

# SESSION II: VISION SCIENCE

## Why are illusions interesting?

Marialuisa Martelli



Dipartimento di Psicologia  
Sapienza Università di Roma



Dipartimento di Fisica e Astronomia  
Università degli Studi di Firenze





*Afrum* (James Turrell 1967, Guggenheim Museum, NY)



The fake dome by Andrea Pozzo, on the left the experience from the optimal viewing position. Sant' Ignazio di Loyola, 1626-1685.

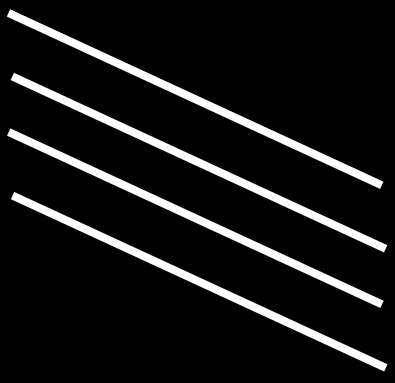


The painting adds a second plane in height and then a third with the sky. However the architectural structure ends after the windows.

The columns appear perpendicular to the walking floor but they are actually painted on the ceiling parallel to the floor.

Andrea Pozzo, Sant'Ignazio di Loyola, 1626-1685

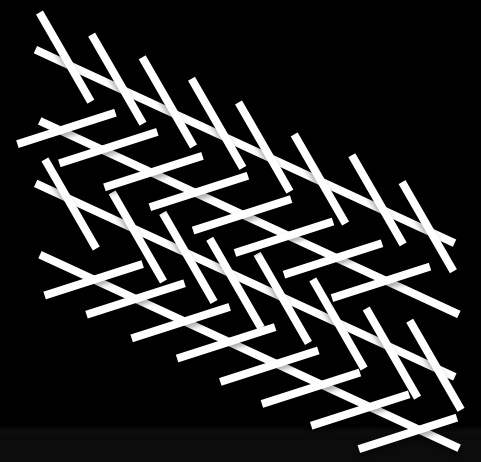
DISTAL



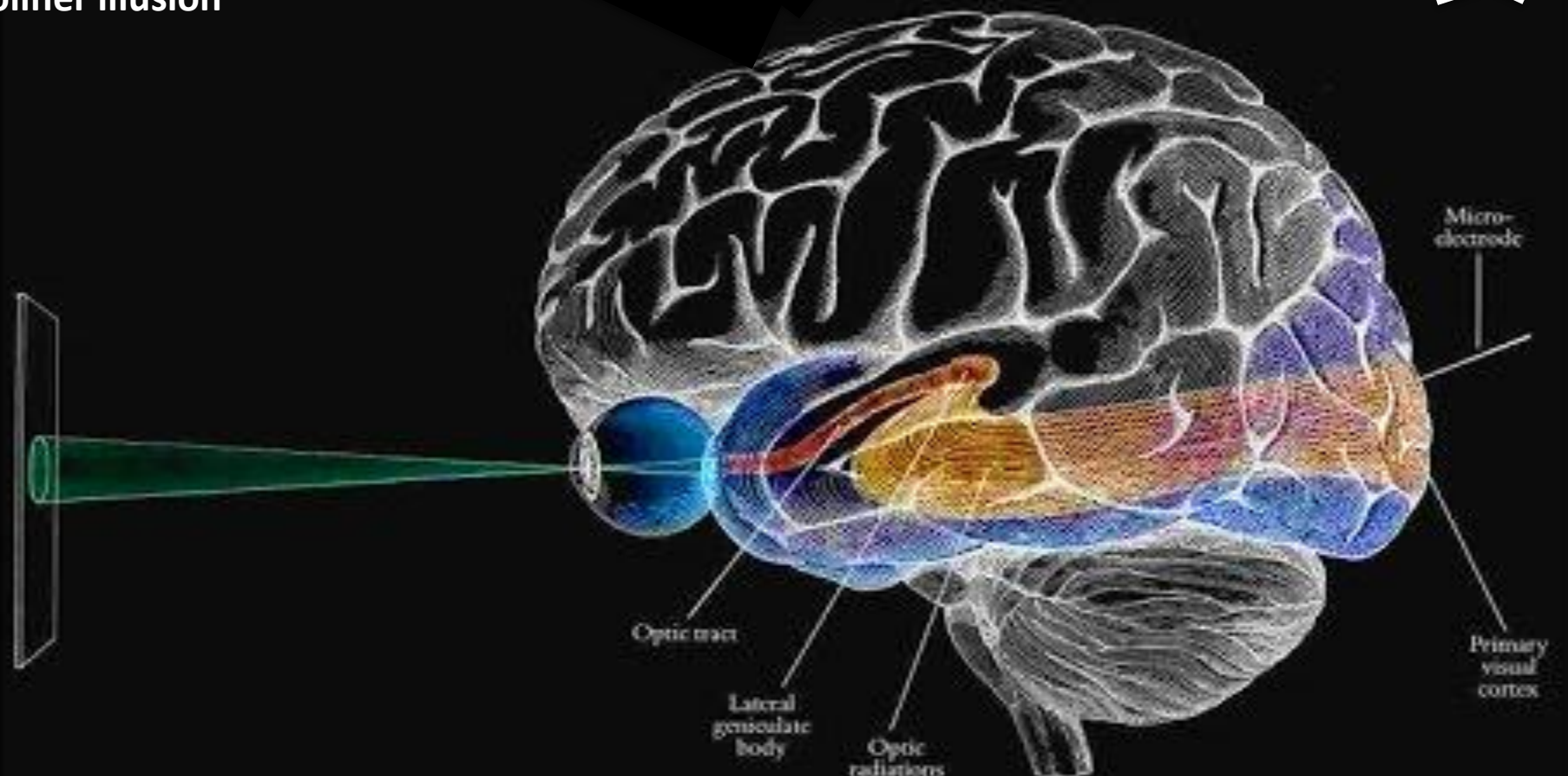
PROXIMAL



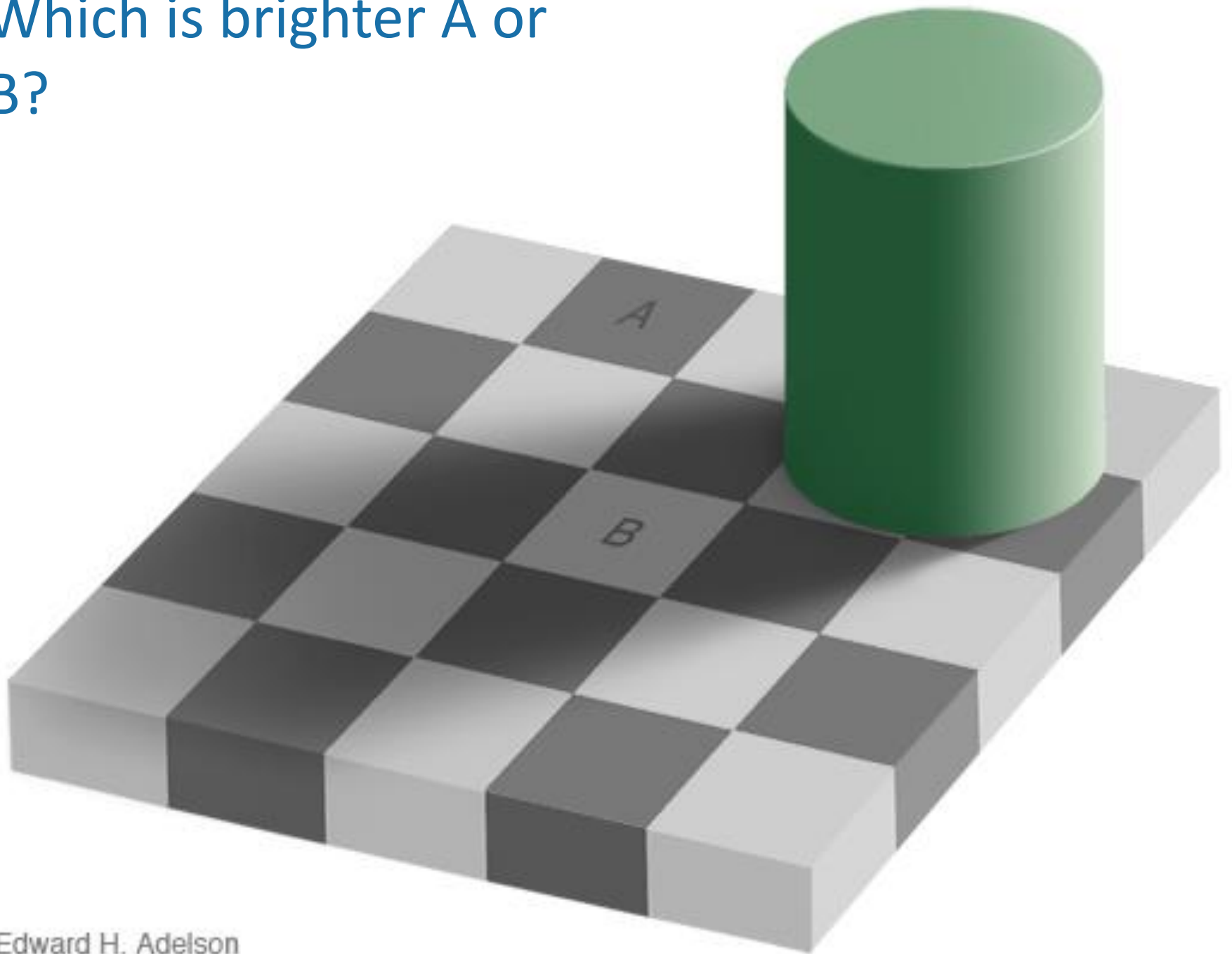
PHENOMENOLOGICAL

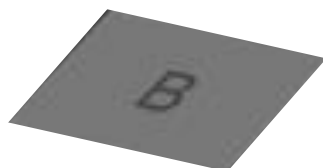
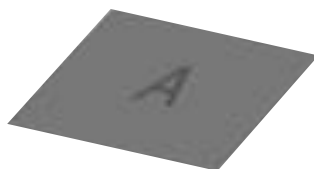


