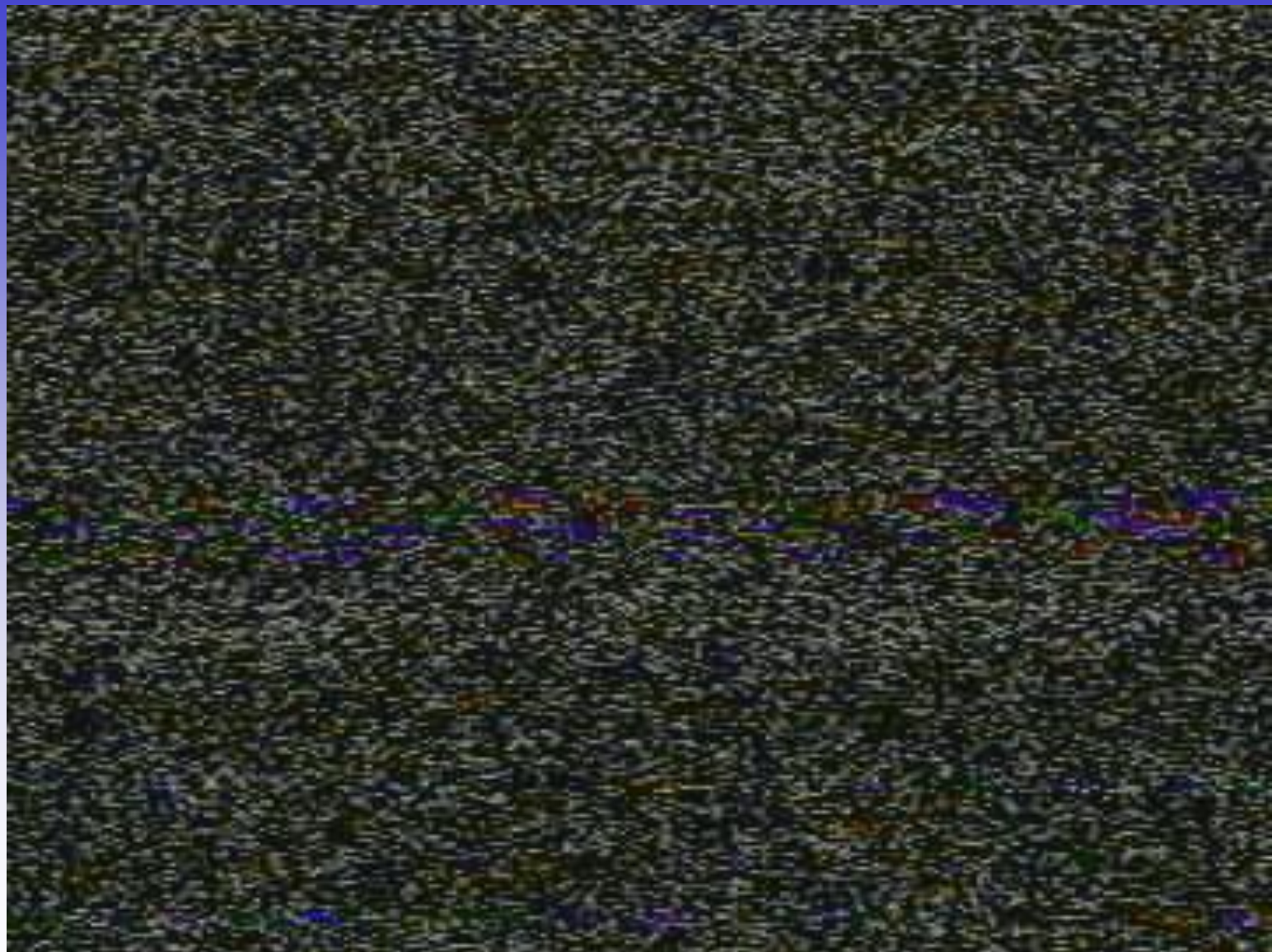


Visual Perception

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Ladies and gentleman

The year 2001 has come and gone

Why the heck am I still doing the dishes?

