

The Art and Science of Depiction

*Limitations of the Medium,
compensation or accentuation*

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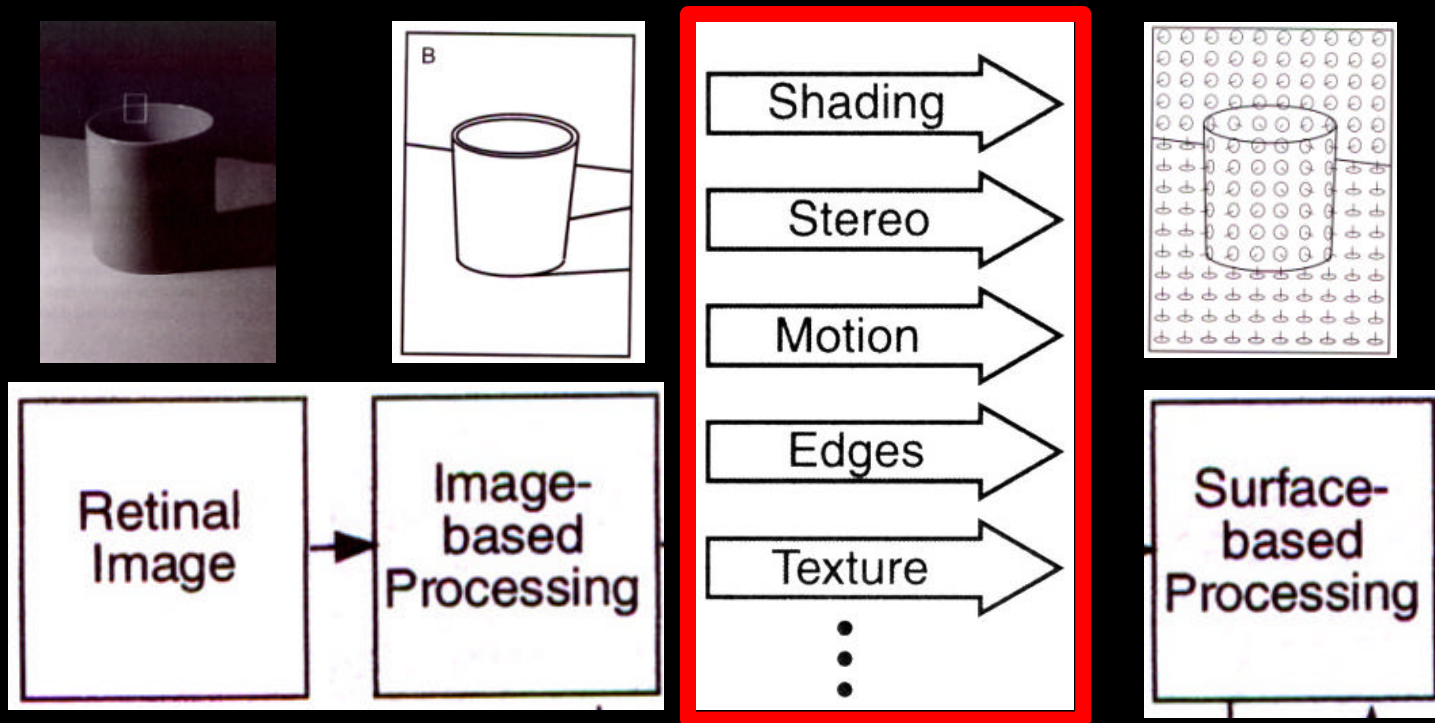
Plan of the next sessions

- The picture is flat
- The viewpoint is unique
- The image is finite, it has a frame
- The picture is static
- The contrast is limited
- The gamut (palette) is limited

The image is flat

Surface-based

- Visible surfaces, organization
- Distance, orientation



Depth cues

- Binocular
- Monocular
- Dynamic
- Pictorial

- Unconscious inference

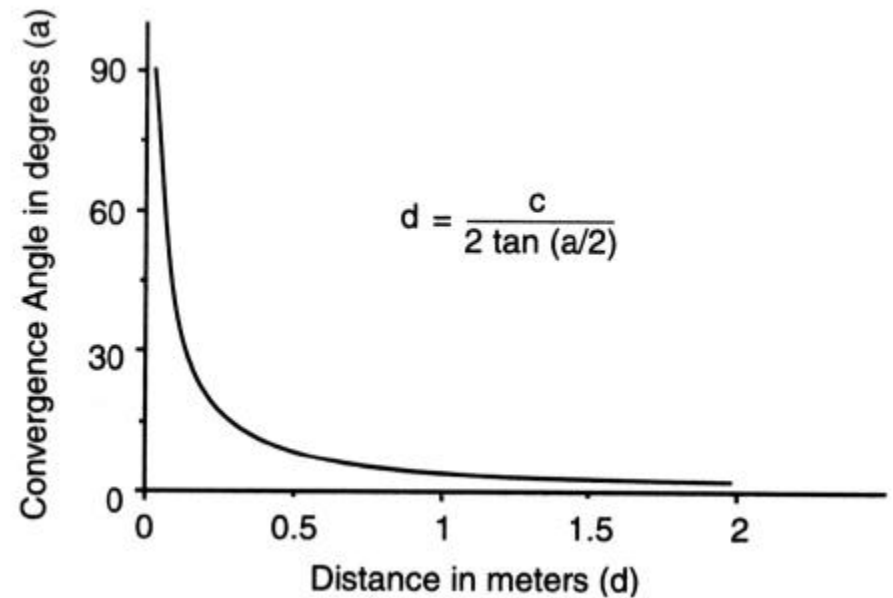
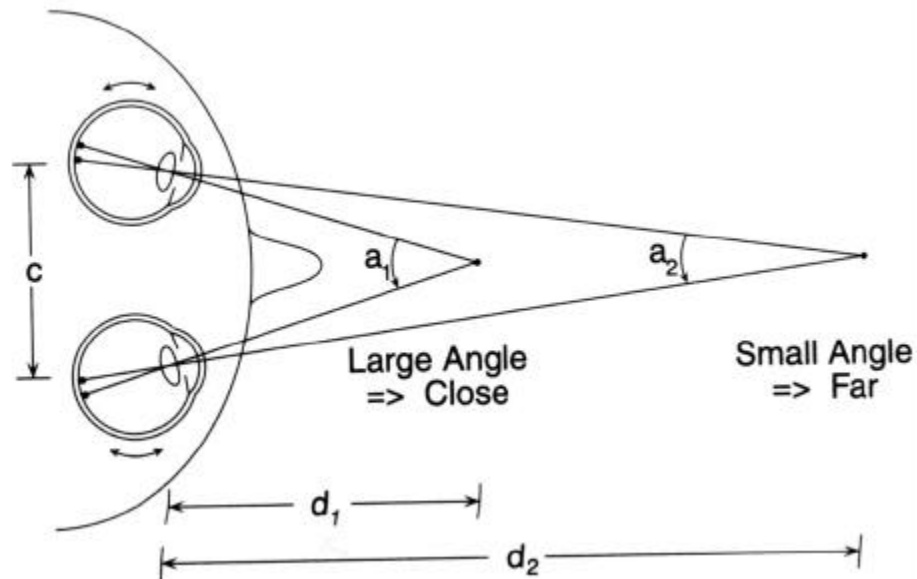
Depth cues