Zöllner illusion

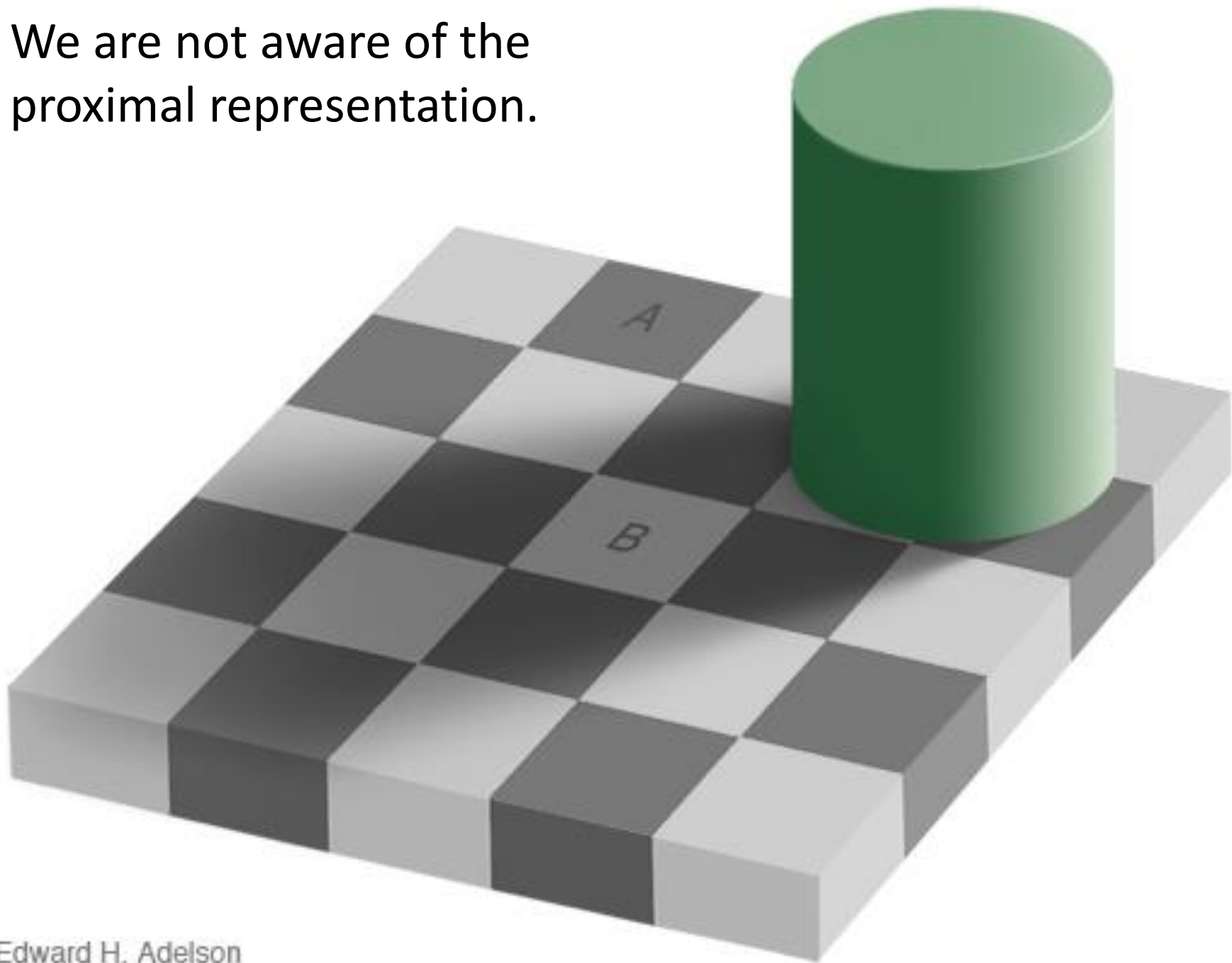


Which is brighter A or B?





We are not aware of the proximal representation.





# Constancy - size



# Constancy

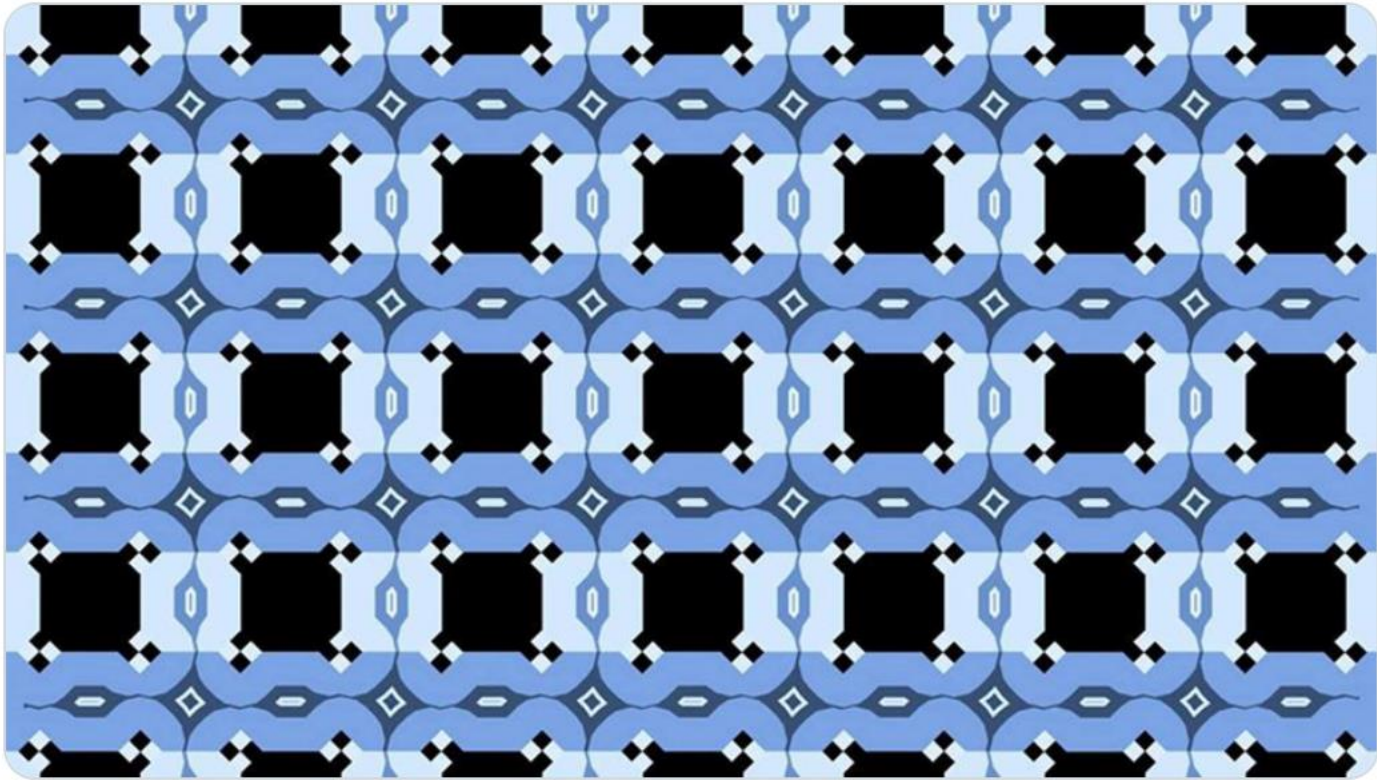


Krantz, 1999

The  
intriguing  
case of  
ambiguous  
figures.