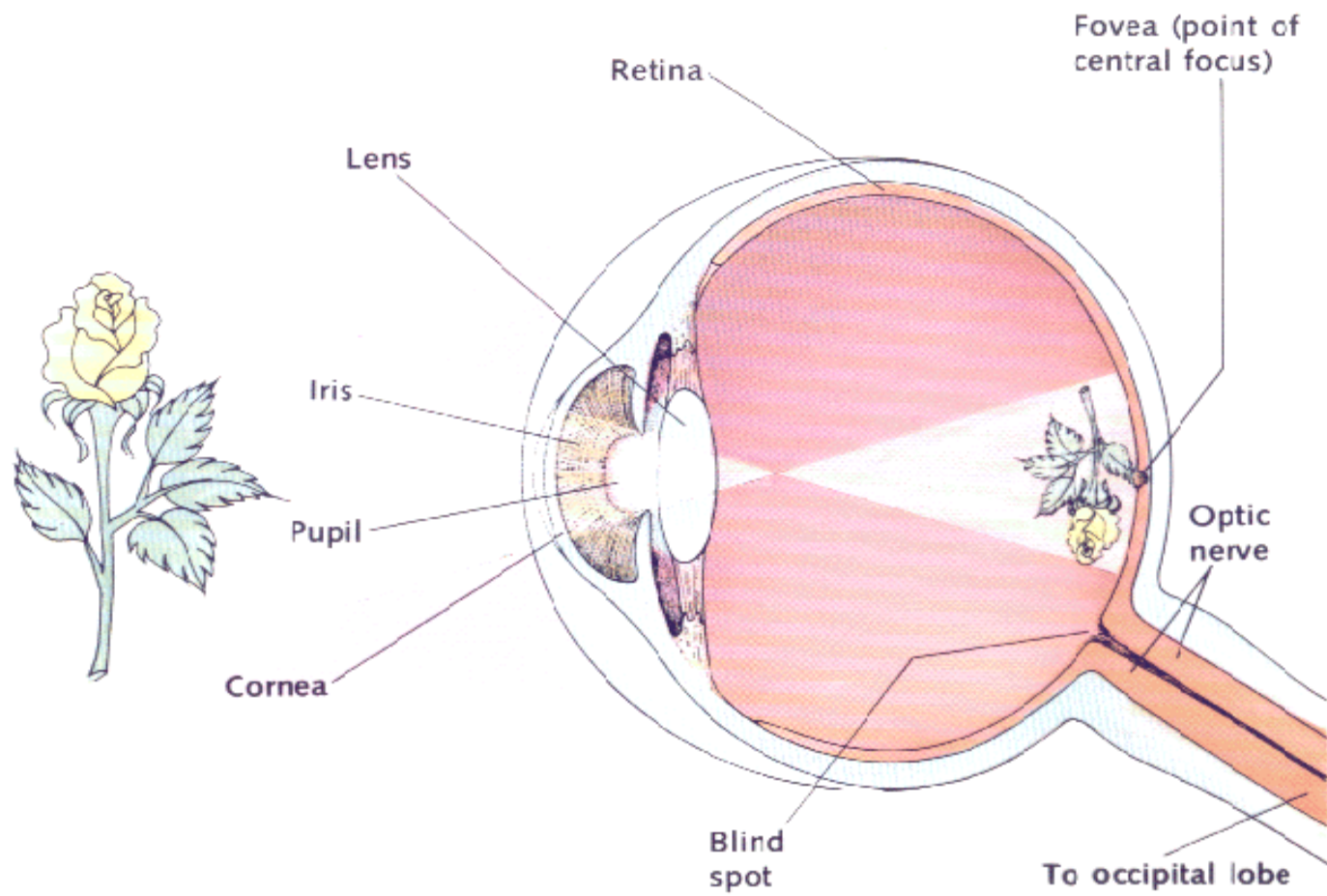
Make me a robot ..

- All Richard O'Brien (Rocky Horror) wanted was a deltoid and a bicep, a hot groin and a tricep.
- All I want is something that will do the dishes for me.
- Tell me four useful stages that a “sense” needs to achieve?