INFORMATION SOURCE	Ocular/ Optical	Binocular/ Monocular	Static/ Dynamic	Relative/ Absolute	Qualitative/ Quantitative
Accommodation	ocular	monocular	static	absolute	quantitative
Convergence	ocular	binocular	static	absolute	quantitative
Binocular Disparity	optical	binocular	static	relative	quantitative
Motion Parallax	optical	monocular	dynamic	relative	quantitative
Texture Accretion/Deletion	optical	monocular	dyanmic	relative	qualitative
Convergence of Parallels	optical	monocular	static	relative	quantitative
Position relative to Horizon	optical	monocular	static	relative	quantitative
Relative Size	optical	monocular	static	relative	quantitative
Familiar Size	optical	monocular	static	absolute	quantitative
Texture Gradients	optical	monocular	static	relative	quantitative
Edge Interpretation	optical	monocular	static	relative	qualitative
Shading and Shadows	optical	monocular	static	relative	qualitative
Aerial Perspective	optical	monocular	static	relative	qualitative

Limitations: Flatness

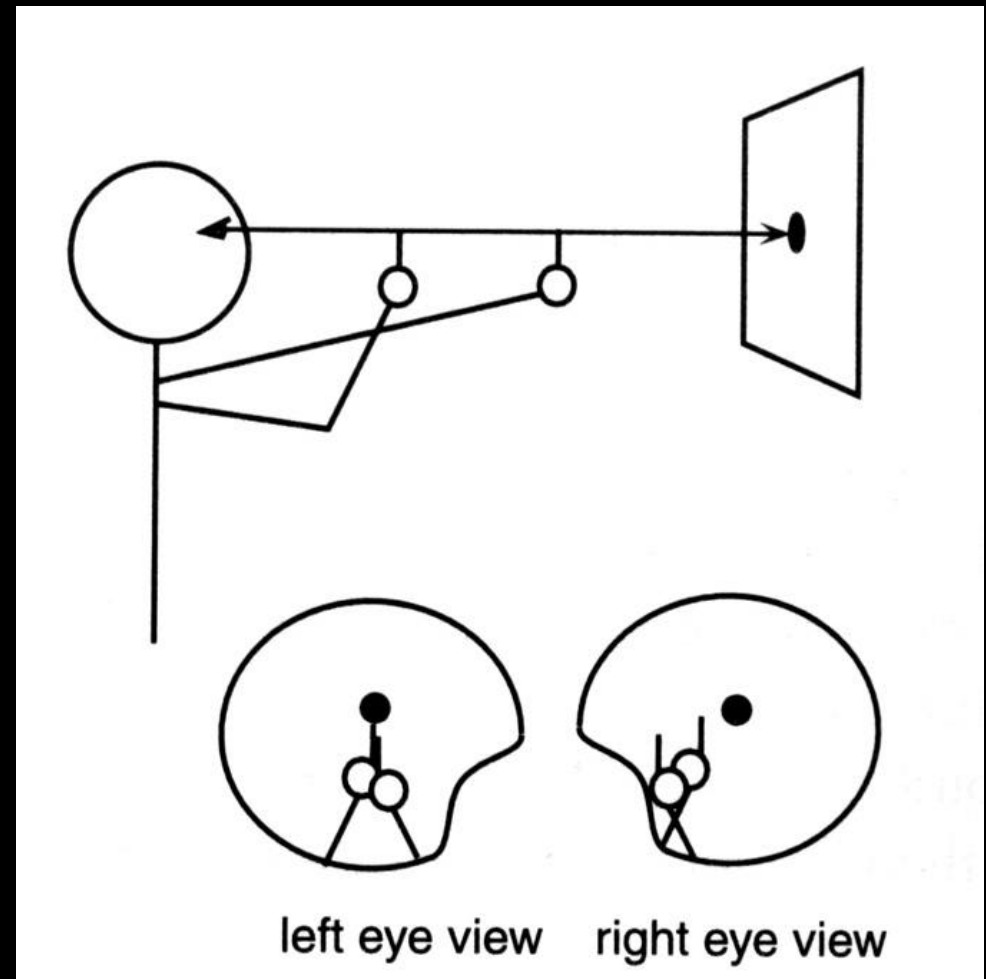
Convergence

- Few meters

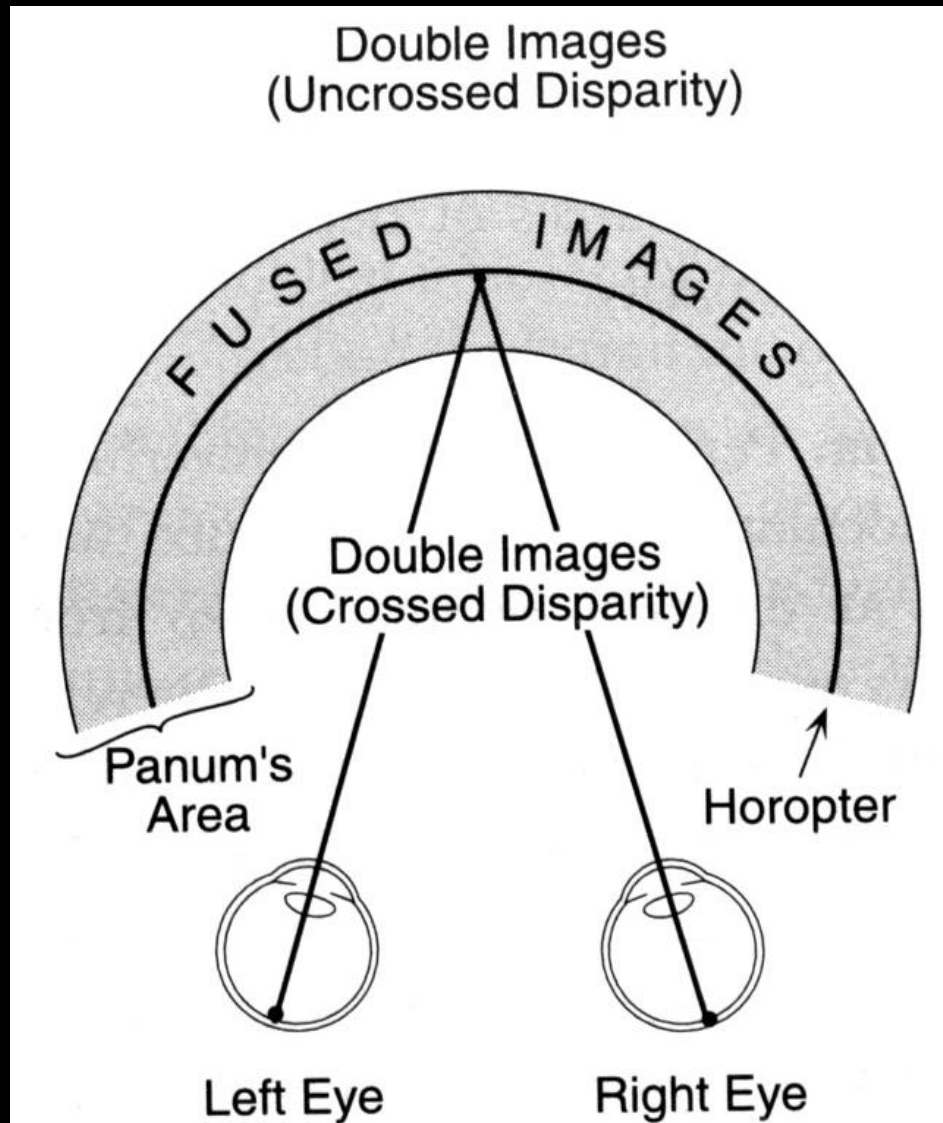


Stereovision

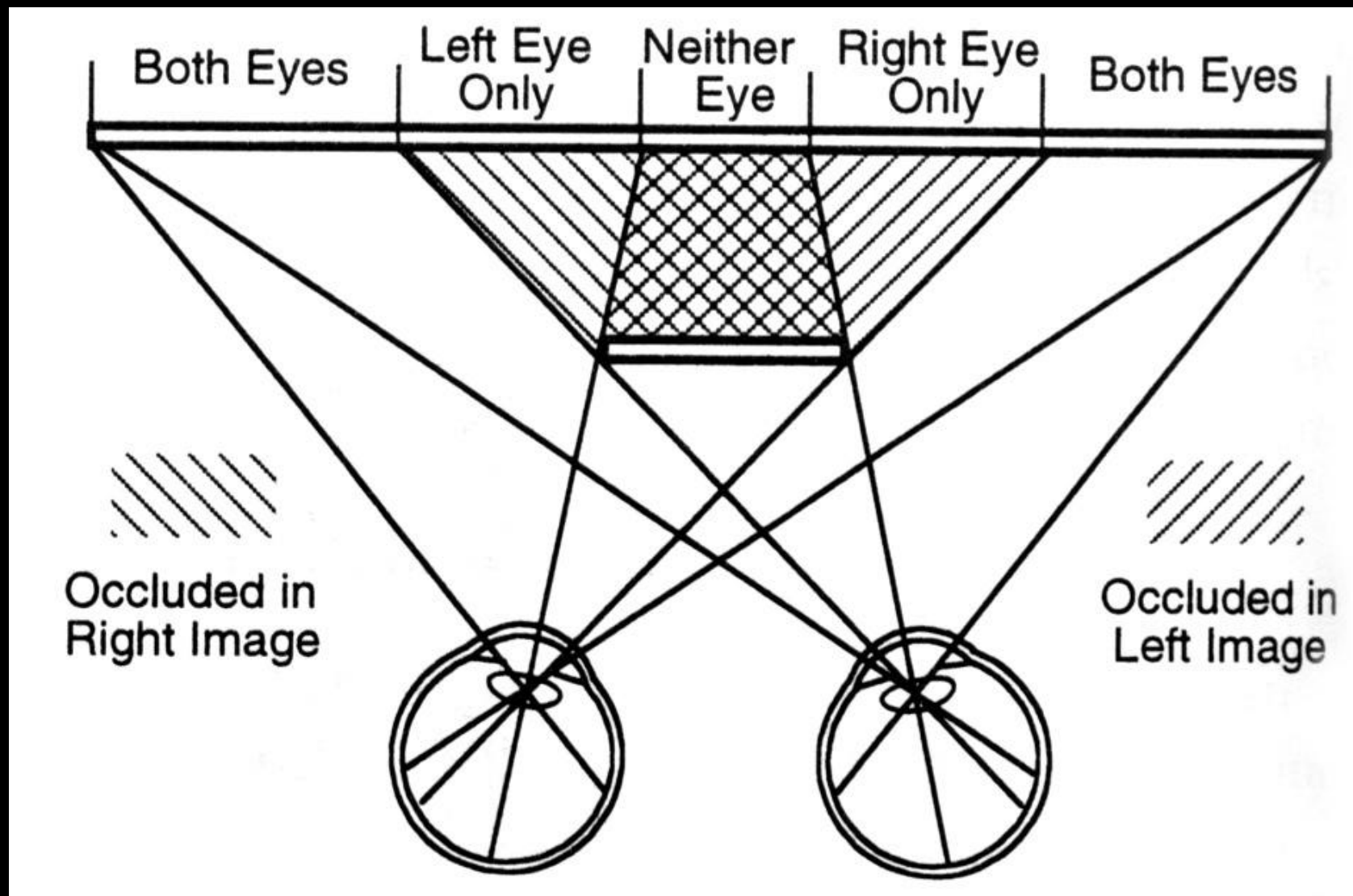
- Different image left/right eye