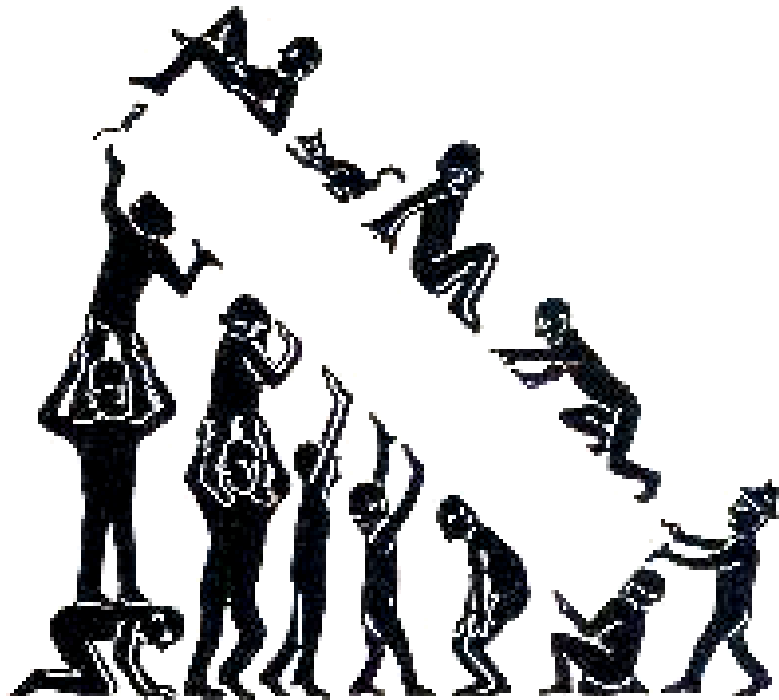


# Illusion can distort what we perceive



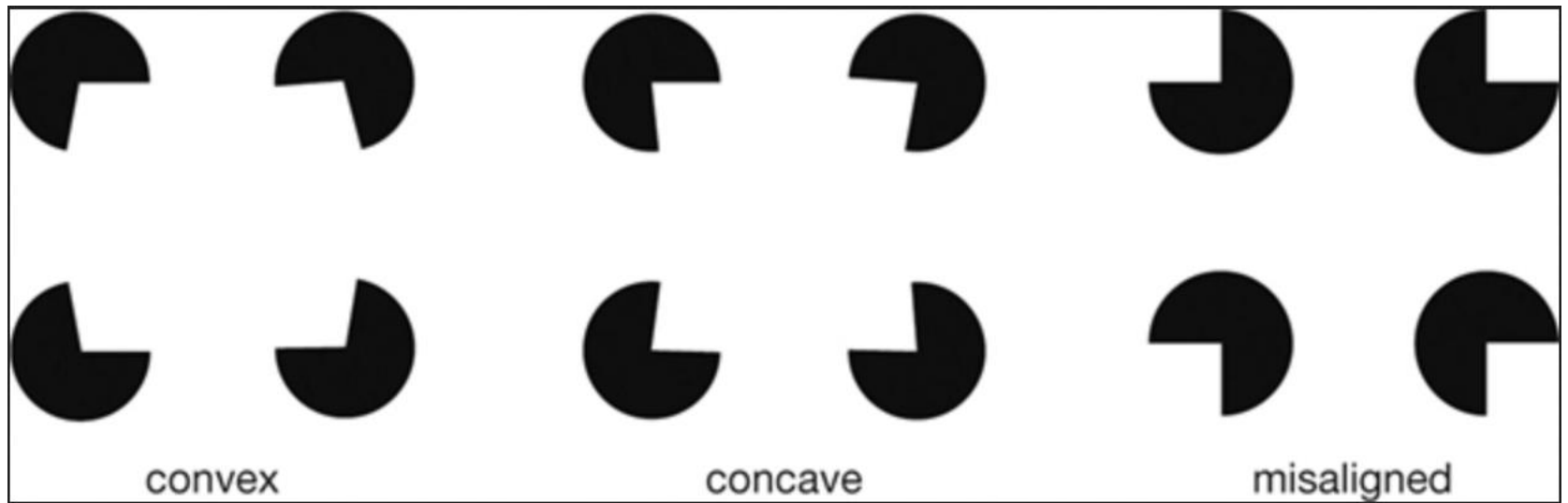
Café wall illusion

Illusion can make us perceive something that is not there.

