• Perception occurs always in context

• if we have too much information we simplify through abstraction and aggregation

• if we have not enough information we add to it through conjectures and guesses

• complexity without order breeds confusion

• order without complexity breeds boredom

• Gestalt psychology was developed by Max Wertheimer and other psychologists starting in 1910

• It is based on the premise that visual perception always results from a combination of sensations which are processed and organized by the brain as a whole

    “the whole is more than the sum of its parts ..”
• Gestalt theory proposes a number of **principles** the brain uses to parse and group information - e.g.:

  • foreground - background
  • proximity
  • similarity
  • common region and fate
  • connectedness
  • continuation
  • closure

• All of these cues are employed by the principle of “praegnanz”, which claims that the brain will **always** favour the “simplest solution” it can find, based on what it already knows and expects in a given context

(remember that “simplicity” is always in the eye of beholders: e.g. experts “see” differently from novices)
Gestalt Theory & Visual Illusion

- foreground and background
• **proximity**

we group elements that are closest to each other
(all other things being equal :)
• **similarity**

we group elements that appear to be similar in visual properties (eg. size, shape, colour, lightness ..)
(all other things being equal :)

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![Gestalt Theory & Visual Illusion](image-url)
• **common region**

  we group elements enclosed by a line or a surface as single units (all other things being equal :)

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![Diagram of common region examples]
• **connectedness**

we tend to perceive any uniform, connected region as a single unit (all other things being equal :)

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- **continuation**
  we group elements that appear to be aligned with or smooth directional continuations of one another
  (all other things being equal :)

![Diagrams illustrating continuation](image-url)
• **closure**

we group elements that hint at the possibility of “closing”
a simple, regular, symmetric - or simply familiar - entity;
i.e. we “jump to conclusions”
(all other things being equal :)

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_Gestalt Theory & Visual Illusion_
• **praegnanz**

  The brain seeks to construct simple, consistent and closed interpretations of the word - base on the best guess we can make with what we know at the time (all other things being equal :)

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Gestalt Theory &
Visual Illusion
• praegnanz explains the importance of clustering
• **visual illusions** show where the brain’s search for simple interpretations breaks down

• the images invite you to oscillate between foreground and background
• a figure will appear three-dimensional when it is simpler to understand as a three-dimensional scenario than as a two-dimensional one [Arnheim]

• the images below provide contradictory cues
Gestalt Theory & Visual Illusion

MACH

SCHRODER STAIRS

NECKER CUBE

VARIATION ON A NECKER CUBE
**Gestalt Theory & Visual Illusion**

**Müller-Lyer (1889)**
A and B are the same physical length, but are seen as different.

**Ponzo**
The two horizontal lines are the same length.

**Oppel**
The vertical and horizontal lines are the same length.

**Sander Parallelogram**
The two dashed lines are the same length.

**Oppel-Kundt**
Interrupted or divided lines or spaces generally appear to be longer than undivided ones.
Converging lines create an illusion of depth. All three persons are the same height. The one furthest, however, appears the tallest. Size is traded for distance.

**JASTROW**
A and B are identical in size and shape. A looks smaller because its' bottom curvature is in close proximity to the larger outer curvature B.

**EBBINGHAUS**
The two center circles are the same size, but one appears smaller compared to the larger circles that surround it; the other appears larger because of the small circles that surround it. Size is relative to the surround.

**DELBOEUF**
The two inner circles are the same size. One looks larger than the other because of the size of the surround circle.
many artists use visual illusion in their works
eg. M.C. Escher
• many artists use visual illusion in their works
e.g. R. Magritte