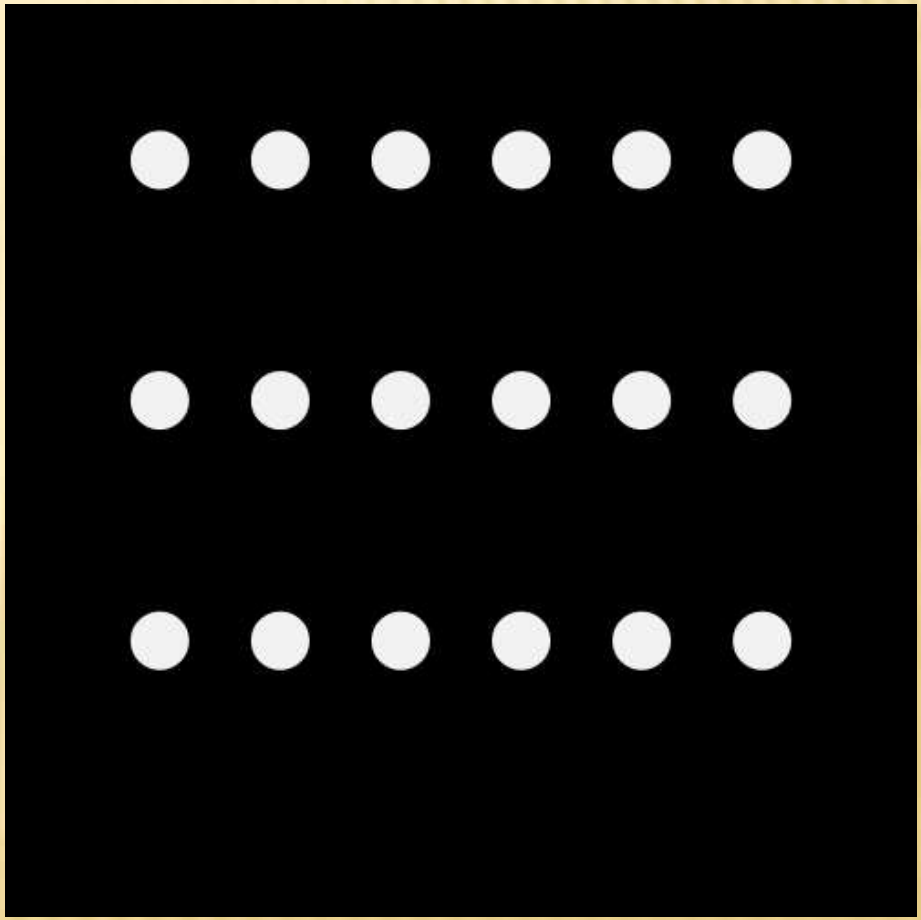
1. LAW OF PROXIMITY



- “Tendency to perceive items located together as a group.”

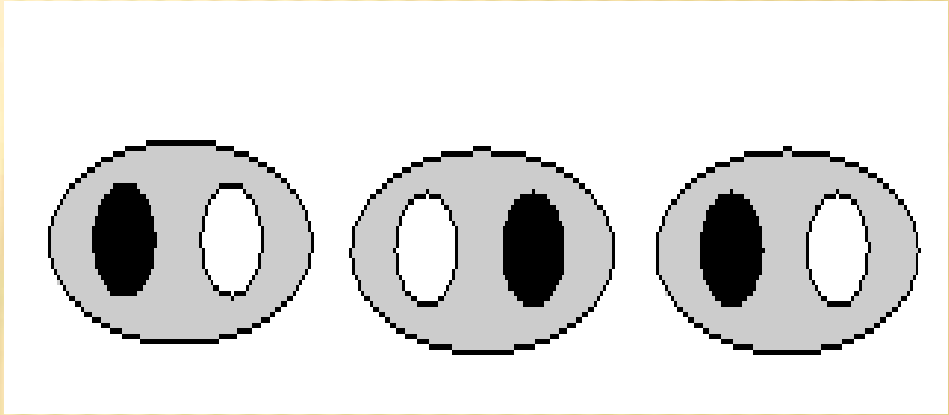
2. LAW OF SIMILARITY

- "Tendency to perceive similar items as a group."