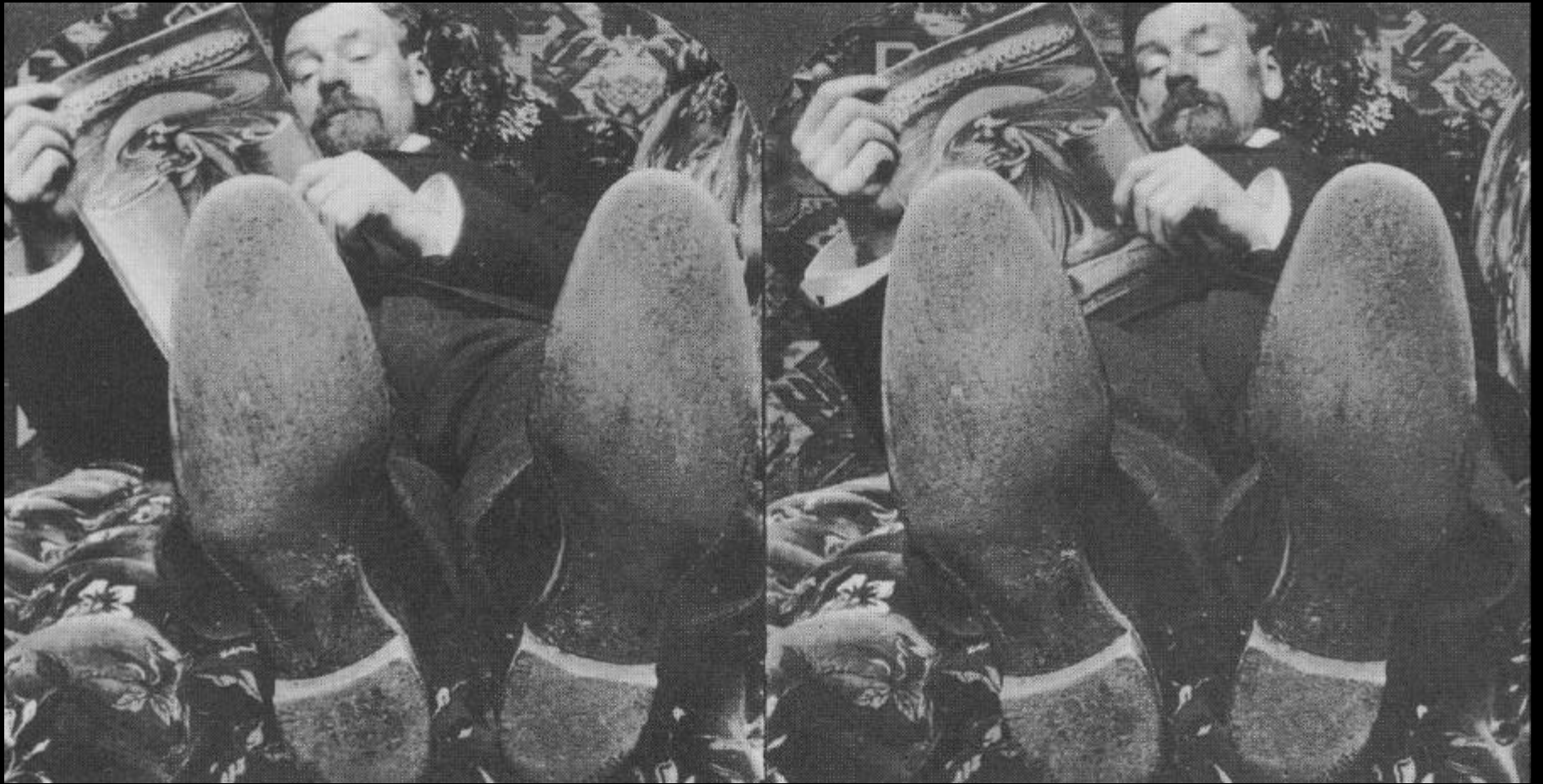
Panum fusion



Stereopsis

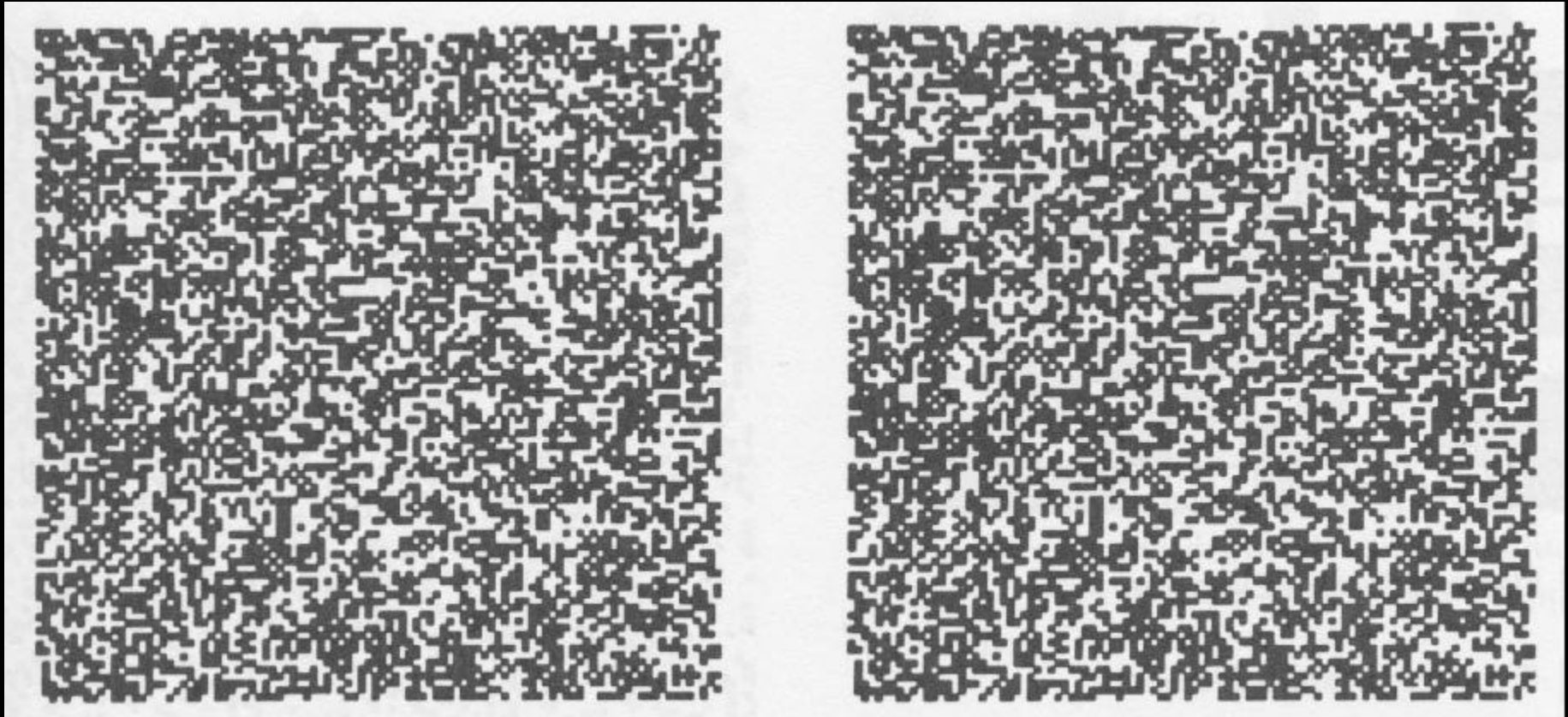


Stereo



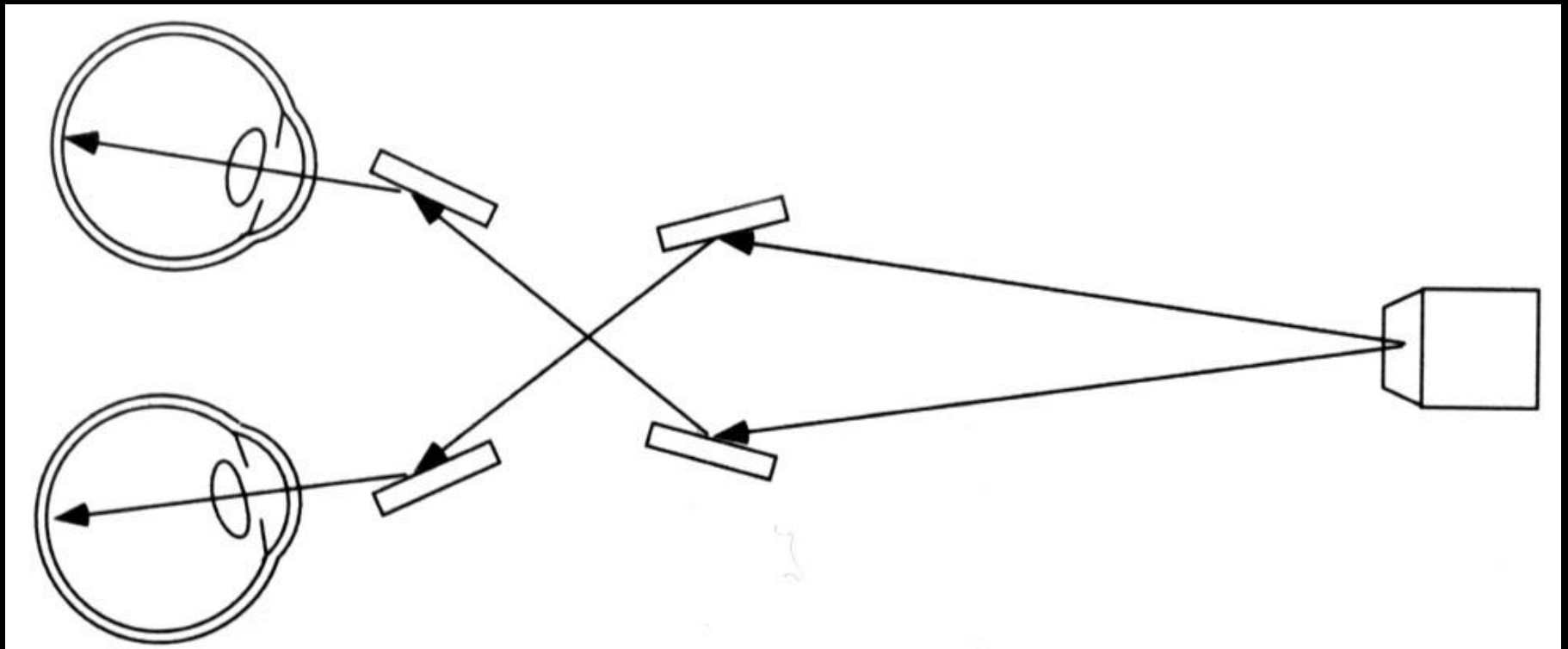
Limitations: Flatness

Random dot stereogram



Pseudoscope

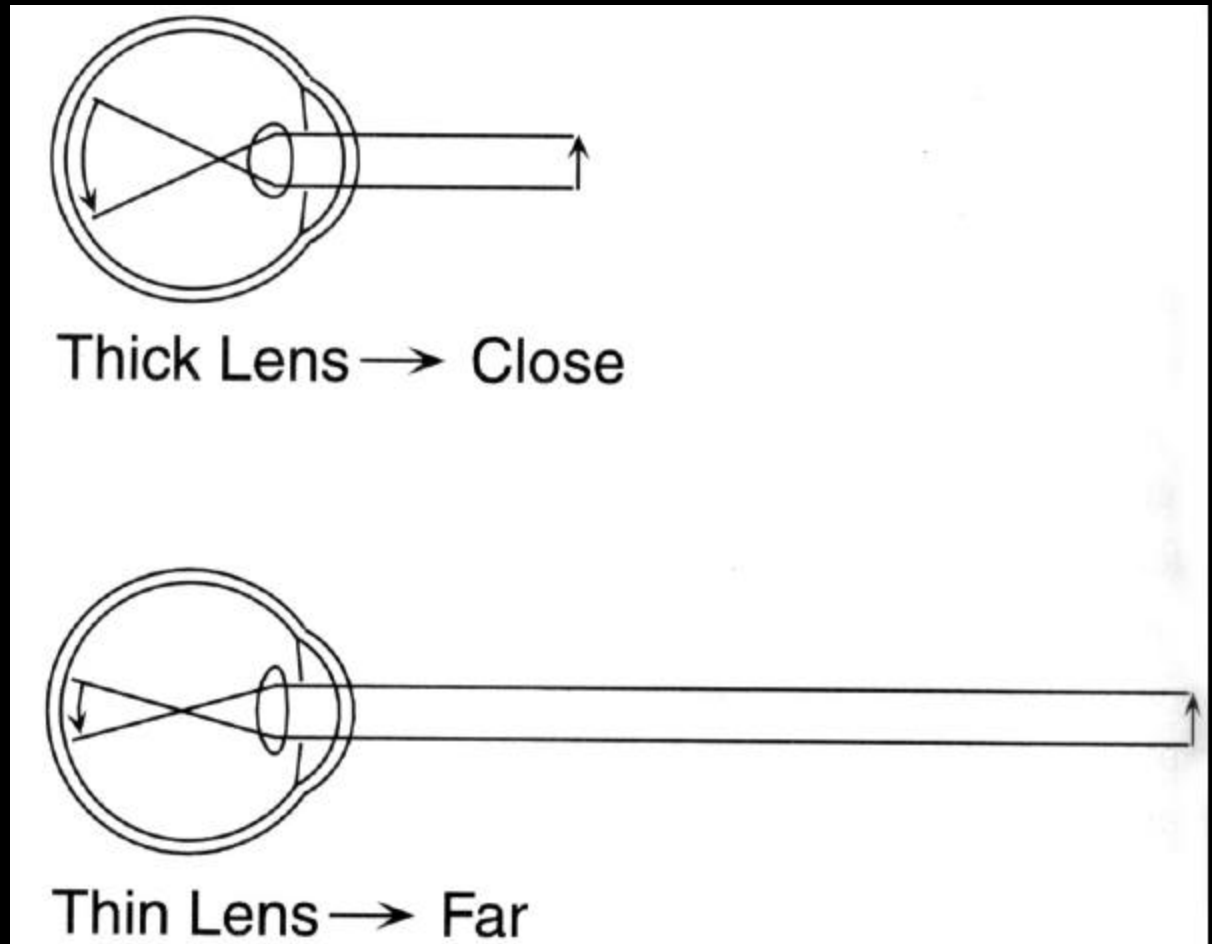
- Pictorial cues are stronger than stereo



Limitations: Flatness

Accommodation

- Close distance (< 3 meters)



