GESTALT PSYCHOLOGY AND OPTICAL ART

Main principle of gestalt psychology

- We perceive objects as well-organized patterns rather than separate parts

- The characteristics of the single parts depend on their relationships to the other parts (on the whole organization of the visual or sound “field”).
  - The whole also depends on the parts.
  - The whole and the parts determine one another.

– In this figure, the combination of A and B leads to a whole new figure C

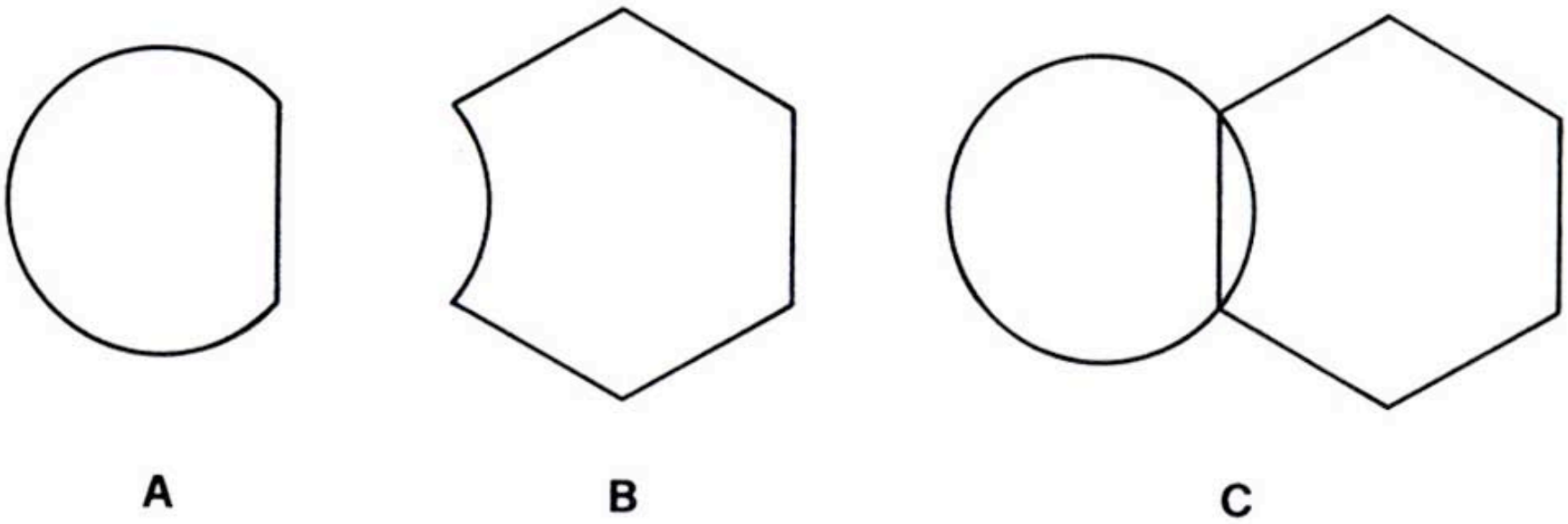
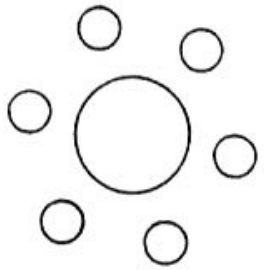


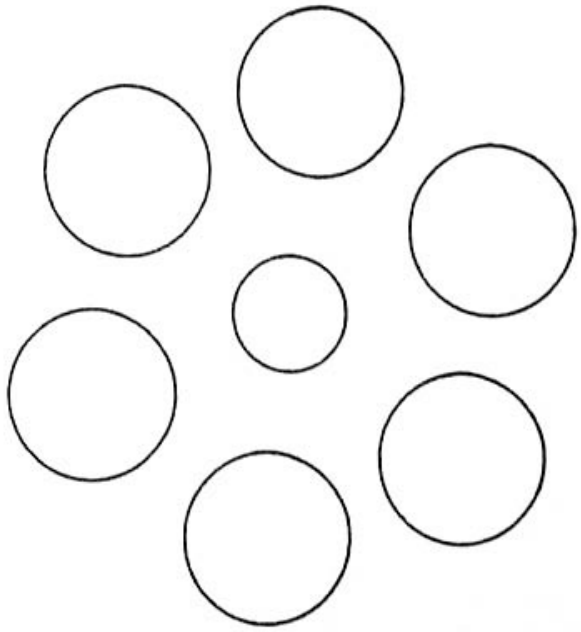
Figure 5.6 The configuration *c* is not formed by *a* + *b*, but by the overlapping of a circle and a hexagon. Structural coherence seems to prevail (Sander 1928).

- The whole pattern has priority over the parts.
- We see each element as part of a whole.

- Our perception of **size** depends on **context**.