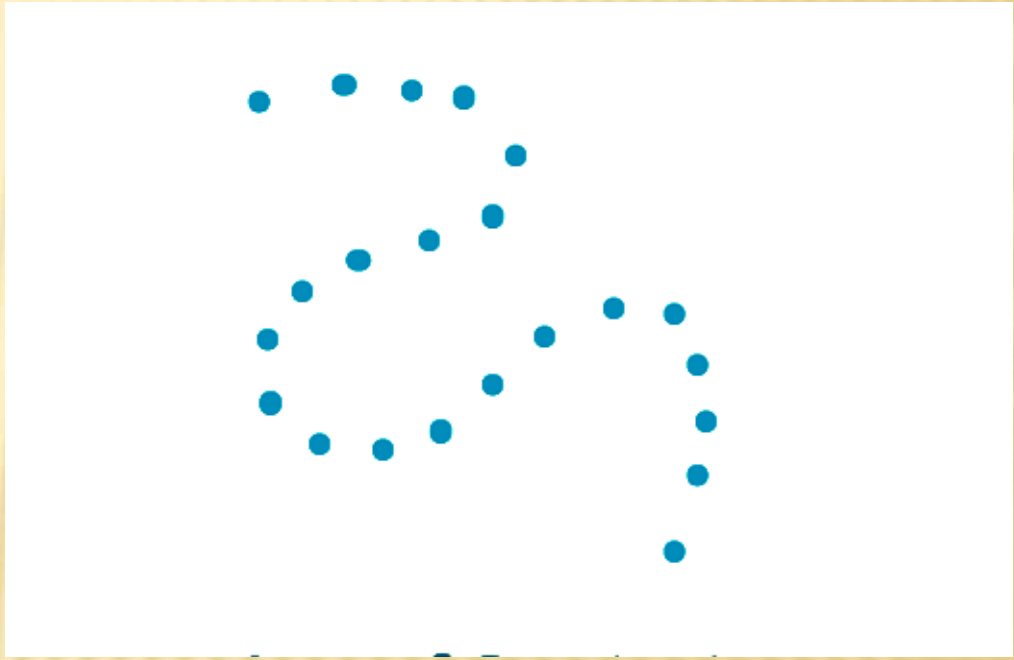
3. LAW OF COMMON REGION

- "Tendency to perceive objects as a group if they occupy the same place within a plane."



4. LAW OF GOOD CONTINUATION

- "Tendency to perceive stimuli as part of a continuous pattern."