Accommodation

- Blurriness
- But no proprioceptive information
- Related to aerial perspective



Accommodation

- Cartier Bresson



Parallax

- Movement

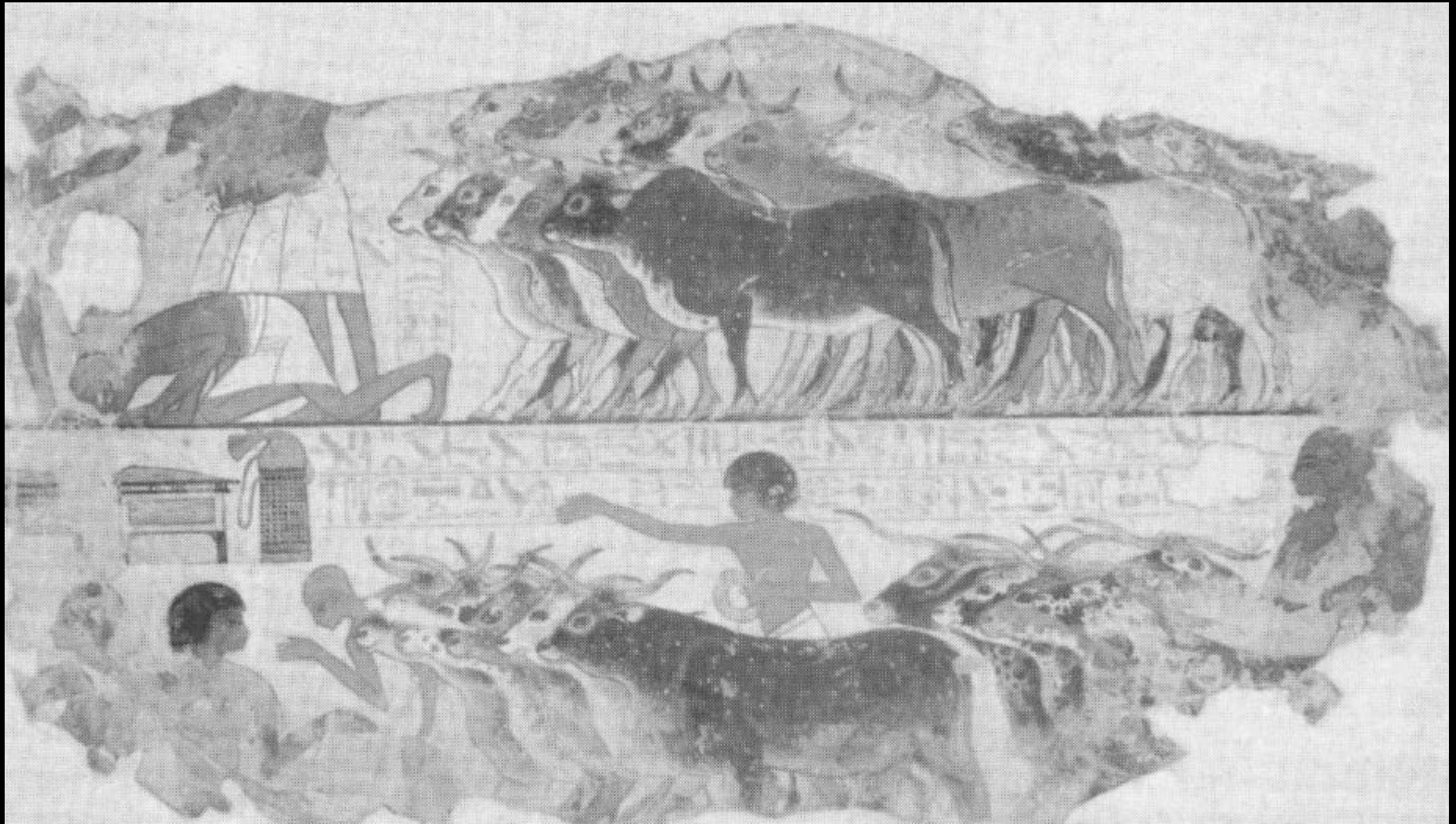


Limitations: Flatness

Pictorial cues

- Occlusion
- Size
- Position relative to the horizon
- Convergence of parallels, linear perspective
- Shading, shadow
- Texture gradient
- Aerial perspective

Occlusion



Limitations: Flatness

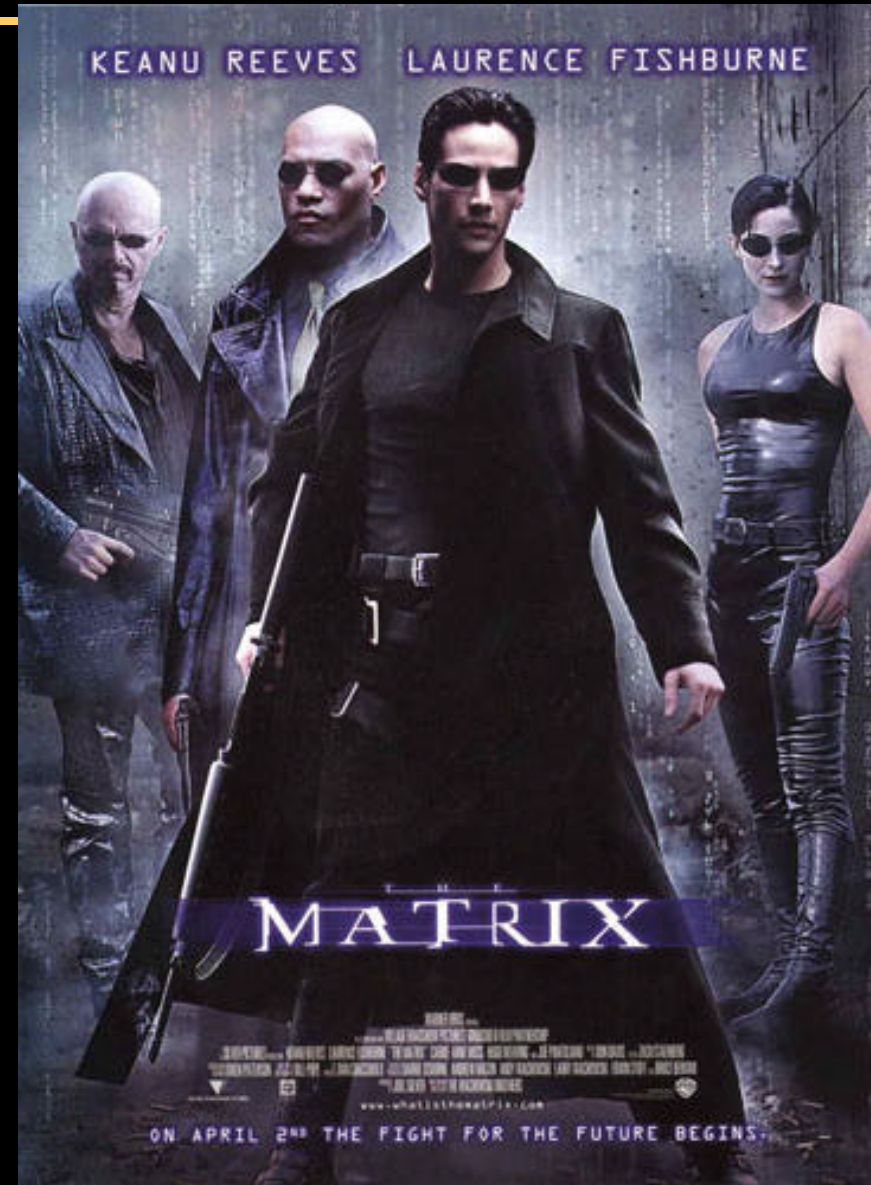
Occlusion



Limitations: Flatness

Occlusion

- Figure-ground...