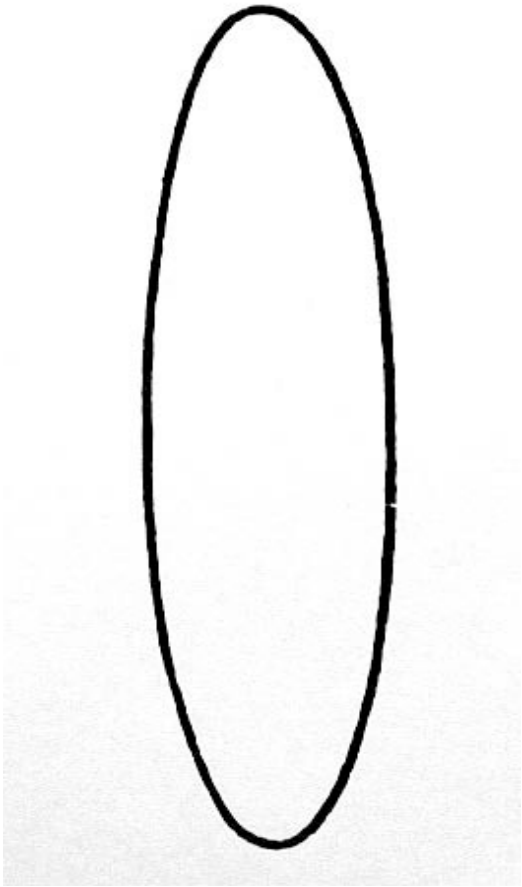


A

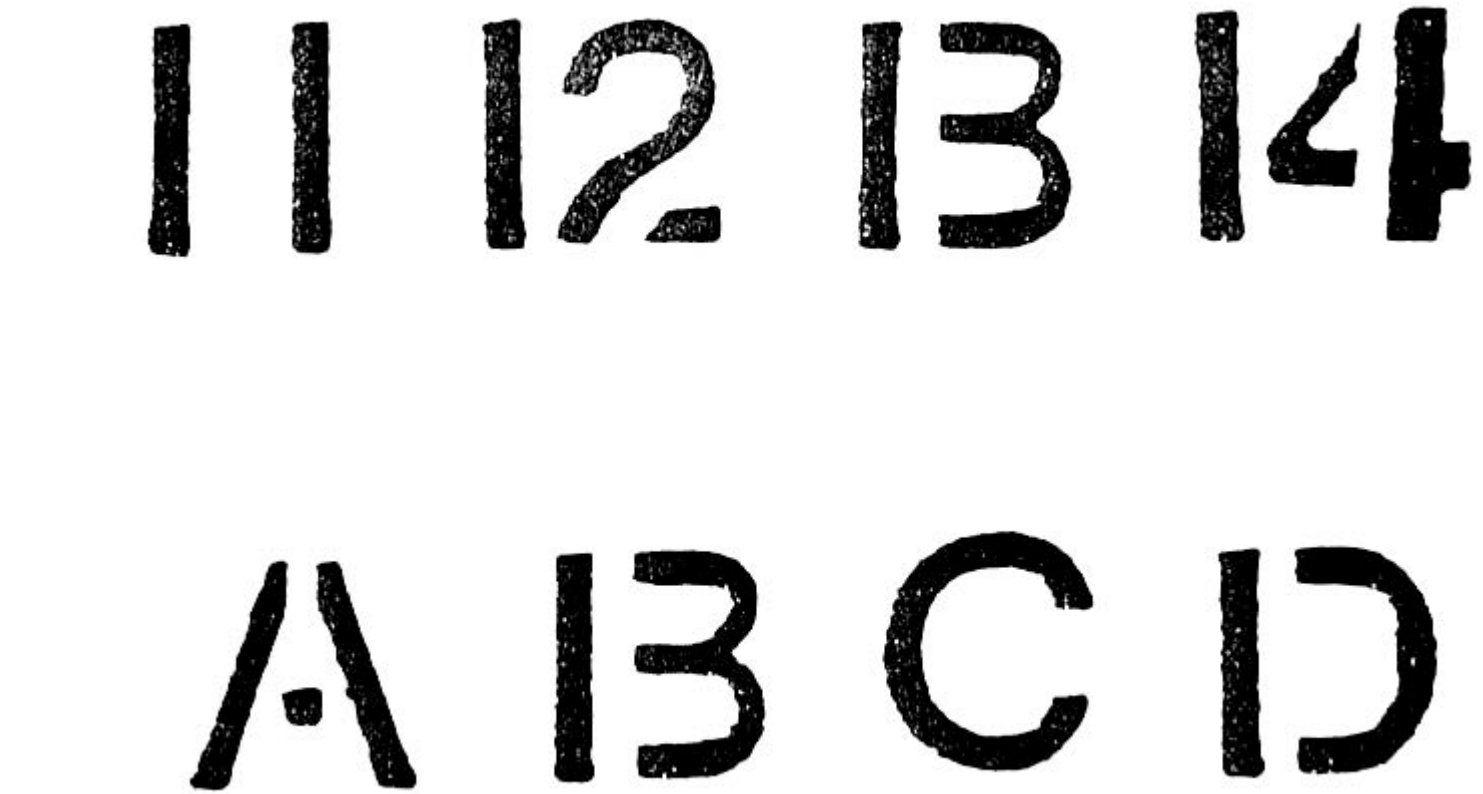


B

- The interpretation of shape also depends on **context**.
- Seen in isolation, this is an oval.

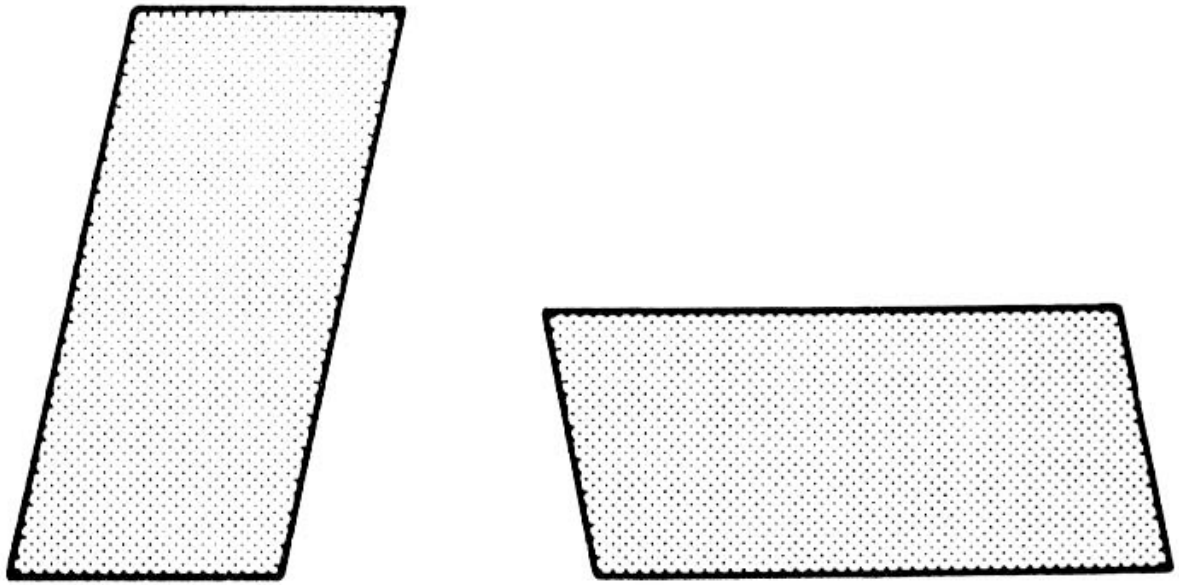


- In a different context, the <u>same</u> shape becomes a circle!