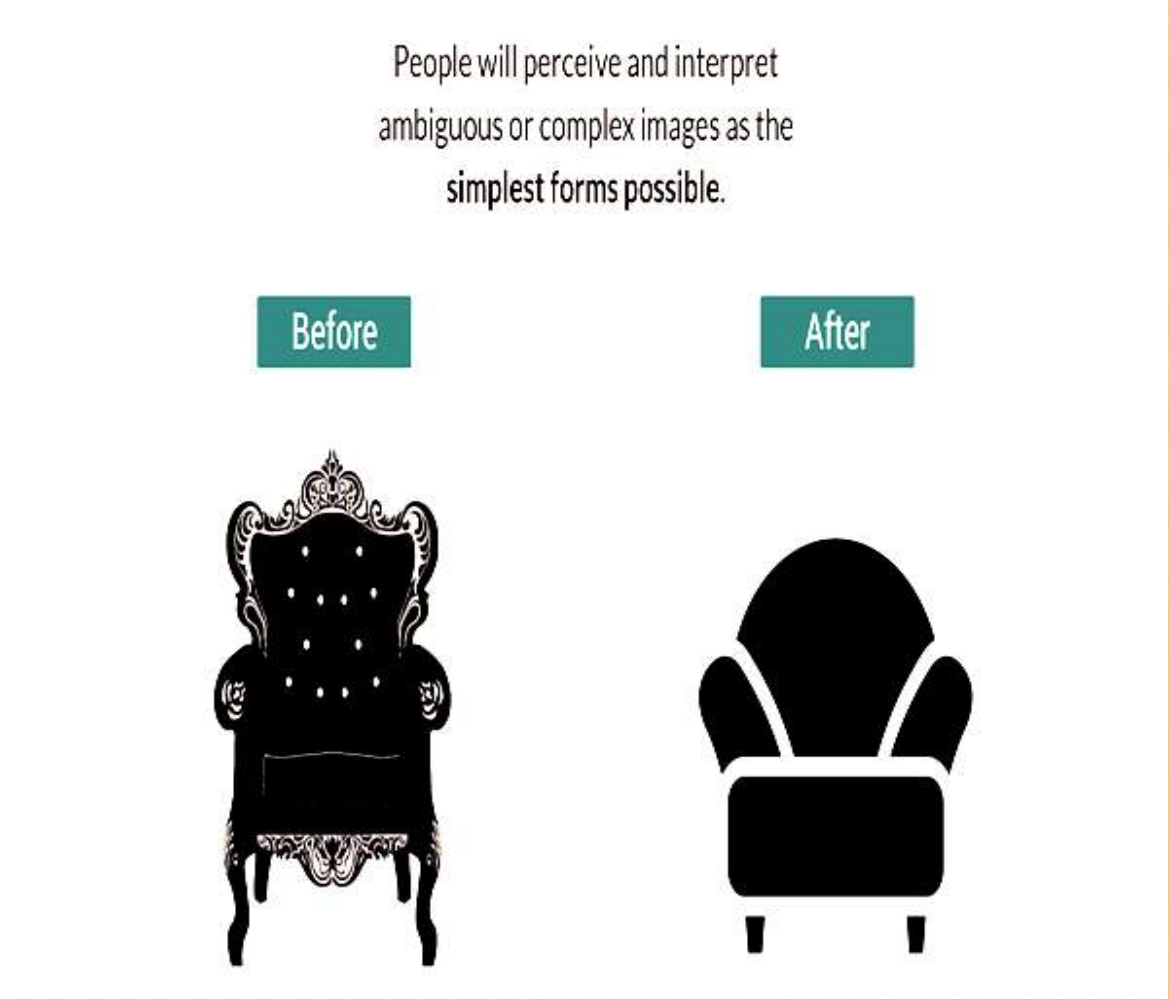


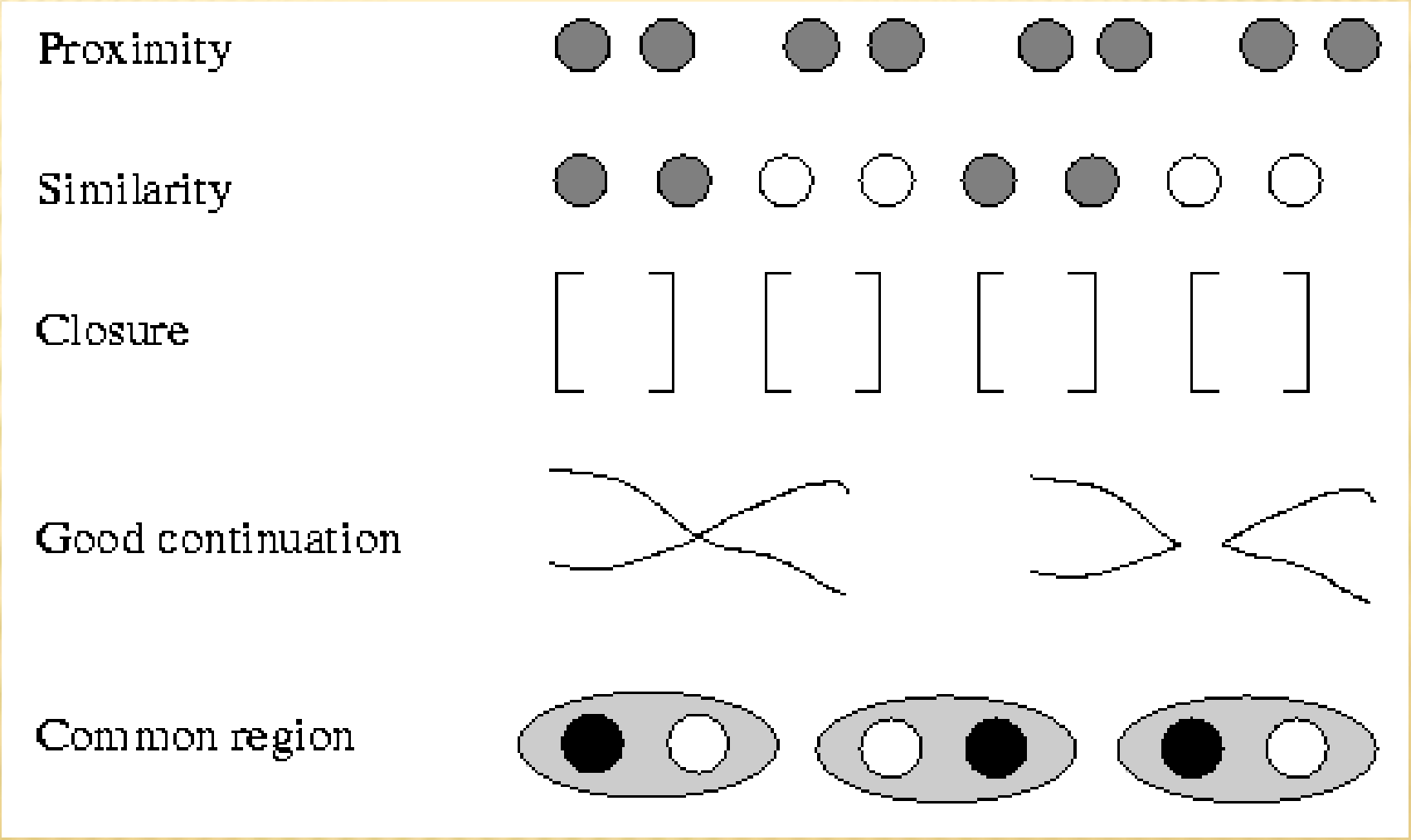
5. LAW OF CLOSURE

- "Tendency to perceive objects as whole entities, despite the fact that some parts may be missing or obstructed from view."

6. LAW OF SIMPLICITY

- *"Tendency to perceive complex patterns in terms of simpler shapes."*




Proximity
Similarity
Closure
Good continuation
Common region

PROCESS OF PERCEPTION

- 1. DEPTH PERCEPTION:

Depth perception is the visual ability to perceive the world in three dimensions, coupled with the ability to gauge how far away an object is.

Depth perception, size, and distance are ascertained through both monocular (one eye) and binocular (two eyes) cues. Monocular vision is poor at determining depth.

2. MOTION PERCEPTION

- Motion perception is the process of inferring the speed and direction of elements in a scene based on visual input.
- Monocular vision, or vision from one eye, can detect nearby motion; however, this type of vision is poor at depth perception. For this reason, binocular vision is better at perceiving motion from a distance.

- Motion perception happens in two ways that are generally referred to as first-order motion perception and second-order motion perception.
- First-order motion perception occurs through specialized neurons located in the retina, which track motion through luminance. However, this type of motion perception is limited.
- An object must be directly in front of the retina, with motion perpendicular to the retina, in order to be perceived as moving.

- Second-order motion perception occurs by examining the changes in an objects' position over time through feature tracking on the retina.
- This method detects motion through changes in size, texture, contrast, and other features. One advantage to feature-tracking is that motion can be separated both by motion and by blank intervals where no motion is occurring.
- This type of motion perception can be used to figure out how fast something is moving toward you—TTC, or —time to contact.

3. PERCEPTUAL CONSTANCY

- There is a tendency to maintain constancy (of size, color, and shape) in the perception of stimuli even though the stimuli have changed.
- Ex- Bus and Bus stop

CORRELATED PERCEPTION

1. AWARENESS

- Awareness is the state of being conscious or the quality of being perceptually knowledgeable.
- It is also the ability to perceive, feel, know, or be cognizant of events.

There are many different states of awareness.

- To be asleep or in a state of psychosis is to have a lack of awareness.
- Being intoxicated on alcohol or drugs can lead to a reduction of awareness.

Someone who has high anxiety levels or is paranoid may have a heightened sense of awareness.

2. MOTIVE

- A motive is something that causes us to act or behave in order to reach a a goal or desired endpoint.
- It comes from the latin word that means 'moving'.
- A motive is the reason WHY you do something.
- For instance, the motive for someone who robbed a store is most likely that they needed money.