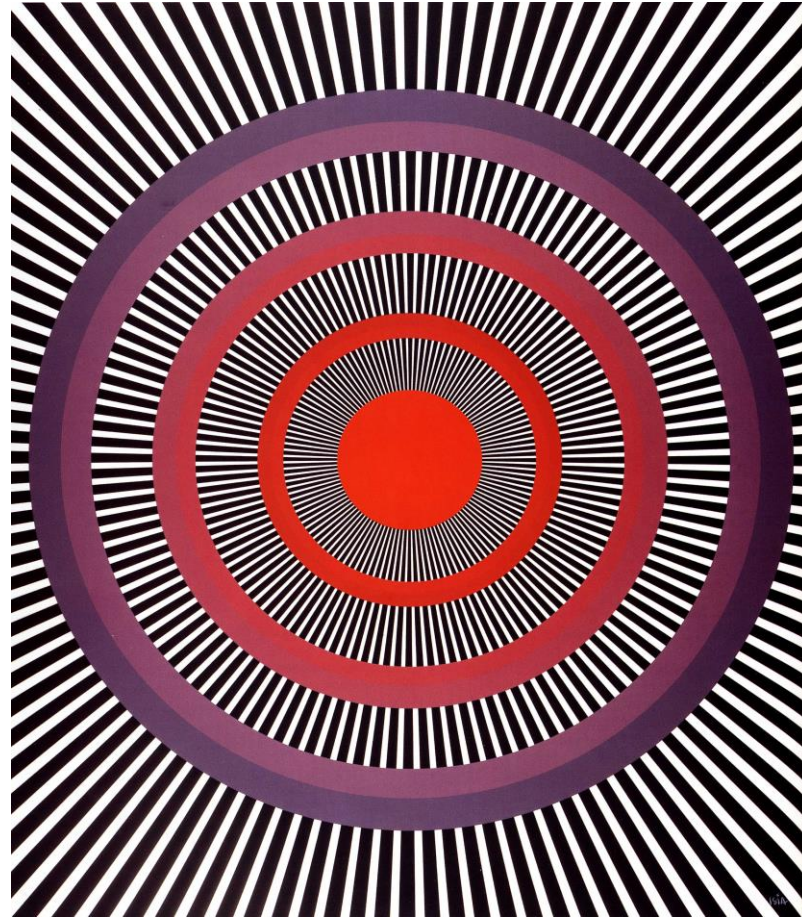


Bonaiuto private drawings collection..

Illusion can make us perceive something that is not there.

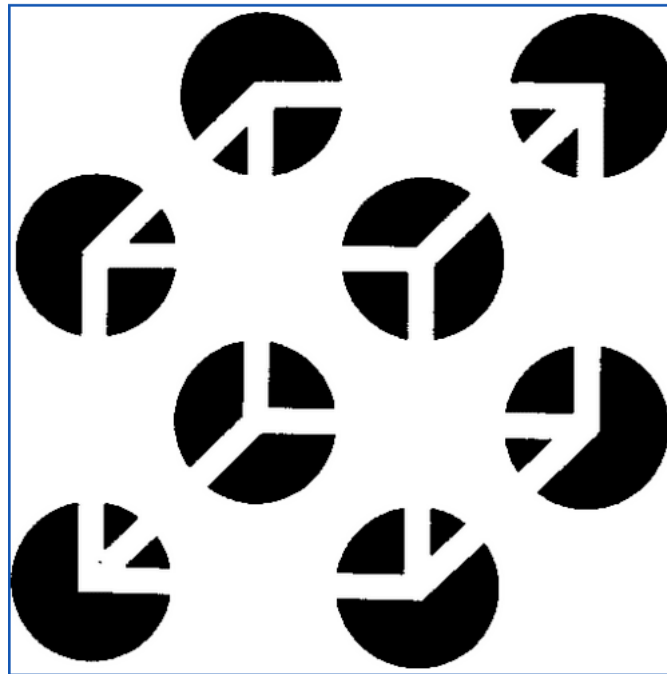


Illusion can make us perceive something that is not there.



“The Enigma”, Isia Leviant , 1981.

Illusion can make us perceive something that is not there.

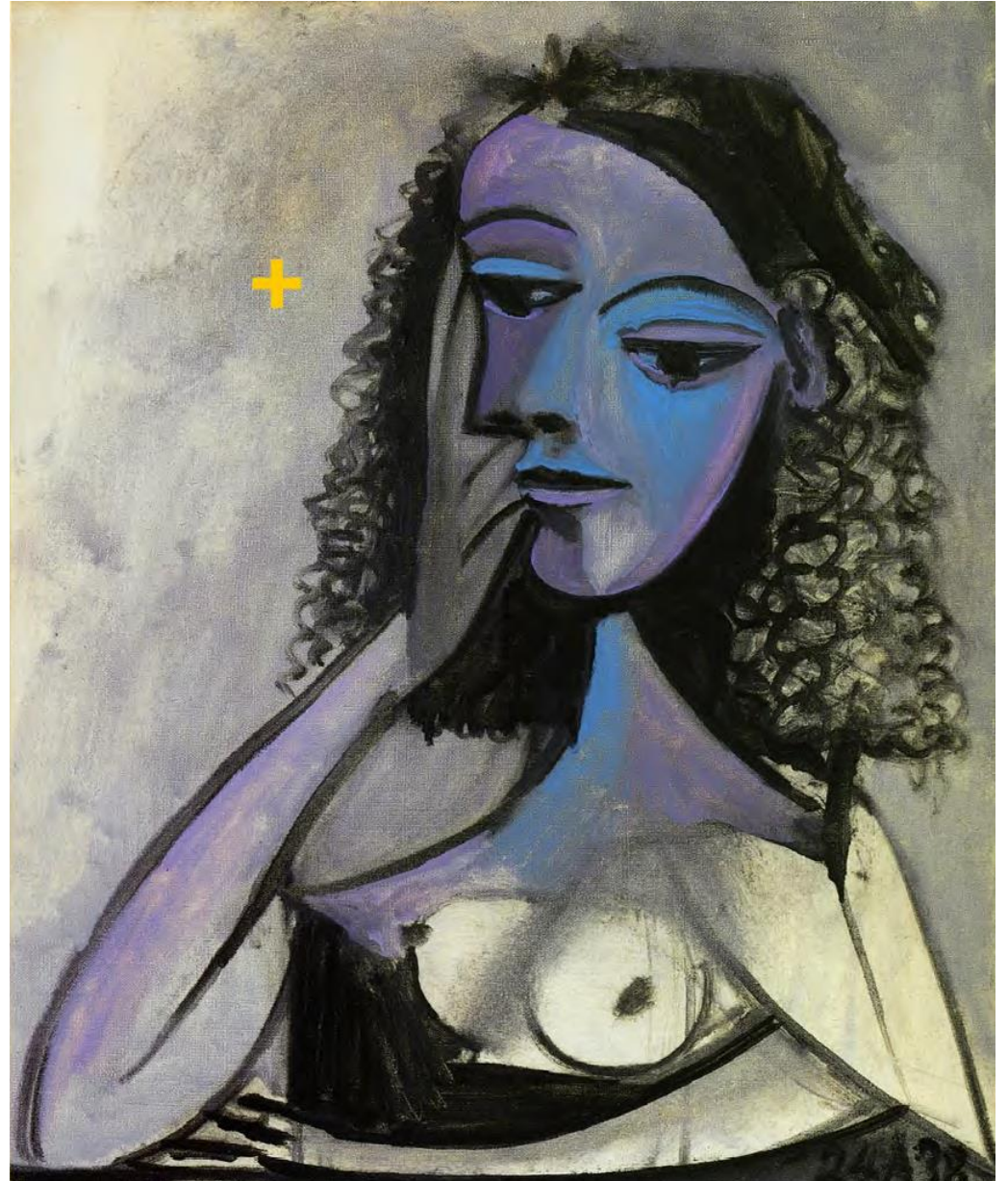


Illusory Necker cube.