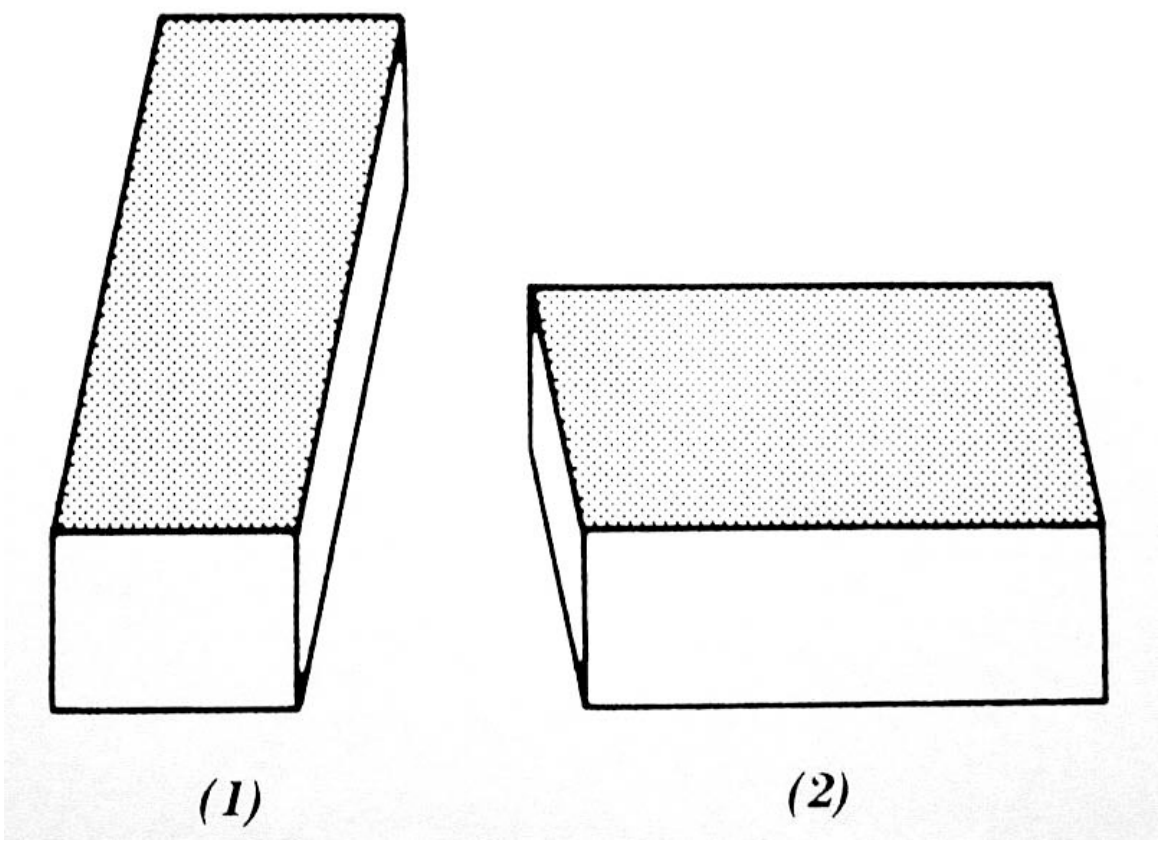

11 12 13 14
A B C D

- When the context is changed…

…our perception of the parts is also changed.



(1) *(2)*


(1)
(2)

Our perception is affected by the orientation of each figure relative to its frame of reference.

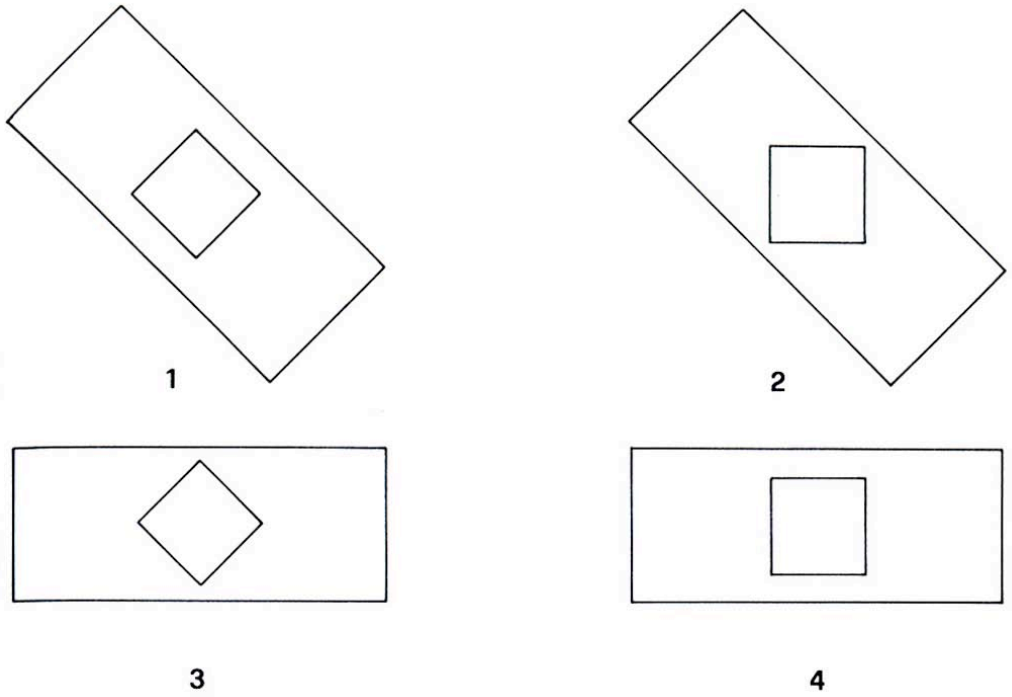
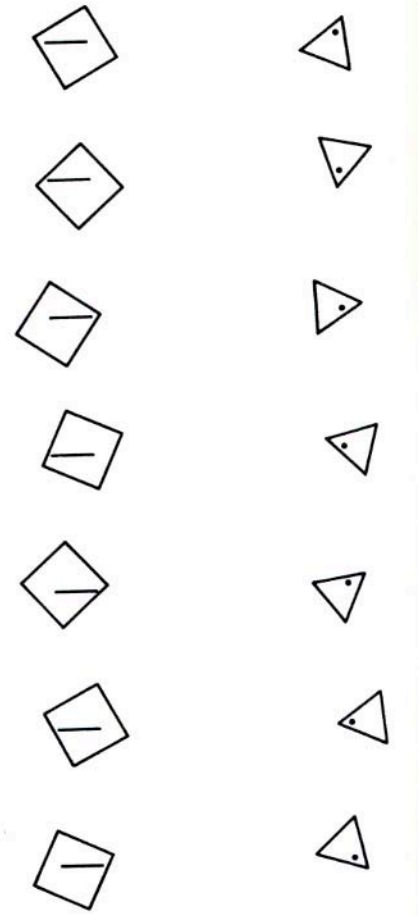


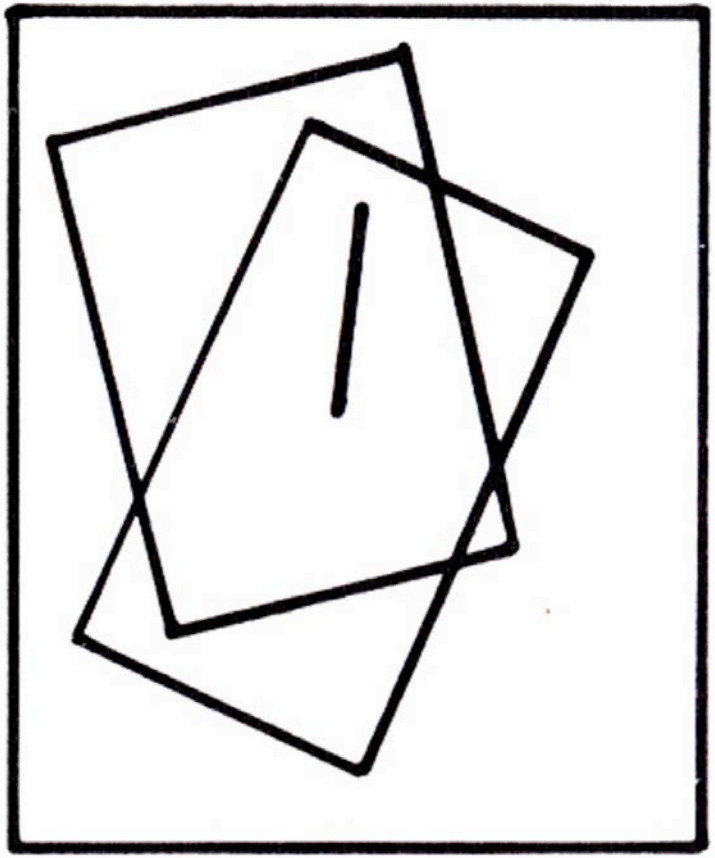
Figure 4.18 The appearance of a figure depends upon the orientation with respect to the nearest frame of reference (Kopfermann 1930).