3. NEEDS

- They are states of deprivation that emerge within the body.
- Hunger is a common urge or need that motivates you to go to the nearest refrigerator, dining hall or supermarket.
- The drive theory postulates that needs motivates us or living things to act and regain homeostasis.

4. ILLUSION

- An illusion is an inaccurate perception of a stimulus.
- The term is also broadly used to refer to inaccurate beliefs or perceptions.
- In scientific usage, however, an illusion is a sensory distortion.
- Most people can be tricked by optical illusions, and scientists can use information about this visual phenomenon to better understand perception and brain organization.

ILLUSION WITH 5 SENSES

- Optical illusions, which may be seen when an image is constructed in such a way that it relays misleading information to the brain. For example, two people of different heights standing on a slanted floor covered in check marks may appear to be standing on a flat floor and thus appear to be the same size.

- Auditory illusions, which occur when a person hears sounds that are not actually being made or sounds that are distortions of the actual tones.

- Tactile illusions, which cause the brain to perceive touch stimuli that is not actually present, or that is not present in the way the brain perceives it.
- Smell and taste illusions- not so common. However, certain people may perceive smells differently than others do, especially when given conflicting information about the stimuli producing the smell.
- Similar phenomena can occur with taste.

WHAT CAUSES ILLUSION?

- Effect of light on an object
- Insufficient sensory information about an object
- Errors in an individual's processing of sensory details.
- Eg- Refraction of light can cause rainbows and mirages, two illusions that are dependent on the atmosphere.

- Certain illusions, known as pseudohallucinations, can be signs of a psychiatric disturbance.
- One may experience a pseudohallucination under conditions of anxiety or fear or when he or she projects their feelings onto external objects or people.

- People in intensive psychiatric care have been reported to see people around them as monsters or devils, for example.
- Illusions can also be characteristic of certain mental health conditions, such as schizophrenia.
- Schizophrenia- A disorder that affects the person's ability to think, feel and behave clearly.

5. SUBLIMINAL PERCEPTION

- Subliminal perception occurs when a stimulus is too weak to be perceived yet a person is influenced by it.
- The registration of stimuli below the level of awareness, particularly stimuli that are too weak (or too rapid) for an individual to consciously perceive them.

- Question of debate- whether responses to subliminal stimuli actually occur and whether it is possible for subliminal commands or advertising messages to influence behaviour.
- Experimental evidence indicates that subliminal commands may not directly affect behaviour but may prime later responses.
- Priming- technique in which the introduction of one stimulus influence how people respond to a subsequent stimulus.

6. EXTRASENSORY PERCEPTION

- Extrasensory perception or ESP refers to the reception and processing of information not obtained through the physical senses, but are sensed through an individual's mind.
- The four types of extrasensory perception include

Clairvoyance, Psychokinesis, Telepathy and Precognition.

1. CLAIRVOYANCE

- Clairvoyance is the capability to acquire information about a particular object, scenario, physical event or location using extrasensory means.
- The term is a combination of two French words "clair" which means "clear" and "voyant" which means "seeing".
- Clairvoyants are people who allegedly have this ability.

- Eg- people sitting in a room holding few images, and clairovoyants sitting in another room able to transmit this information, without the use of any senses.

2. PSYCHOKINESIS

- Describes the direct effect of the mind on a physical object or scene without the application of any physical energy.
- The supposed ability to move objects by mental effort alone.
- The term comes from the two Greek words "psyche" (breath, or mind, soul, or heart), and "kinesis" (movement or motion)

- A related purported ability is telekinesis, which literally means "distant movement".
- Many references use the terms psychokinesis and telekinesis interchangeably.

3. PRERECOGNITION

- The ability to achieve and perceive information about locations, scenarios, and events before they actually occur.

- The term comes from the two Latin words "pre" (prior to) and "cognitio" (getting to know).

- Scientific research on precognition revealed non-existence of this phenomenon.

4. TELEPATHY

- Telepathy is the purported ability to perform direct communication between two or more minds without the use of speech, body language, writings, or any other extrapersonal means.
- Out of the 4 ESP, Telepathy is the most researched and popularized by media and related industries.

- " No physical theory of telepathy has been worked out — there are no "brain-waves" known, and no receiving stations yet discovered inside our skulls.”- John Arthur Hill