Illusion can impair our ability to recognize what is actually presented.

Look at Ms. Eluard directly, she appears grotesque. Now fixate on the yellow plus she looks marvellous.

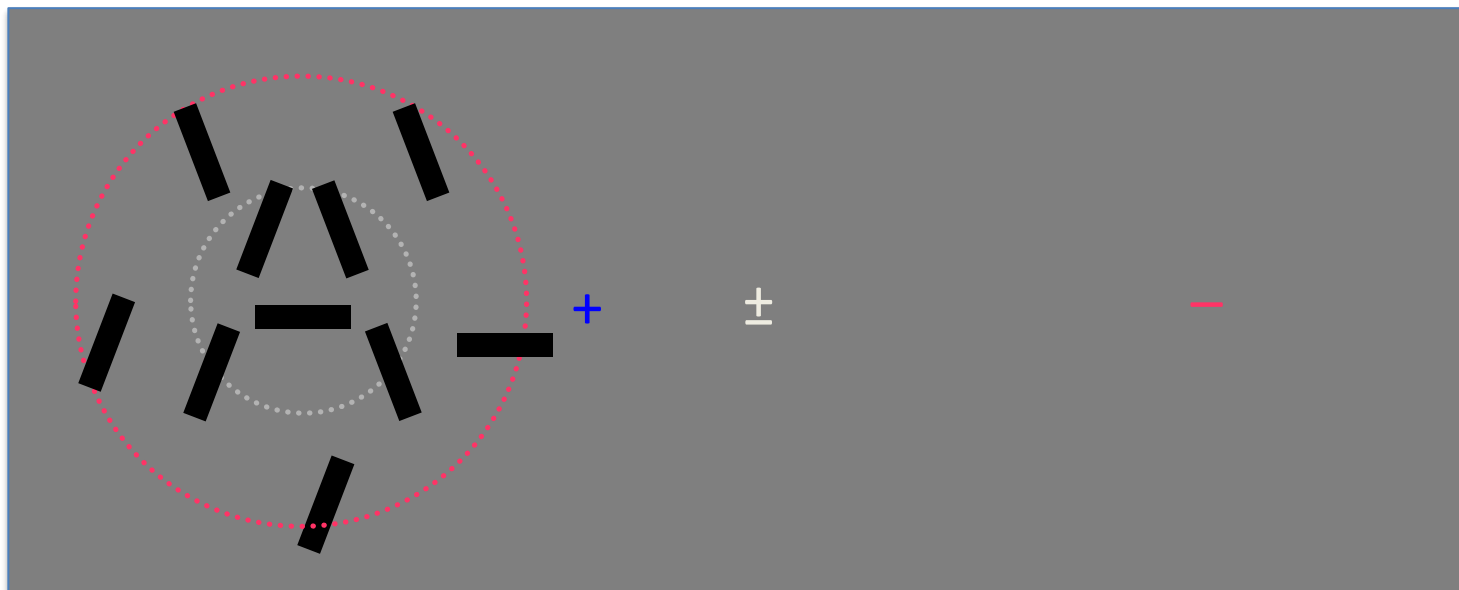


Ms. Éluard, Picasso.