- Other examples of the effect of the frame of reference:

  Destruction of linearity



- The orientation of the central line is made unclear by the competing frames:



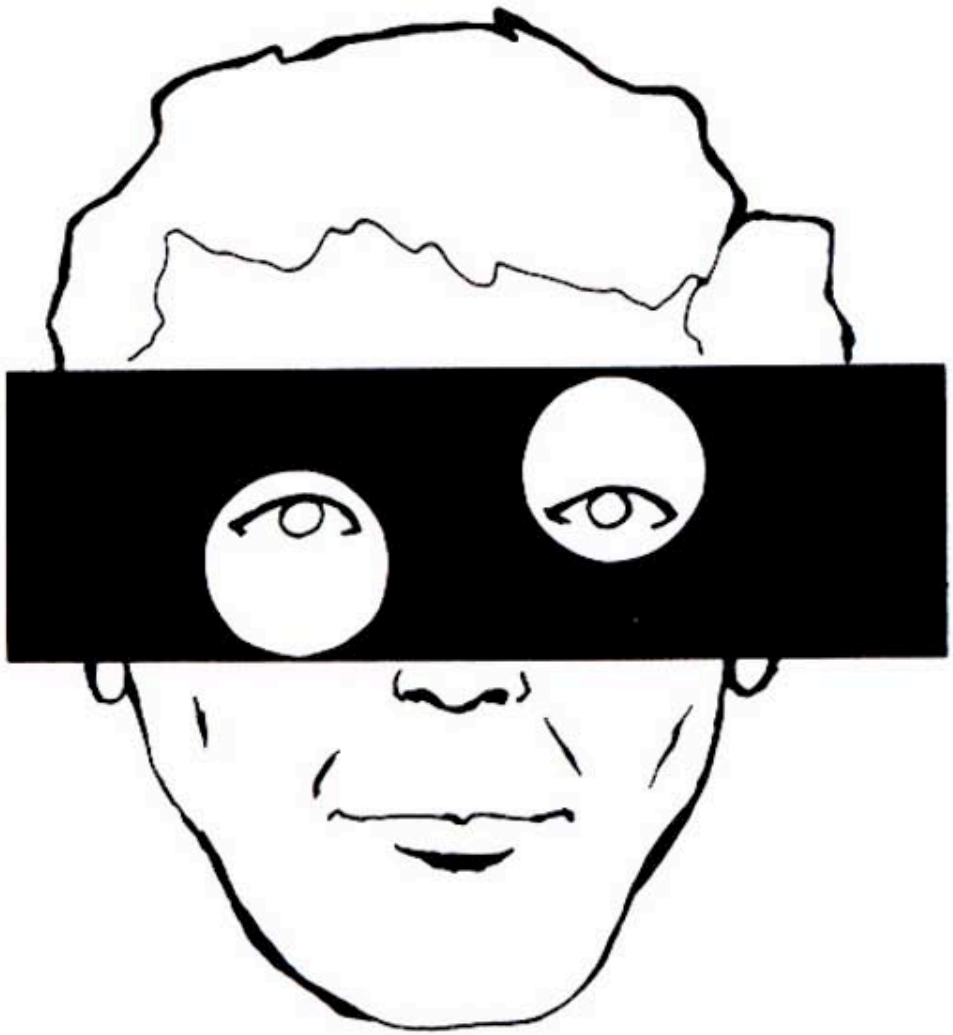


Figure 4.21 Distortion effect induced by the proximal frame of reference.

- The nearest (proximal) frame of reference often dominates the more distant frame

  – In the following diagram:

  The dot is seen as off-center (relative to the small square) and not as at the center of the large square

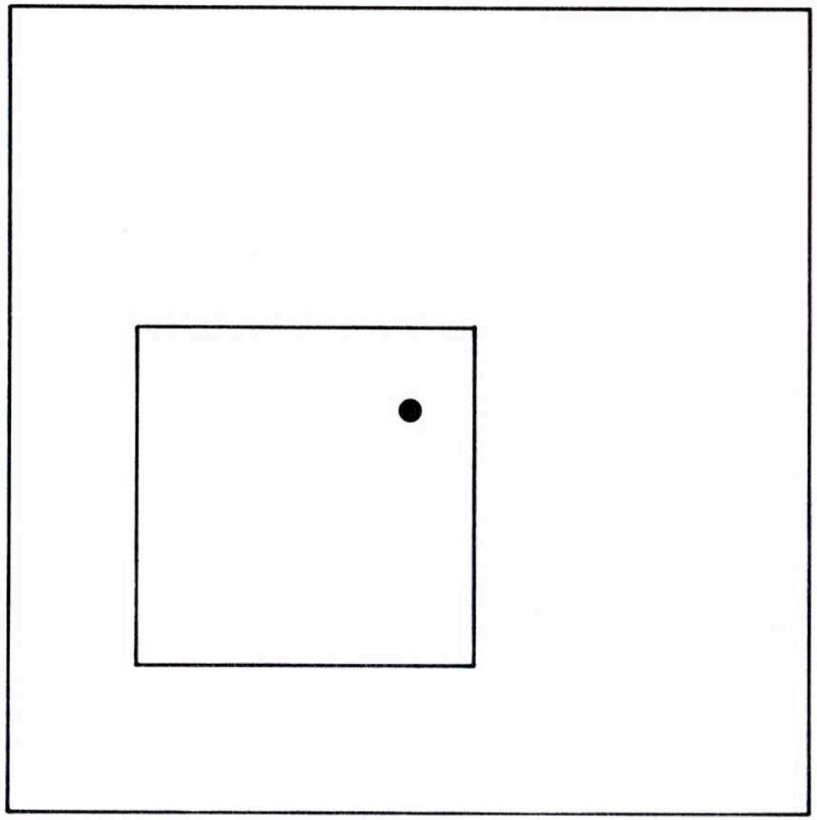
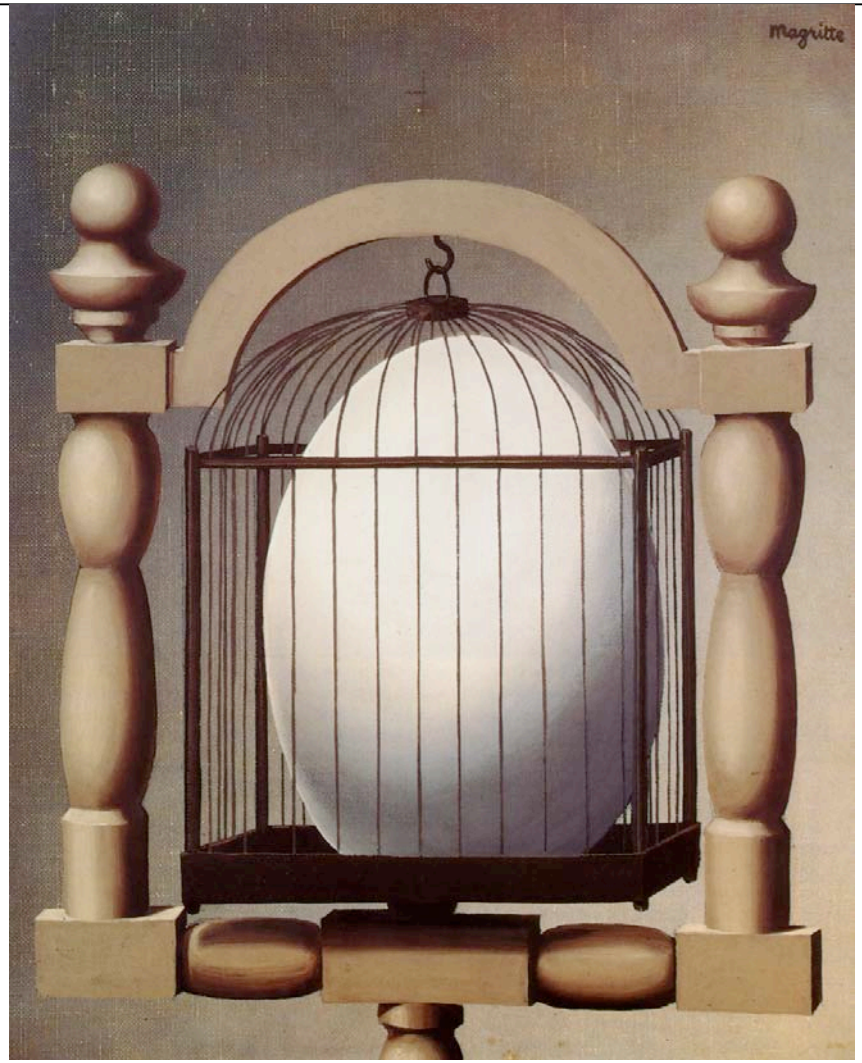