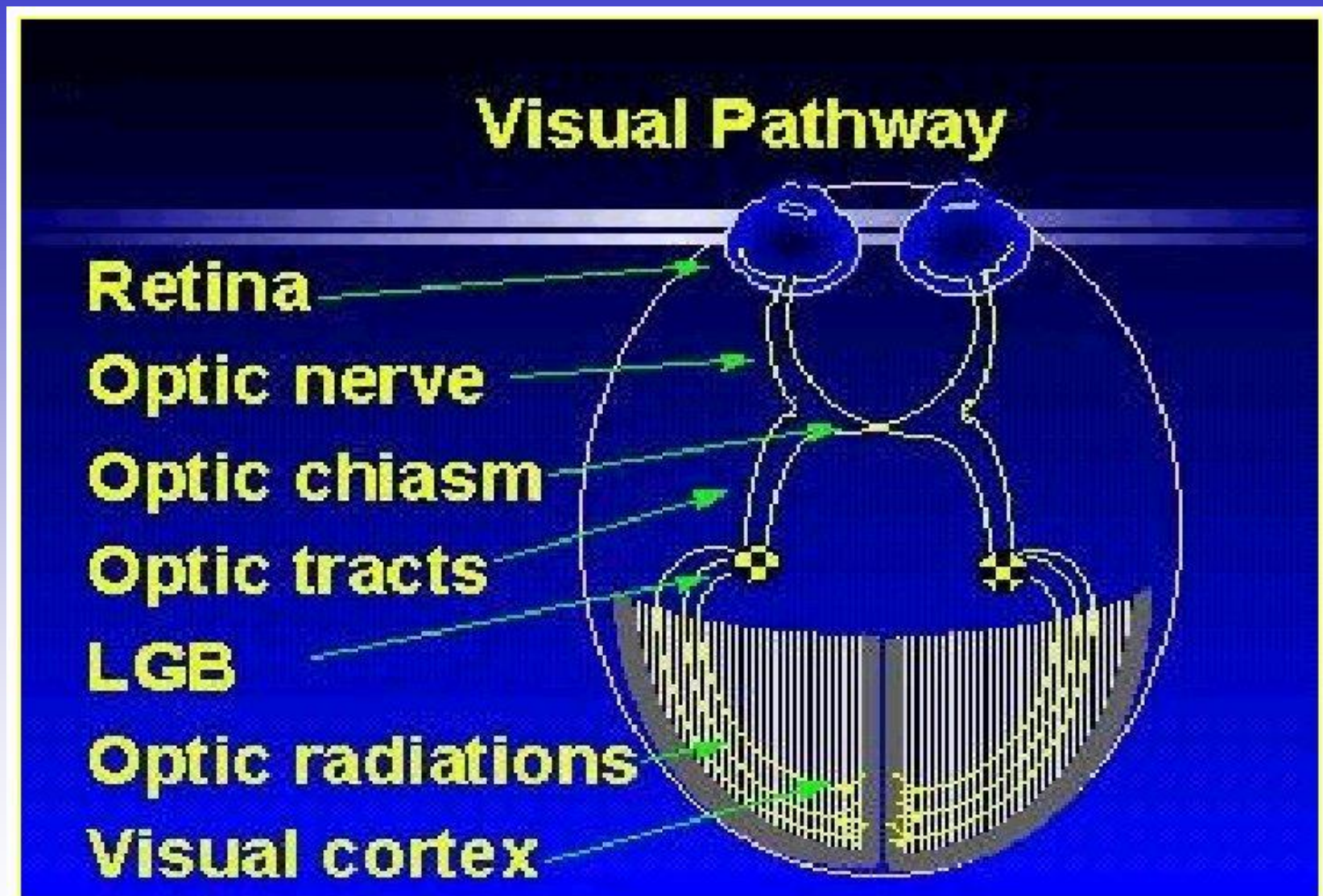
Basic Attributes of the senses

- Detection
- Discrimination
- Scaling
- Recognition

P **Physiological and**
E **Experimental**
R **Research with**
C **Children,**
E **Exceptions**
P **Primates**
T **Top-down/Bottom-up**
I **Information Processing**
O **Object Recognition**
N **Nature/Nurture**