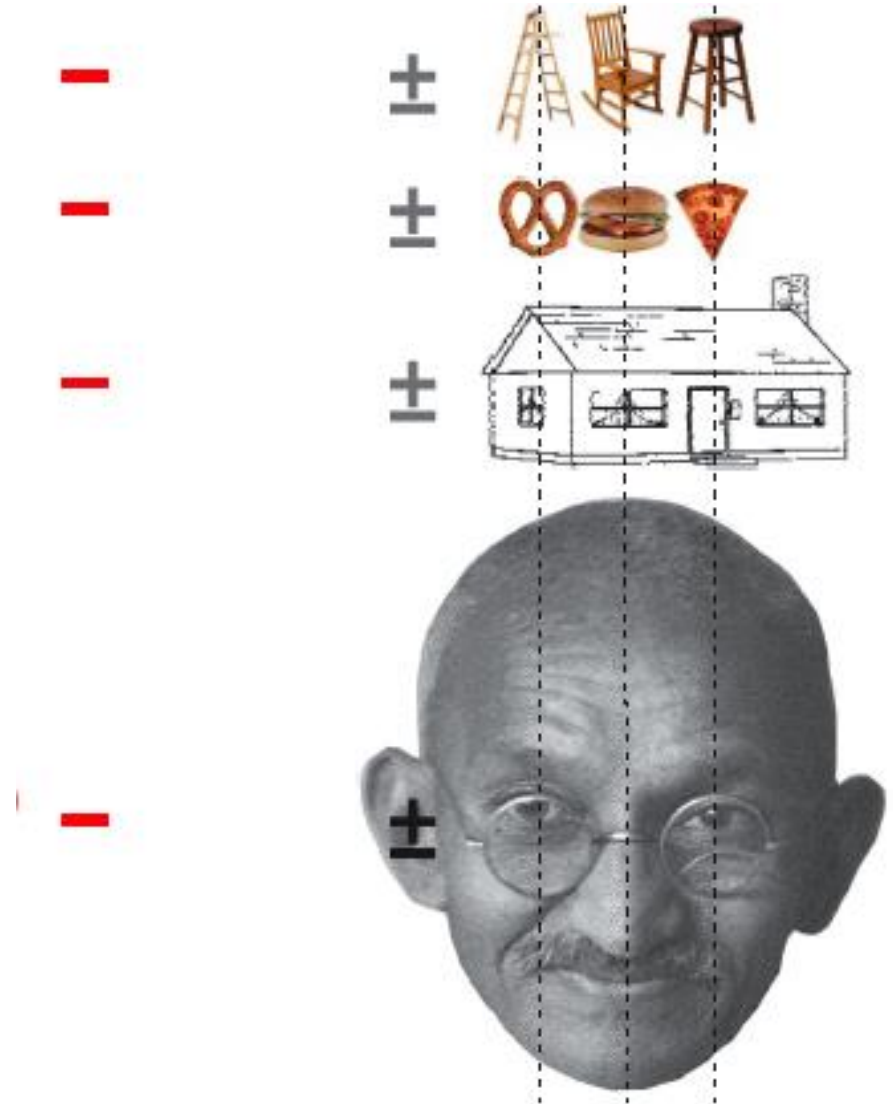
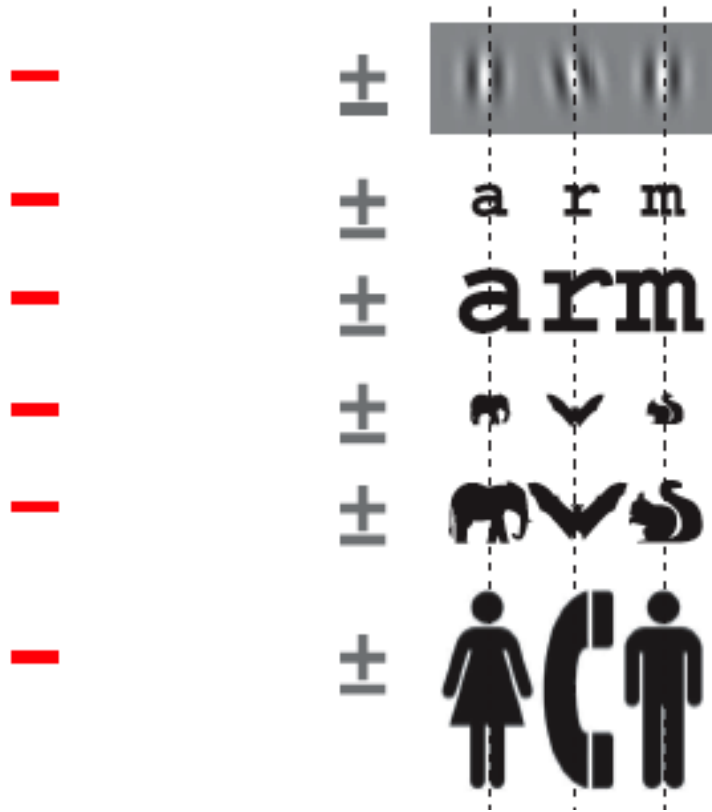
Identify the letter