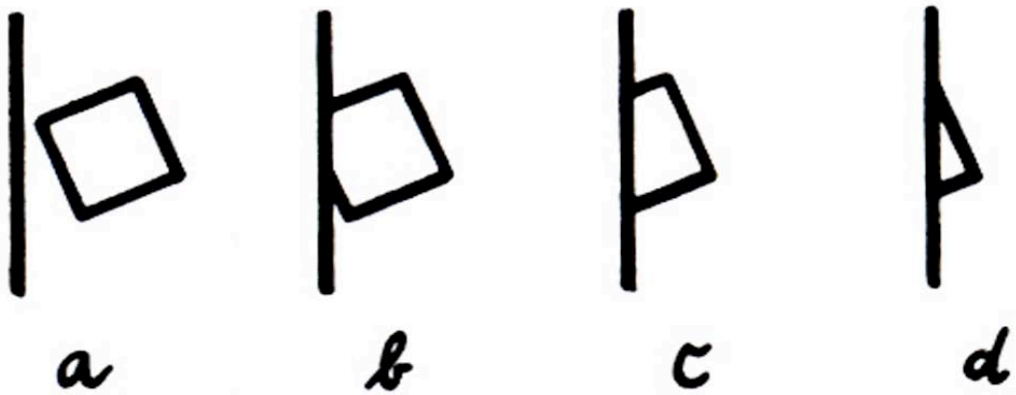
Figure 4.19 Dominance of the proximal frame on the impression of centrality.

- The painter Magritte often made the relation between objects and their frame of reference highly ambiguous.

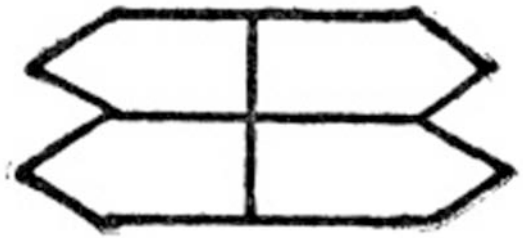

Magritte

:

- The *relationship between order and the frame of reference*:
  - Figure d by itself might be seen as a triangle attached to a vertical line.
  - Seen it after figures a, b, and c, it becomes a square “hiding” behind the line.
  - The same element looks very different when its frame of reference is changed.



- In many instances, shapes are “destroyed” by larger entities:
  - It is very difficult to find the letter E in this diagram
  - The letter is destroyed by the larger figure



- It is often difficult to separate the parts of an image.
  - The letter H occurs twice in this figure, but it is difficult to see it.

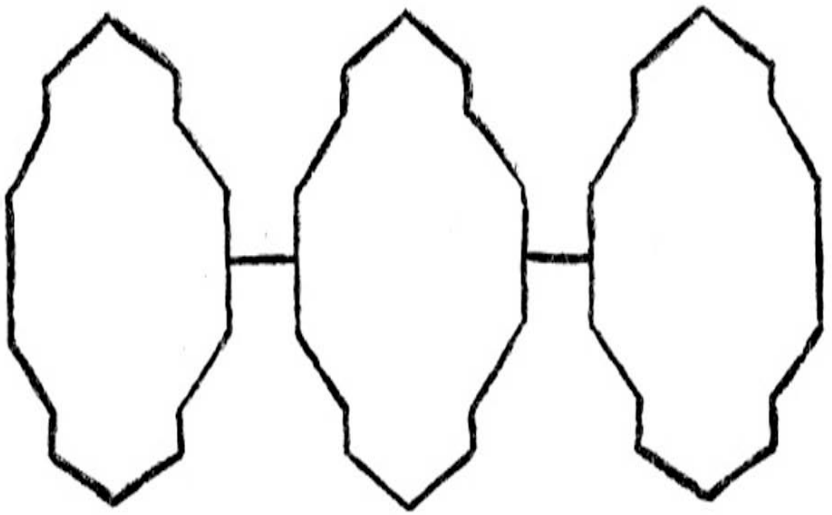
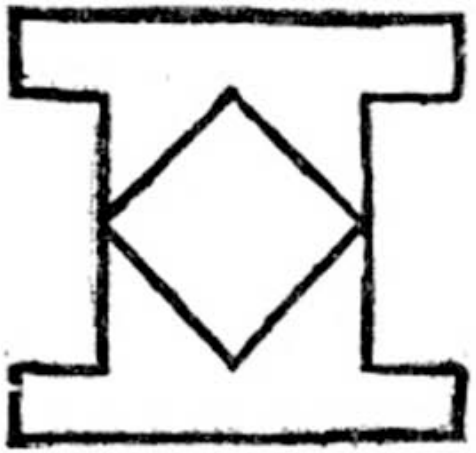


FIG. 16

There is a latter K in this figure:



- It is difficult to find the outline of a small figure inside a larger figure:

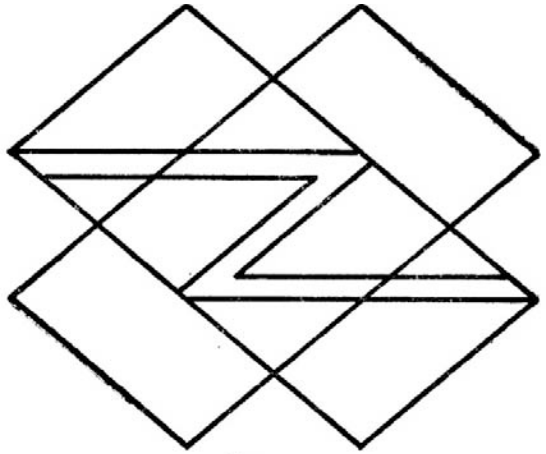
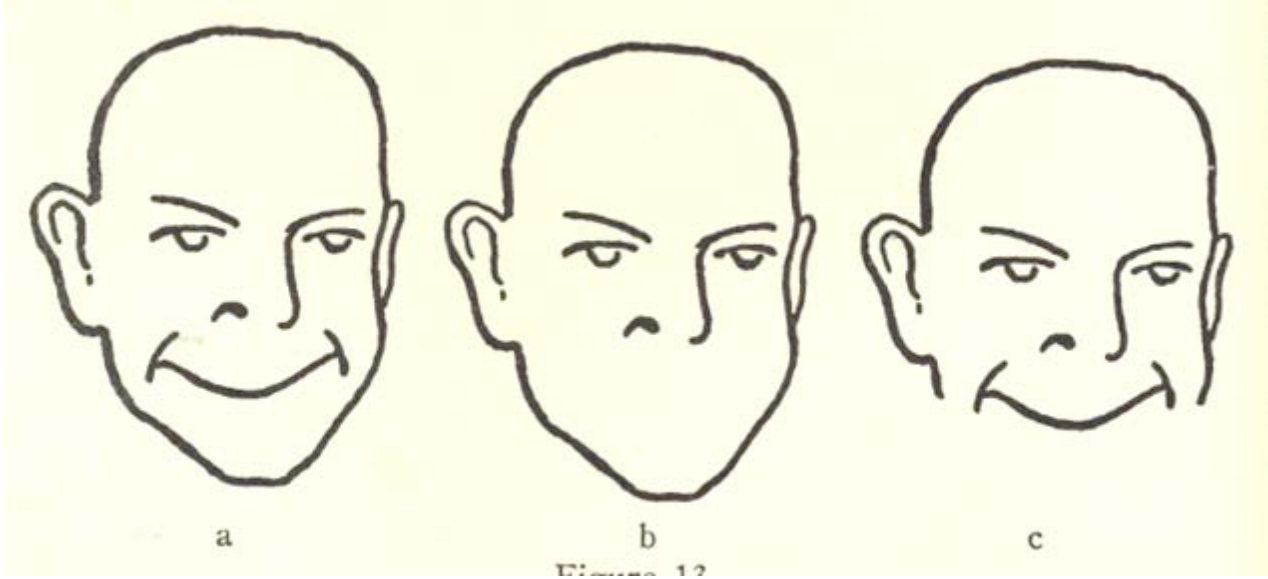
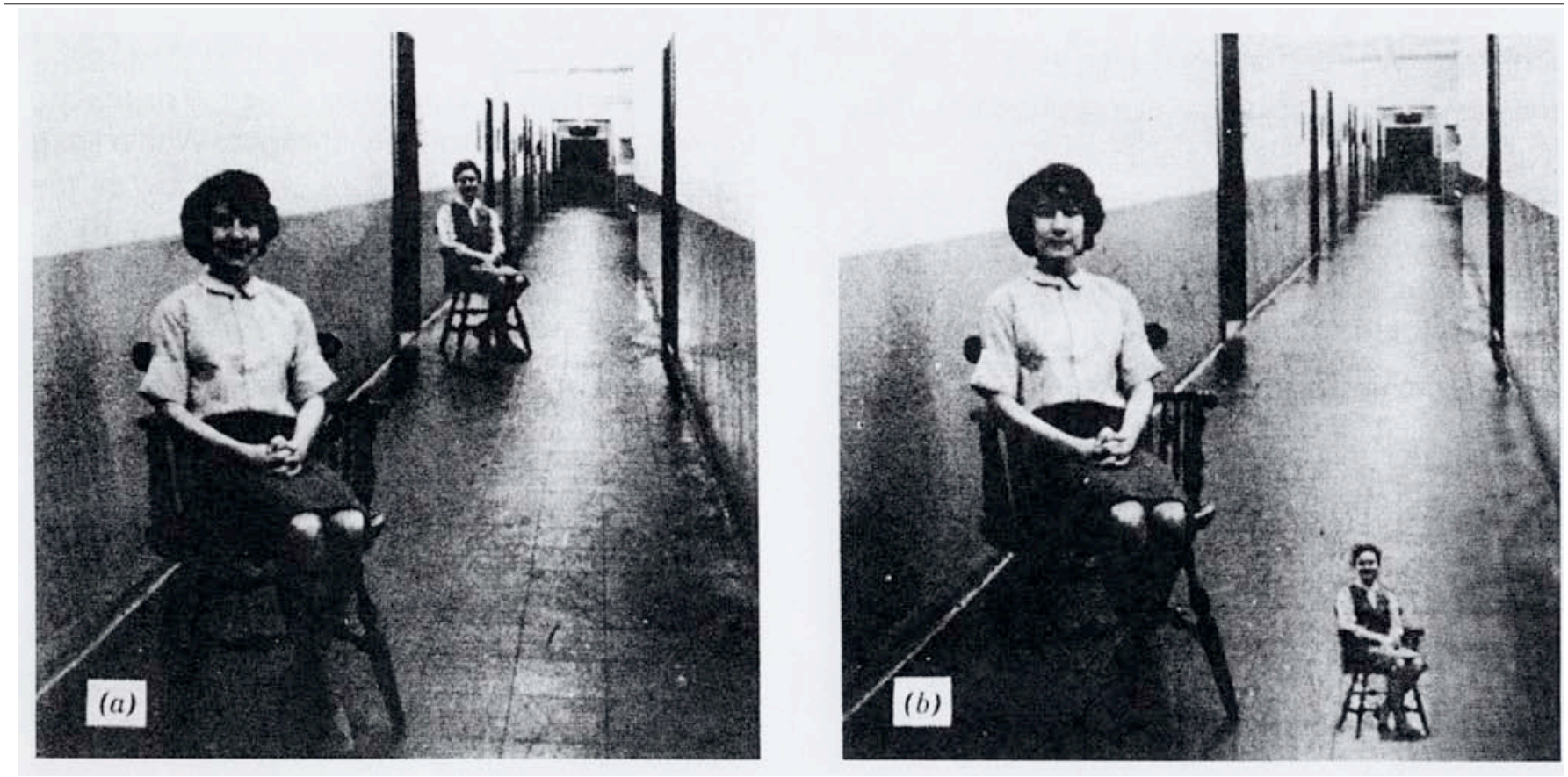


FIG. 12

– **Hierarchy** of value:
  - Some parts are **<u>more important</u>** than others.
  - In this face, the absence of the mouth changes the expression, but the absence of the lower portion of the face does not have such a strong effect.