Ipsilateral and Contralateral connections



Gestalt Psychology

Figure and Ground

Similarity

Proximity

Closure

Good Continuation

Maximum Likelihood Principle

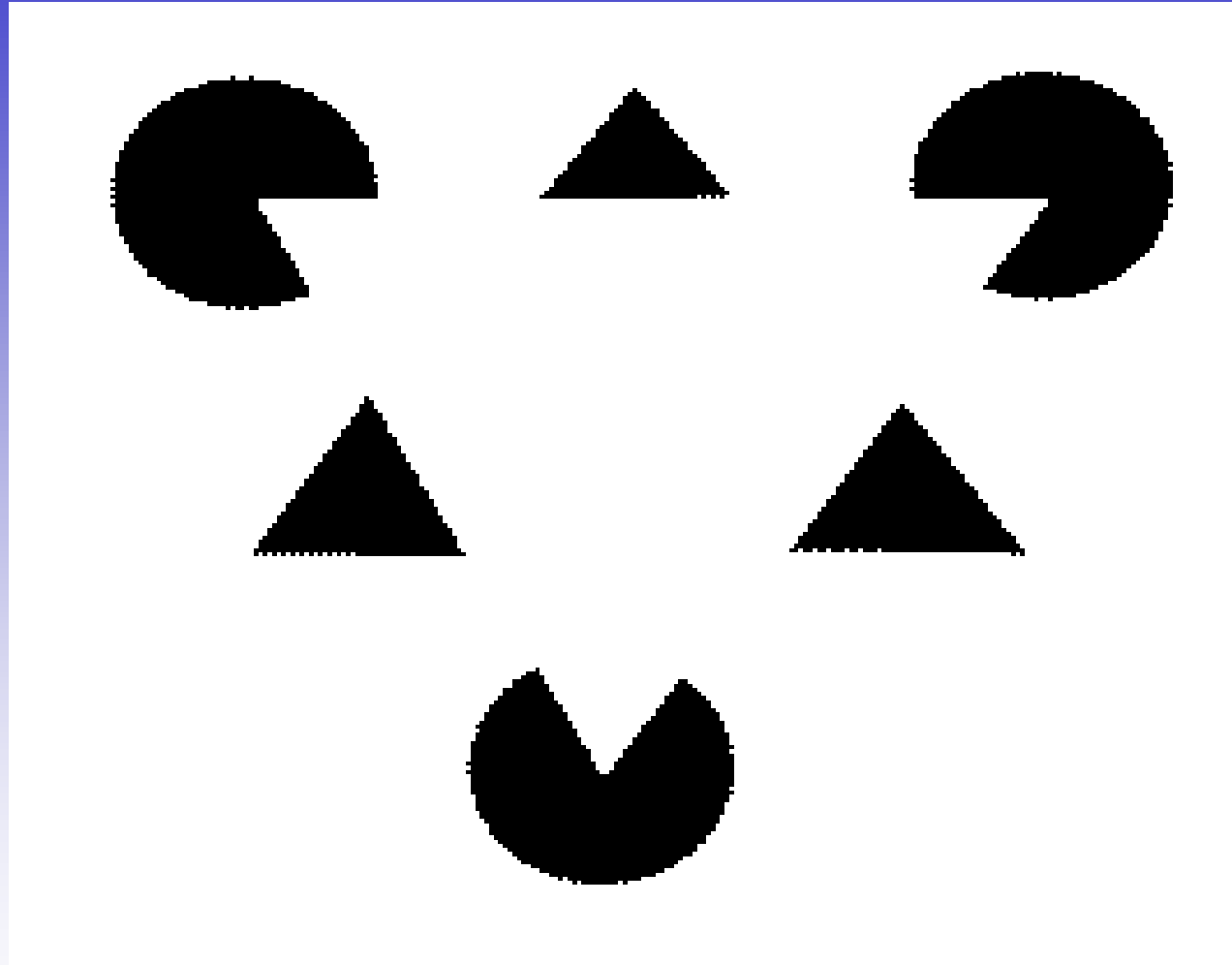
Function:- Perceptual Grouping

Parts of the image are seen as belonging together.

The parts are likely to arise from the same object.

“The whole is greater than the sum of the parts.”

Gestalt - Maximum Likelihood Principle



Does Gestalt work “physiologically”?

Secondary Visual Cortex (V2)

von der Heydt, Peterhans

Cells selective for edges defined by Gestalt grouping e.g.:-

- Good Continuity

- Closure

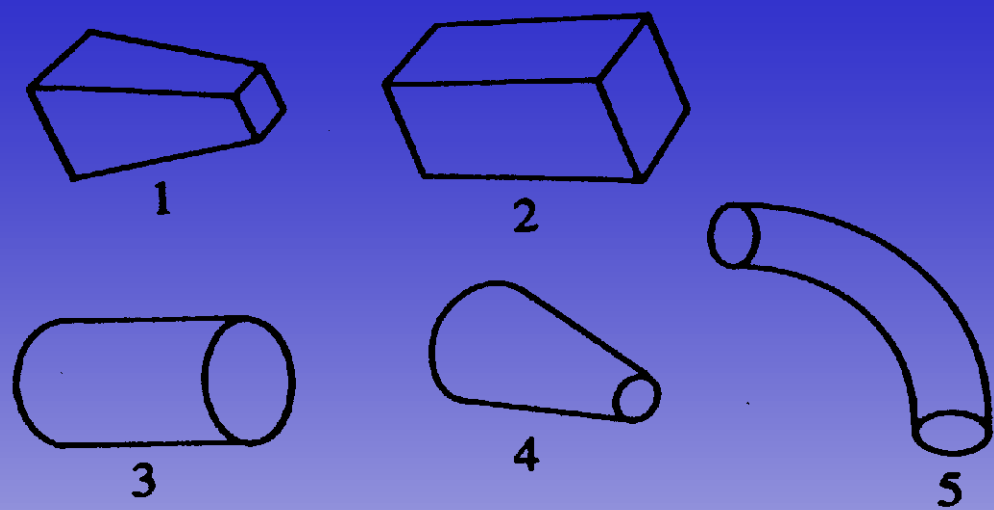
Damage to V2 can impair perception of Gestalt grouping by