Occlusion



No filter



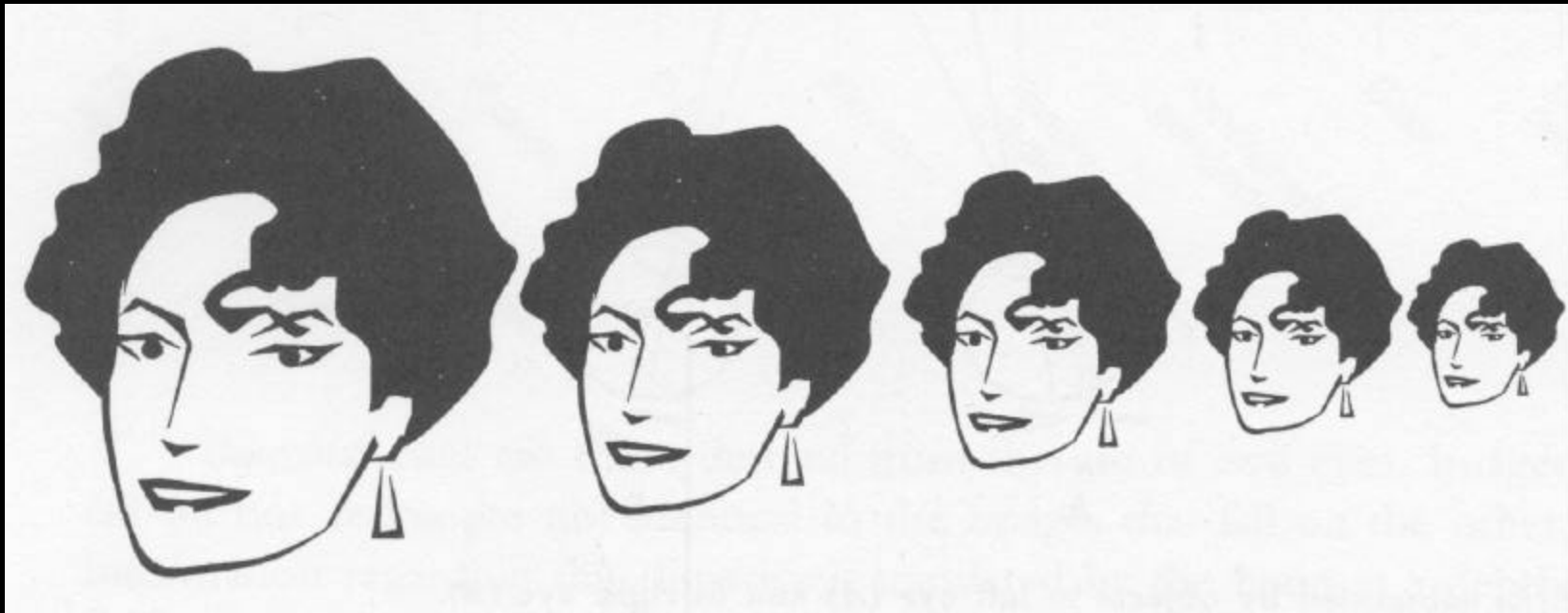
Blue filter



Red filter

Limitations: Flatness

Relative size



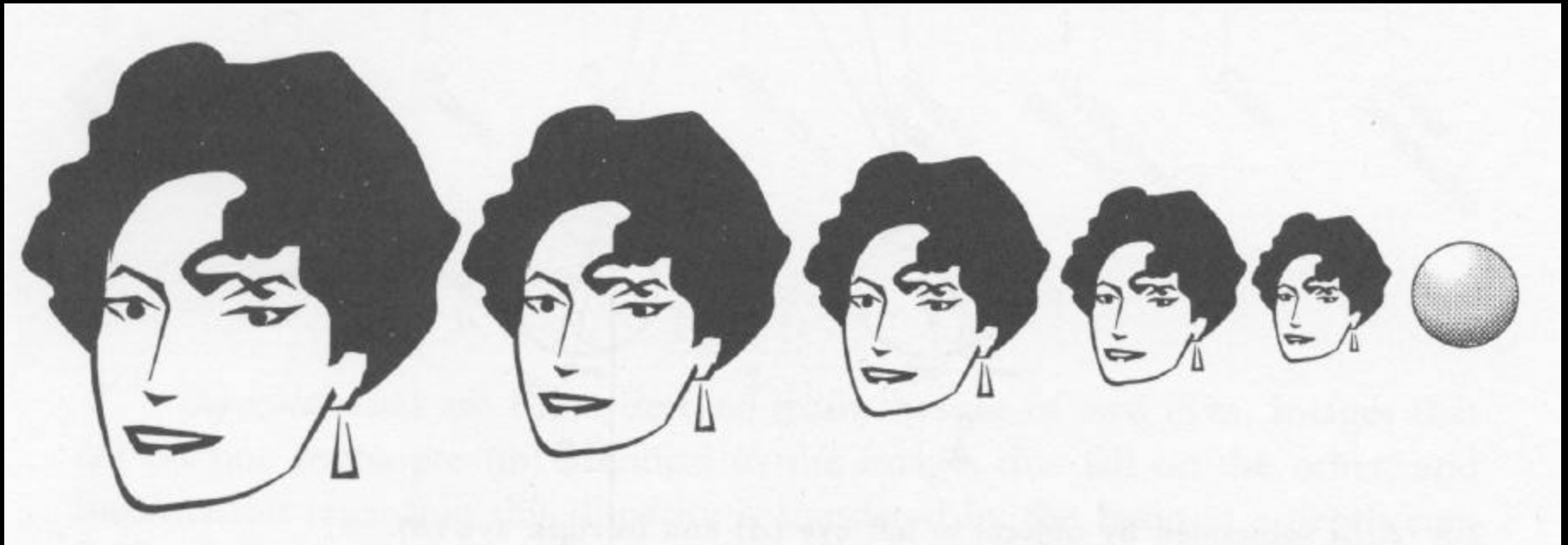
Limitations: Flatness

Relative size



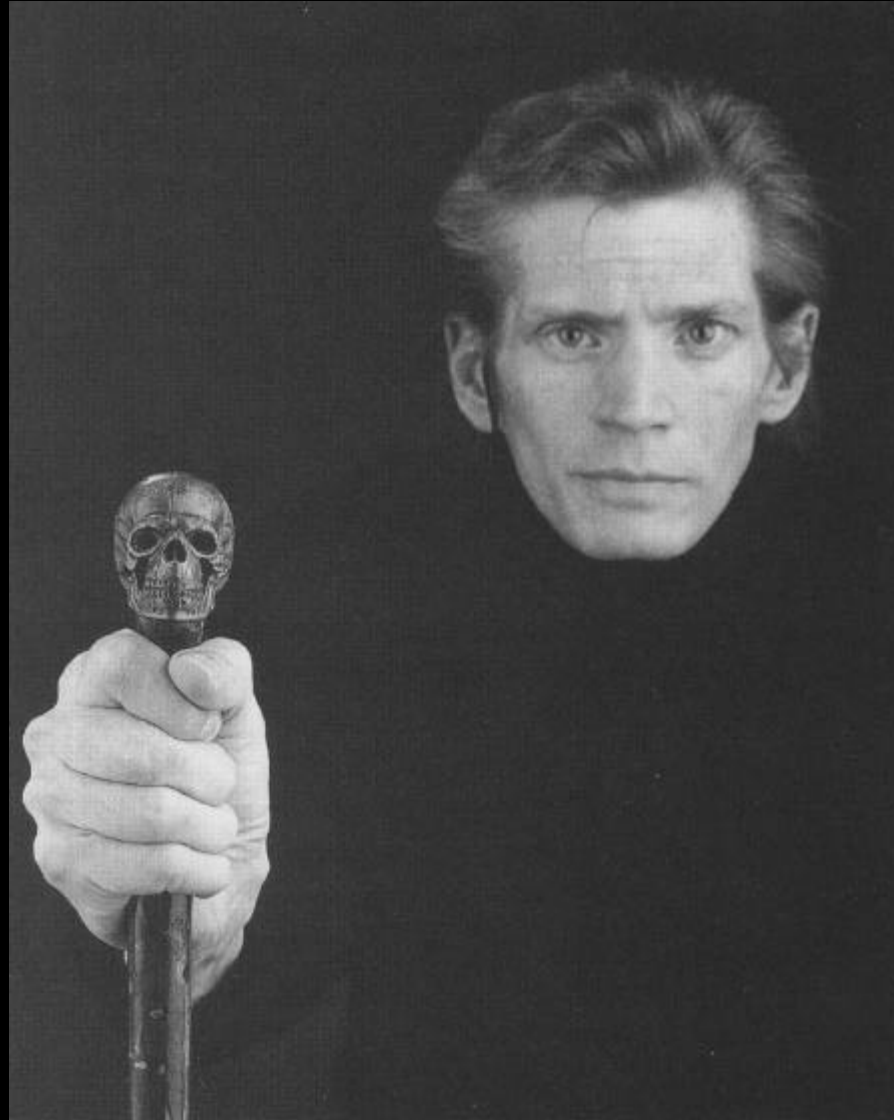
Limitations: Flatness

Familiar size



Limitations: Flatness