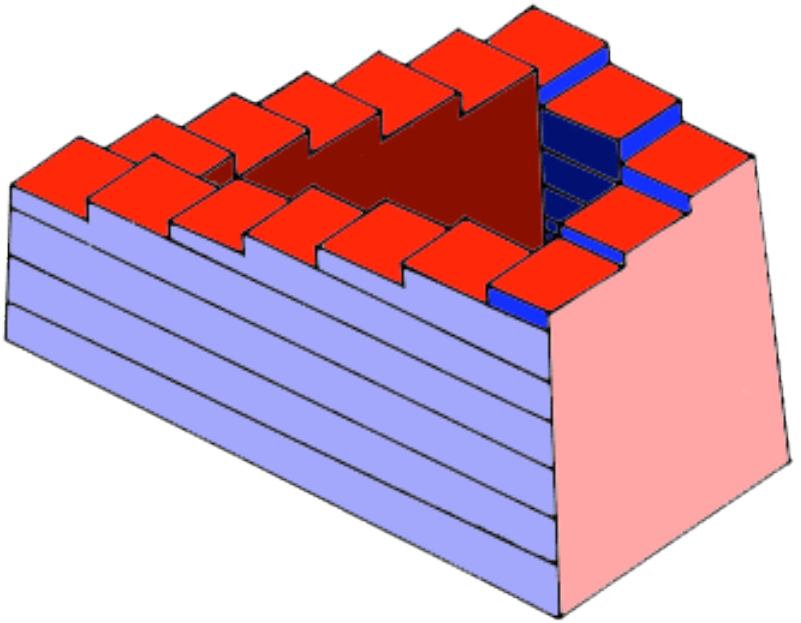


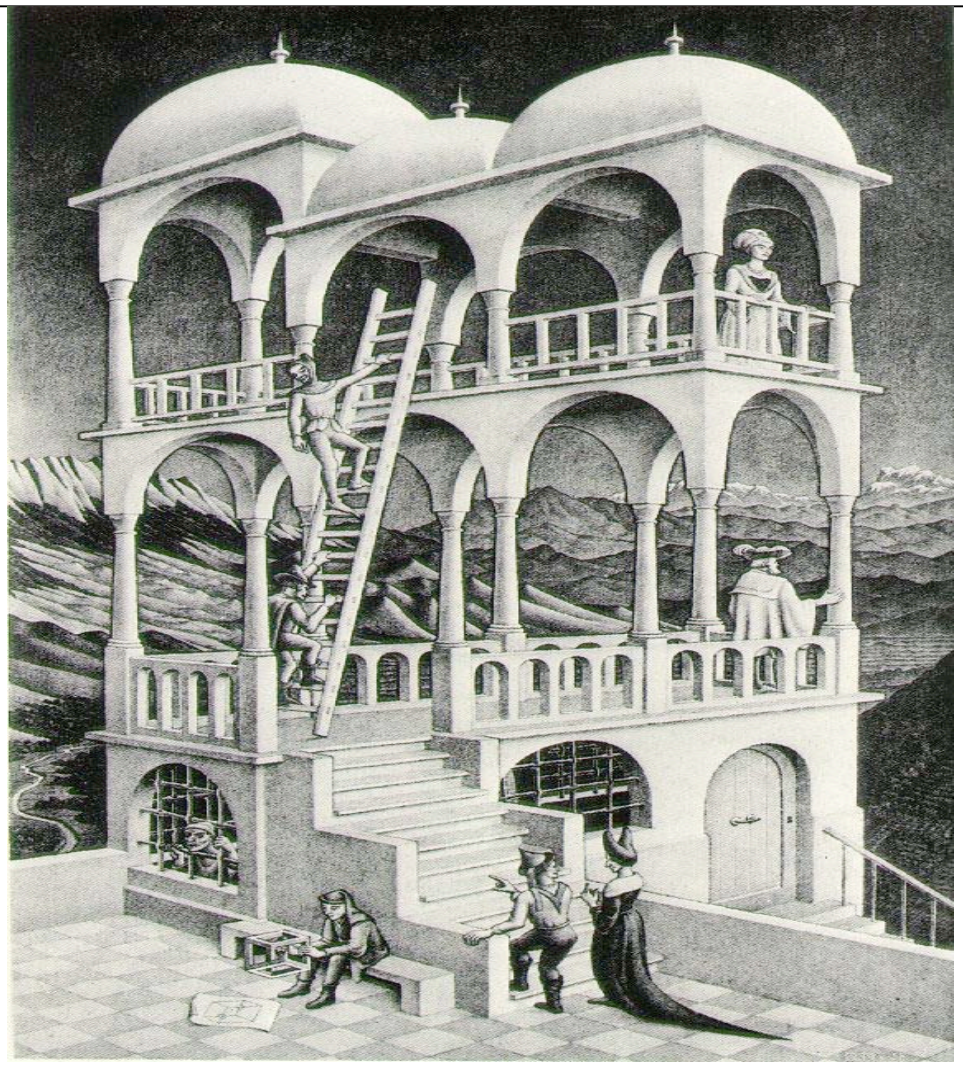
- The whole context often determines how we perceive individual elements:



- Impossible figures are confusing because the separate parts are perfectly logical…
- …but their combination is illogical.

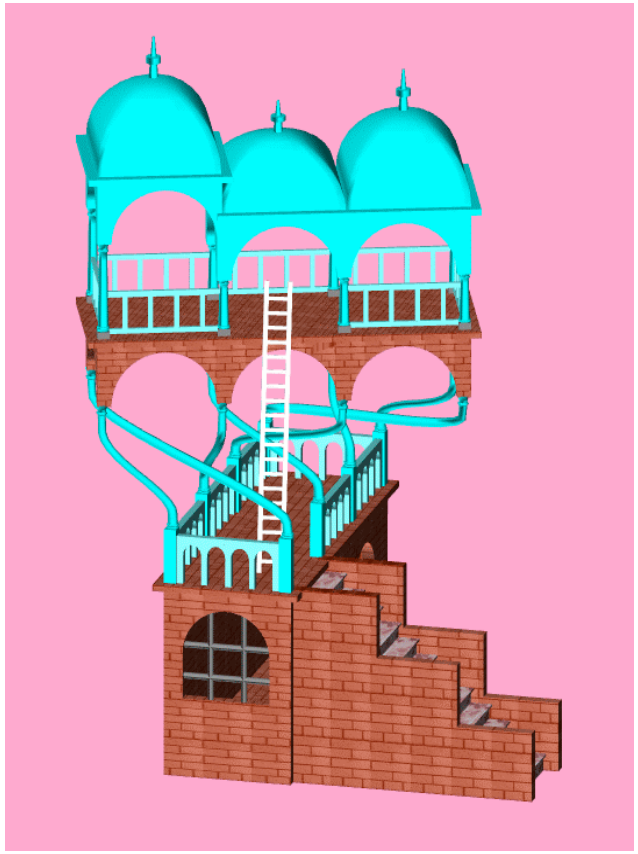
- This kind of illusion concerns the **relations between parts and whole**.





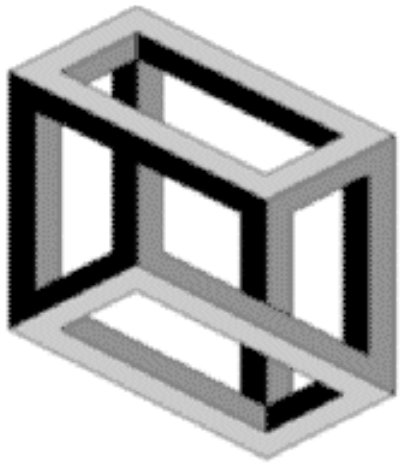
- This is a physical realization of the previous Escher picture.
- It only looks “correct” from one angle.