- Good Continuity

- Closure

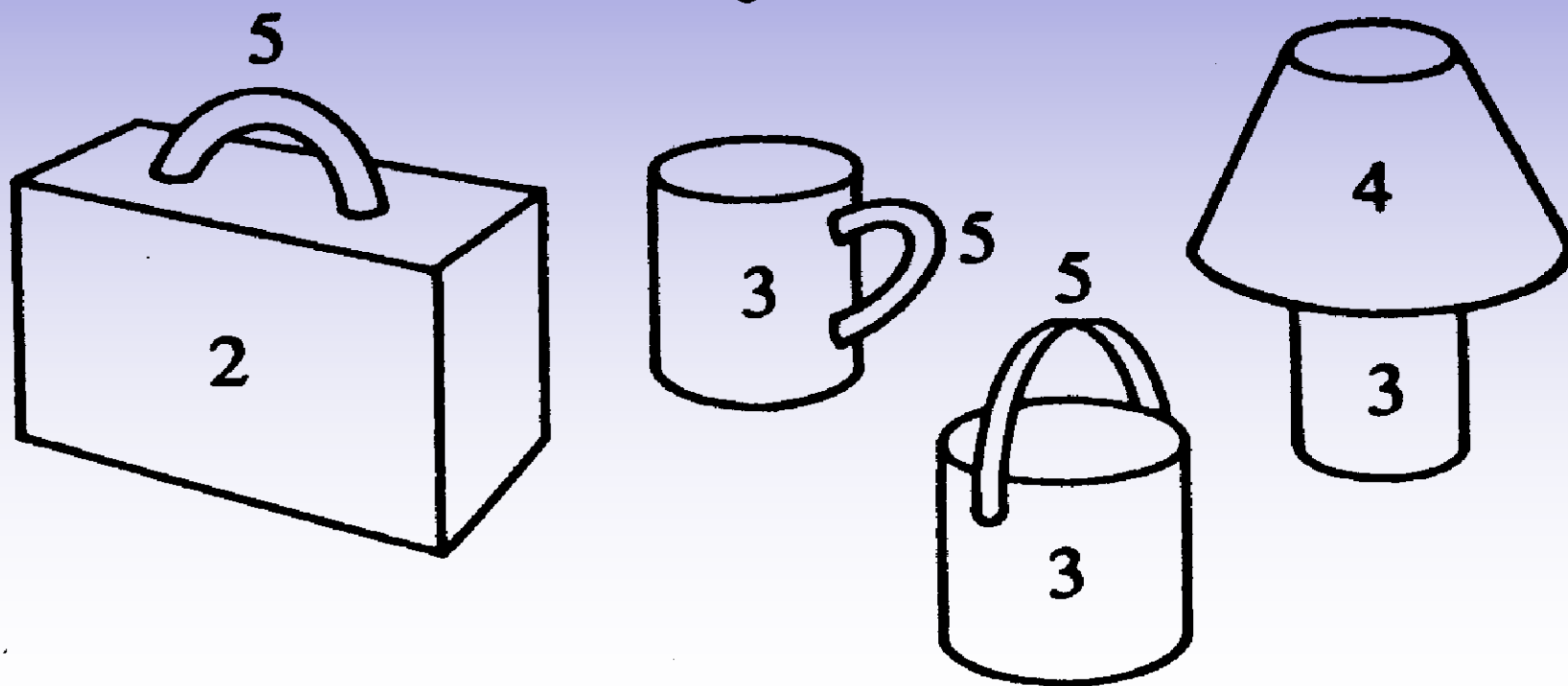
- Similarity

- Proximity



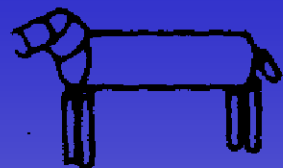
B

Objects

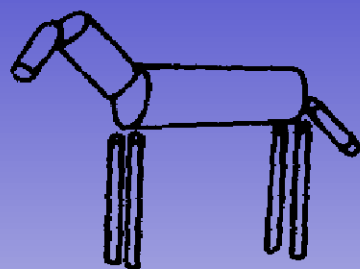




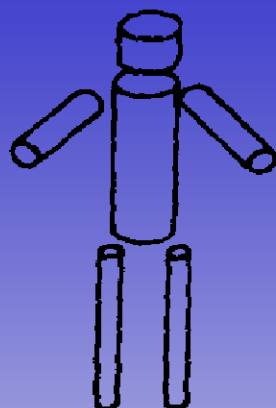
thick limb



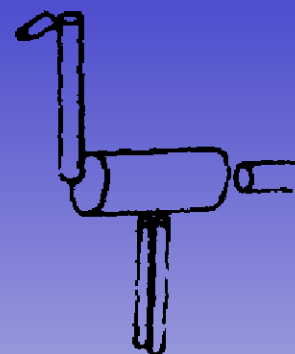
cow



horse