Identify the letter

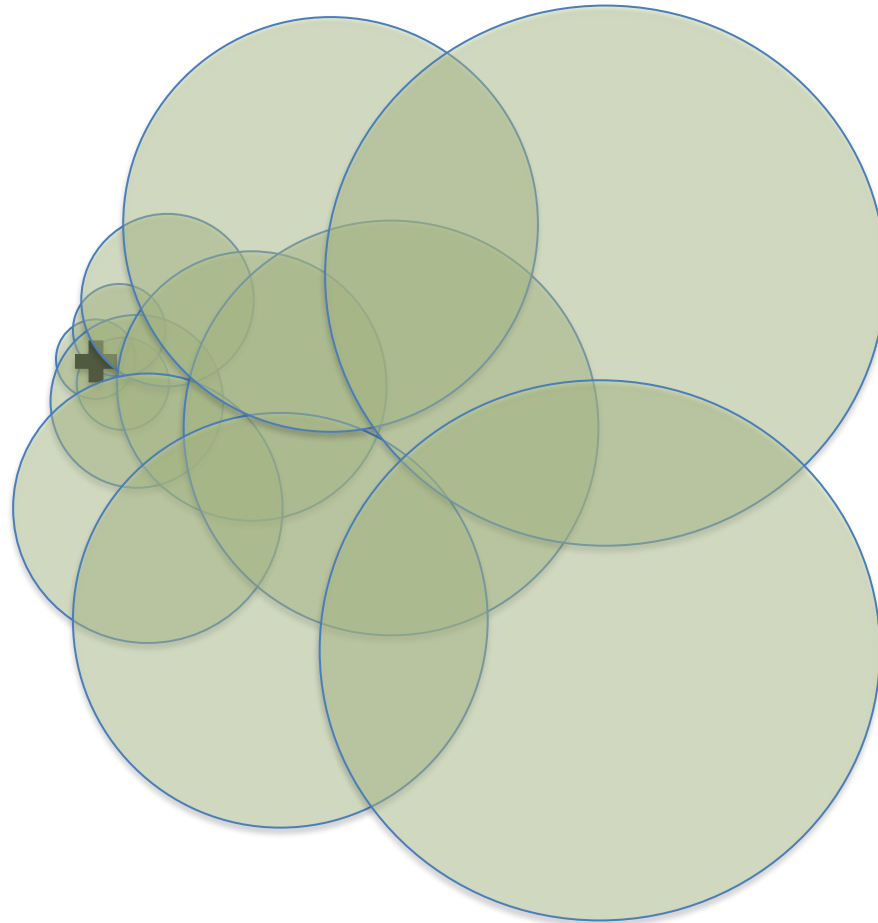


# This limitation is not task specific

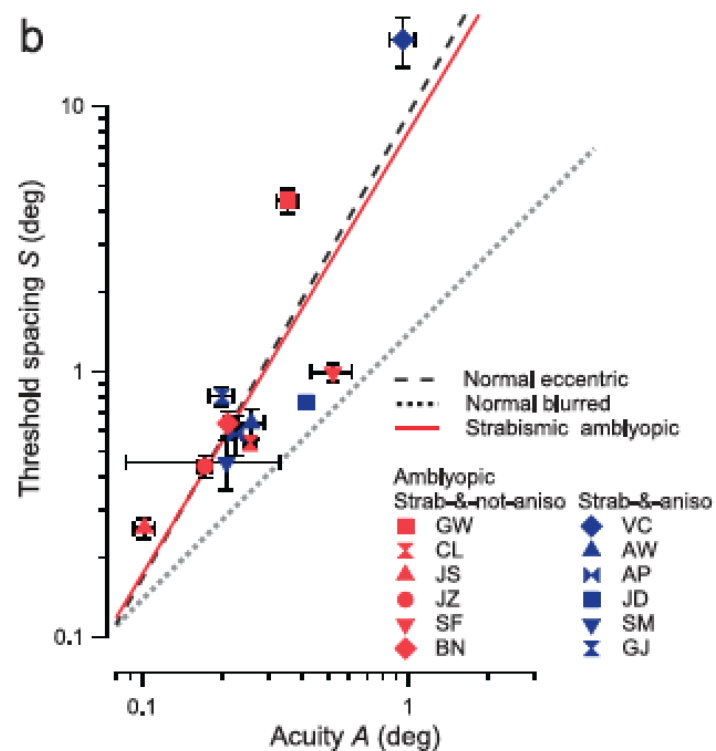
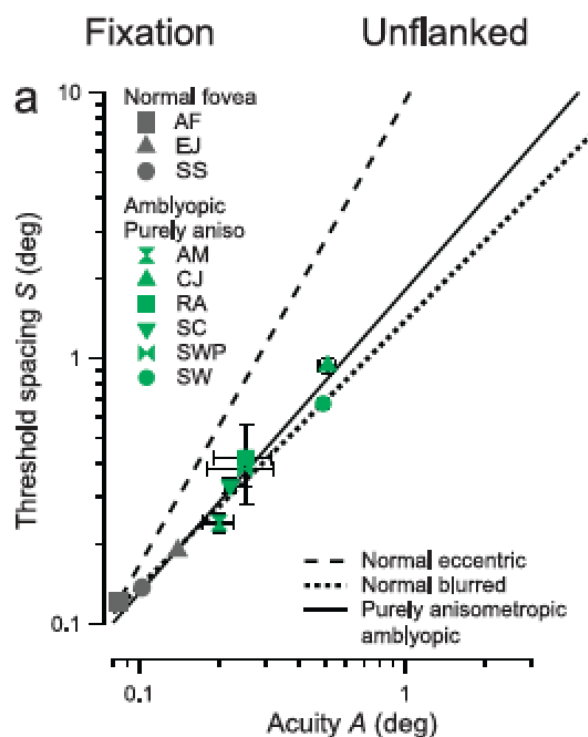


Studying these phenomena reveals the computation and the neural structures involved.

This phenomenon describes the integration regions that tile up our visual field and allow/prevent object recognition.



Findings maybe essential in understanding the mechanisms compromised in different pathologies.

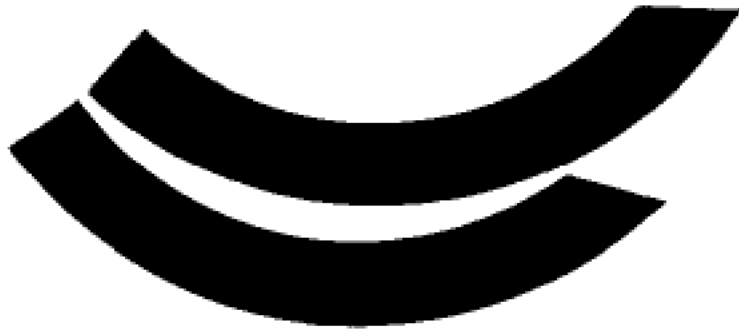


# Finally illusions can be used for clinical assessment

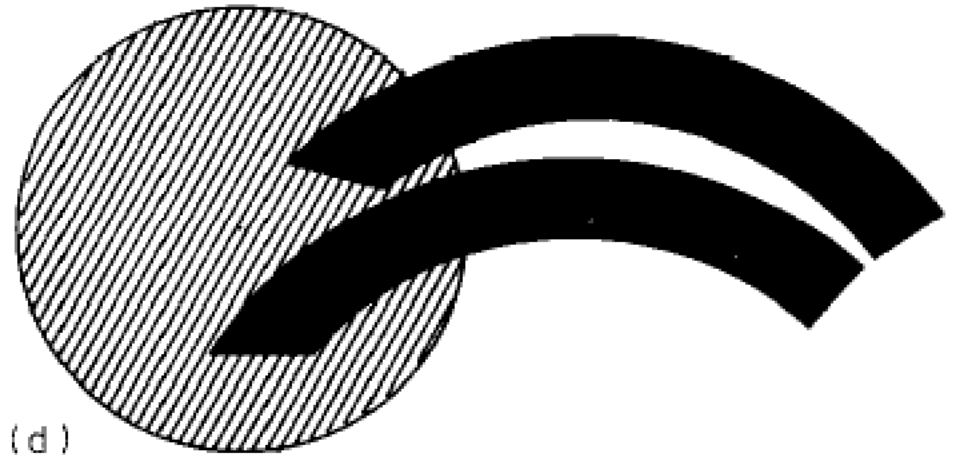


The Wundt-Jastrow illusion

# A clinical test to detect Unilateral Spatial Neglect



(c)



(d)



# Summing up!

The experience of the world is indirect and mediated by the proximal description.

In some circumstances the experience is misleading, ambiguous or erroneous.

The study of these phenomena can:

- Characterize the typical processing computation
- The atypical processing
- Develop diagnostic tools

...by the way

An accidental viewpoint is a viewpoint providing a highly unusual, perhaps unique perspective.