- If you walk around it, the model no longer makes sense.

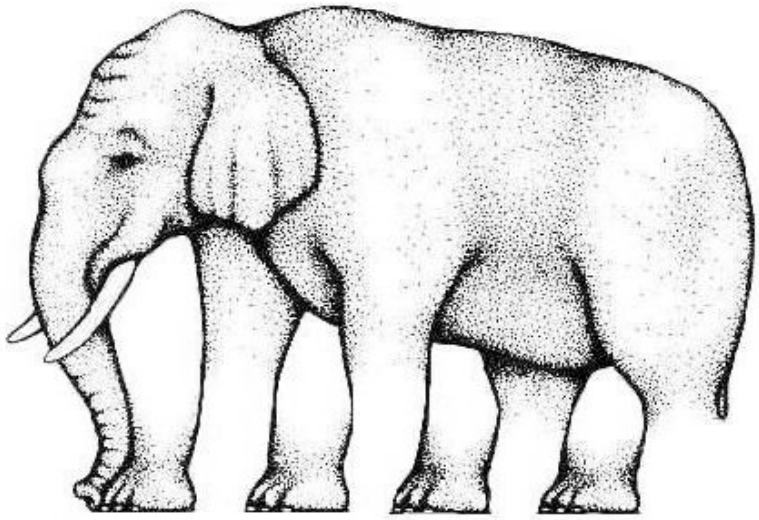


- An impossible figure is physically impossible but looks perceptually convincing.

- Impossible figures are constructed by manipulating part-whole relations.



- Impossible figures



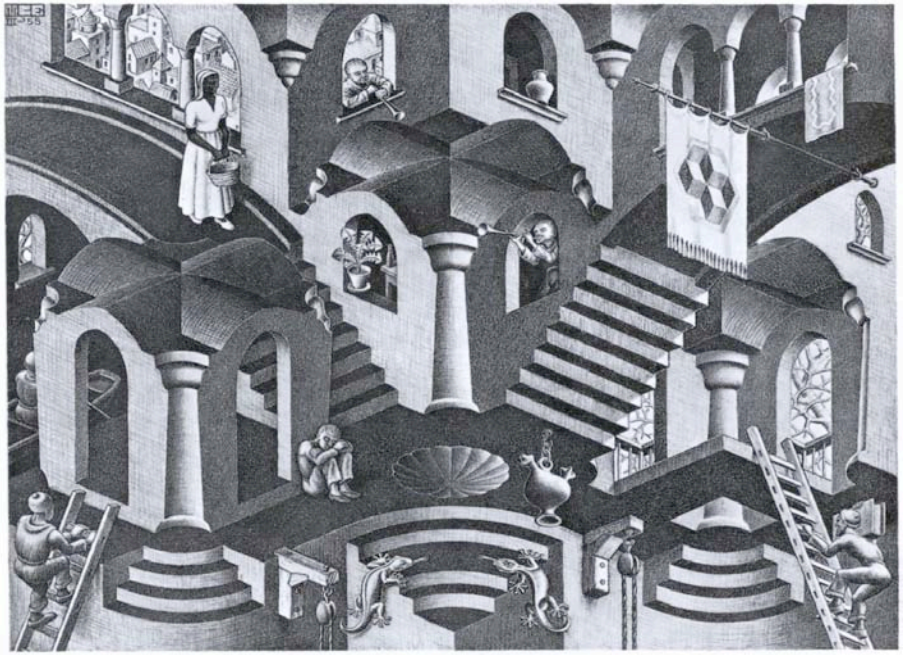
The relations between parts and whole are an important area of art and design.

Magritte:All the individual parts are realistic when seen in isolation…

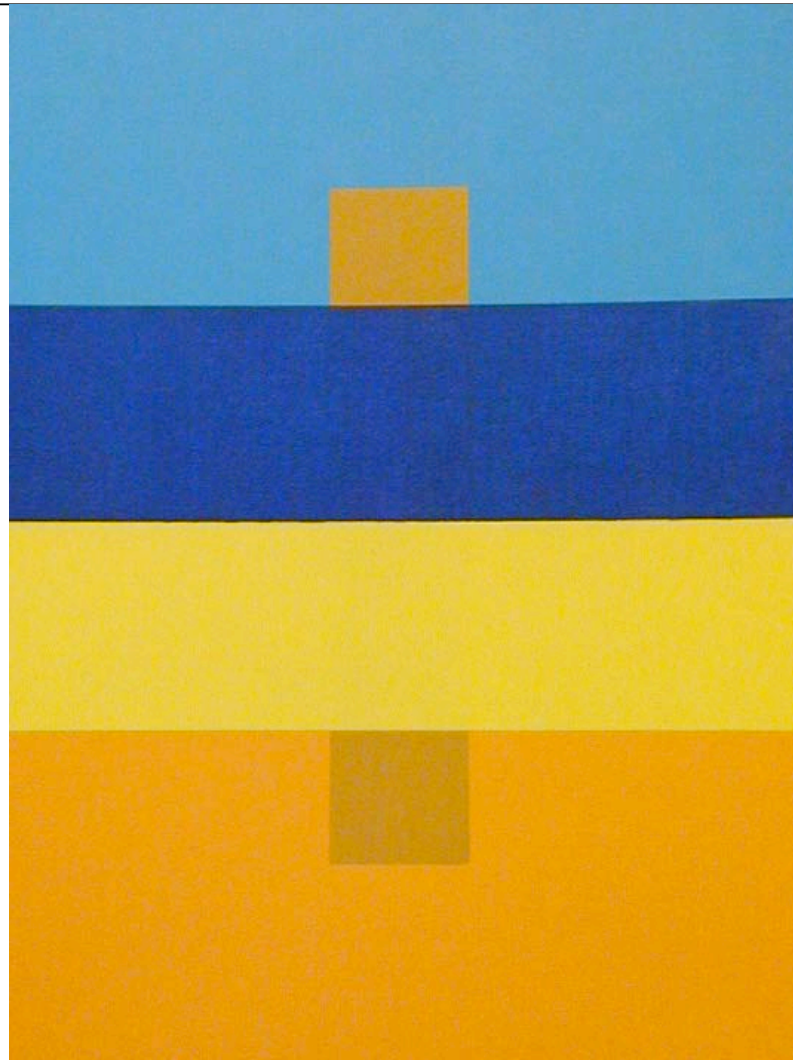
…but their relationships are not realistic!

- **M. C. Escher** manipulated the relationship between part and whole to achieve concave-convex ambiguity.

- Each individual part makes sense, but the whole is ambiguous.



- Another example of how individual parts only make sense in relation to other parts is the perception of color.



- Our perception is directed towards relationships or patterns, not isolated elements.

- The characteristics of individual elements are to a large extent determined by their relations to other elements in the whole pattern.

- Artists can play with part-whole relations to generate impossible, ambiguous, or nonsensical images.