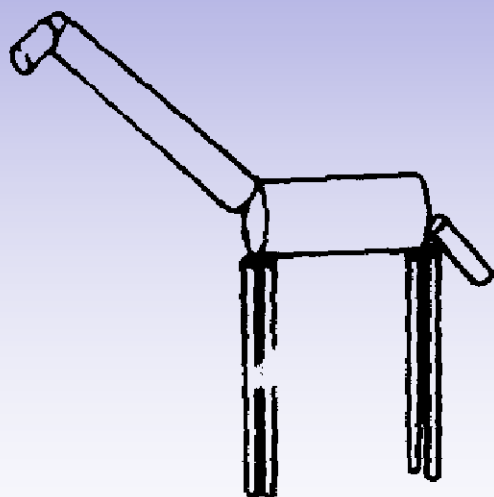
human



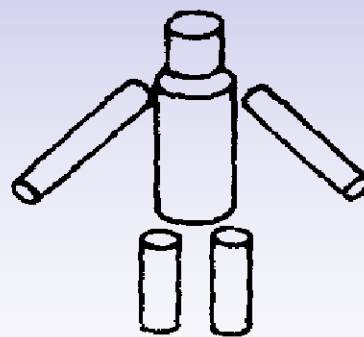
ostrich



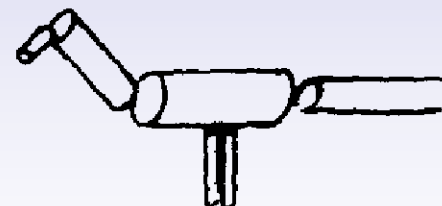
thin limb



giraffe



ape



dove

Monocular

Height in field of view
Geometrical perspective
Texture gradient
Size of familiar objects
Occlusion or overlap
Blurring and increase
of blueness
Shadow

Accommodation

Vertical gaze angle

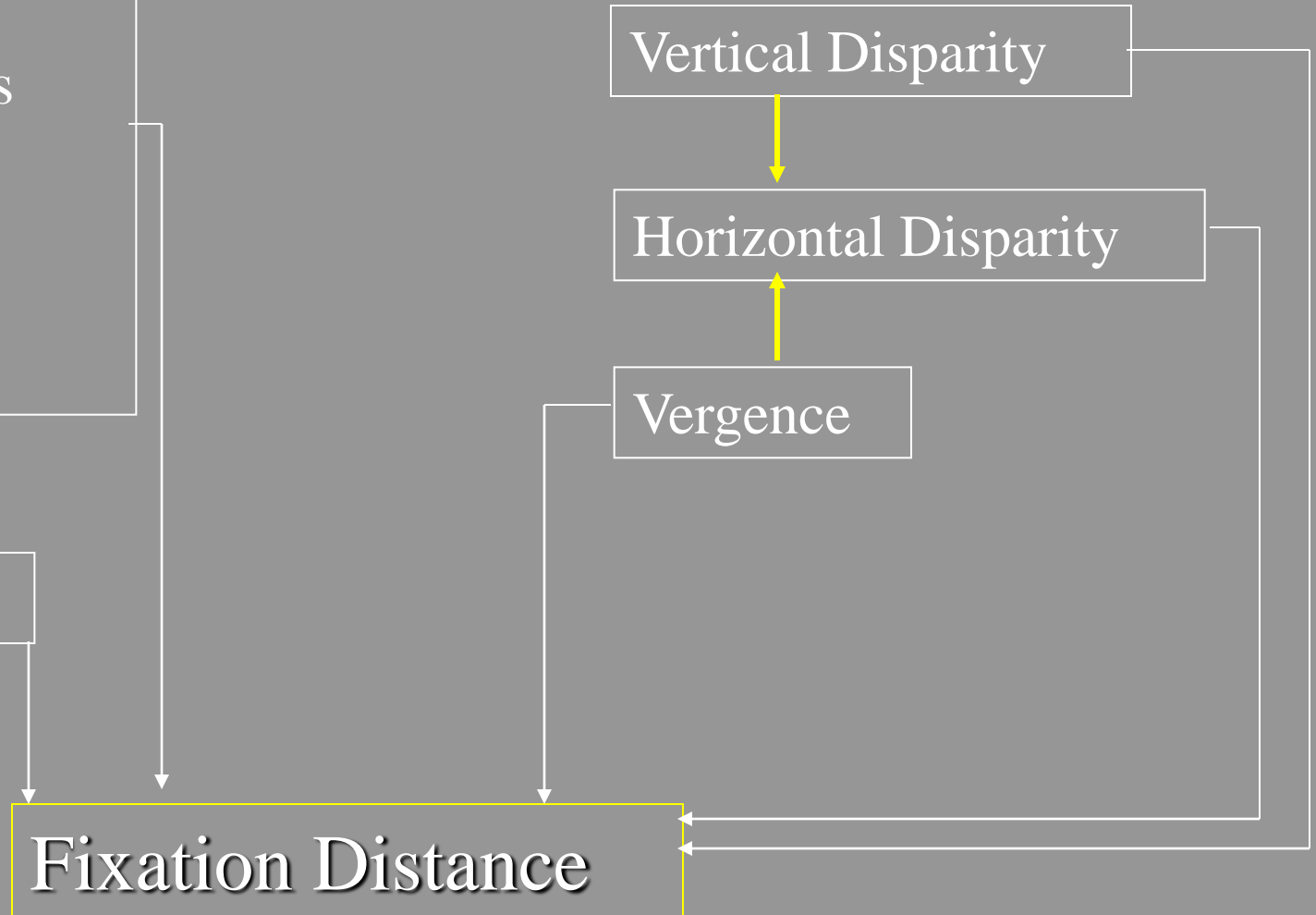
Fixation Distance

Binocular

Vertical Disparity

Horizontal Disparity

Vergence





Source:
Gustave Caillebotte

Size constancy



Size constancy



Illusions:

Time

Brightness after effect

Colour after effect

Motion after effect

Orientation after effect

Size

Ponzo

Muller-Lyer

Ames room

Ambiguous Figs

Necker cube

Figure ground reversal

Space

Brightness contrast

Land colours

Motion contrast

Orientation contrast
(e.g. Zollner illusion)

Impossible figures

Penrose Triangle

Escher's prints

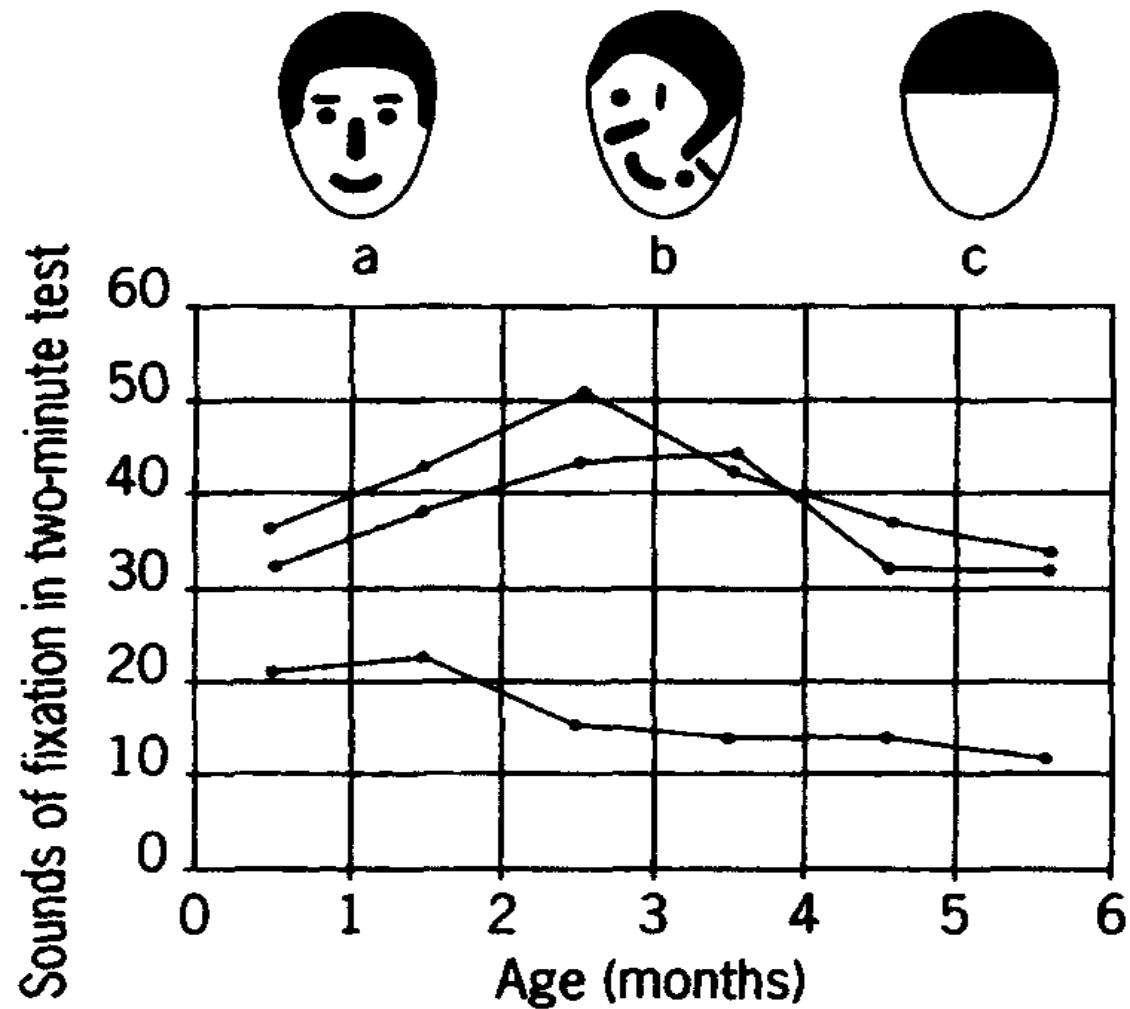


Figure 3.3 Looking times for each of the stimuli used in Fantz's study of the perception of faces (from Fantz, 1961).

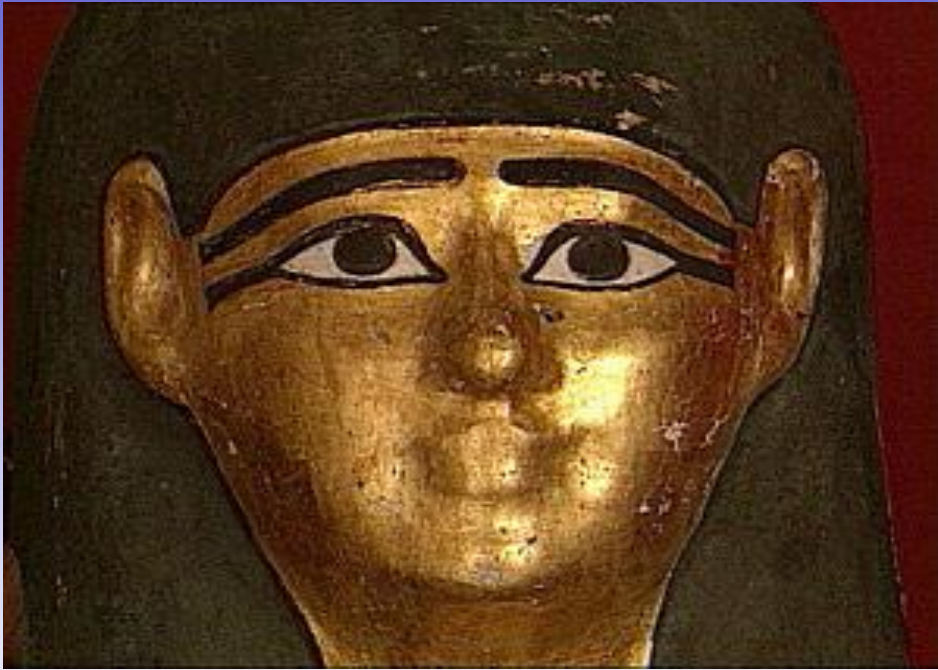
The Thatcher Illusion





- Features analyzed independently
- Each coded relative to gravity

The Art of Illusion - The Death Mask of Hor



Visual cues to face recognition

Features

Internal features (eyes, mouth, nose, etc)

External features (hair)

Configuration (all the features have to be in the right place)

Familiar and unfamiliar faces

External features more important for unfamiliar faces

Internal features more important for famous faces

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