Familiar size



Limitations: Flatness

Familiar size – dissonance

- Magritte



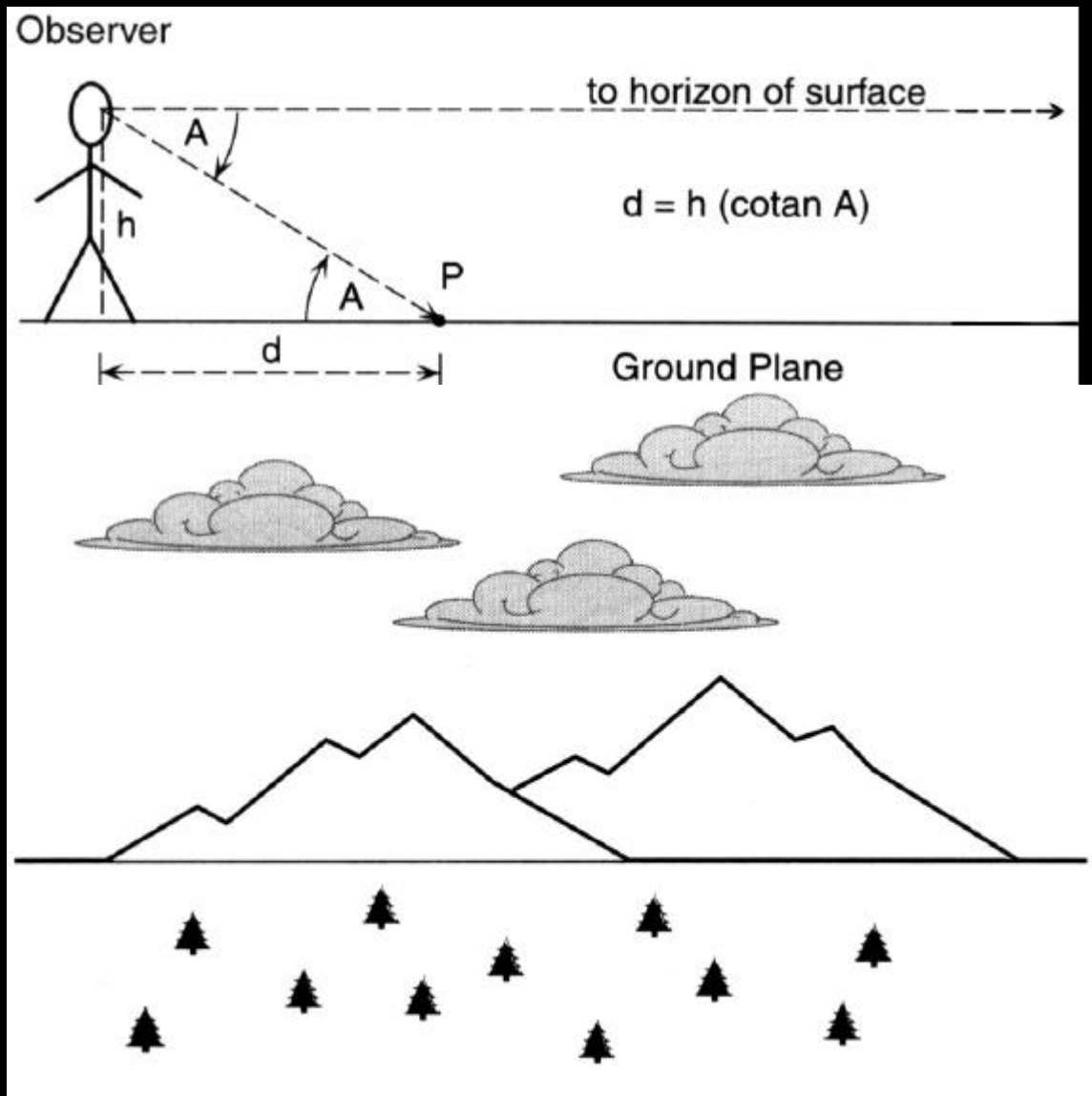
Limitations: Flatness

Familiar size

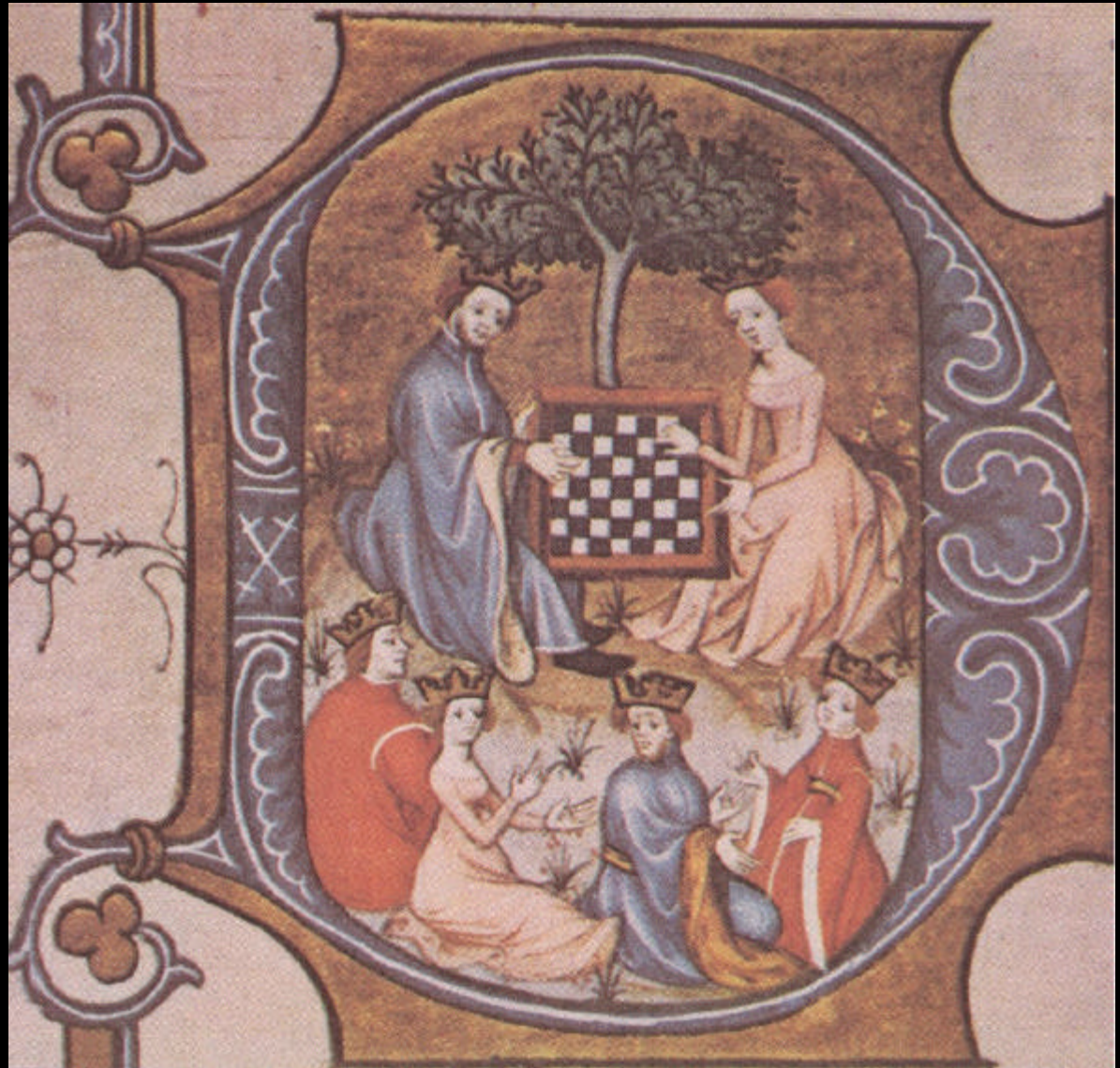


Limitations: Flatness

Position relative to the horizon



Position relative to the horizon



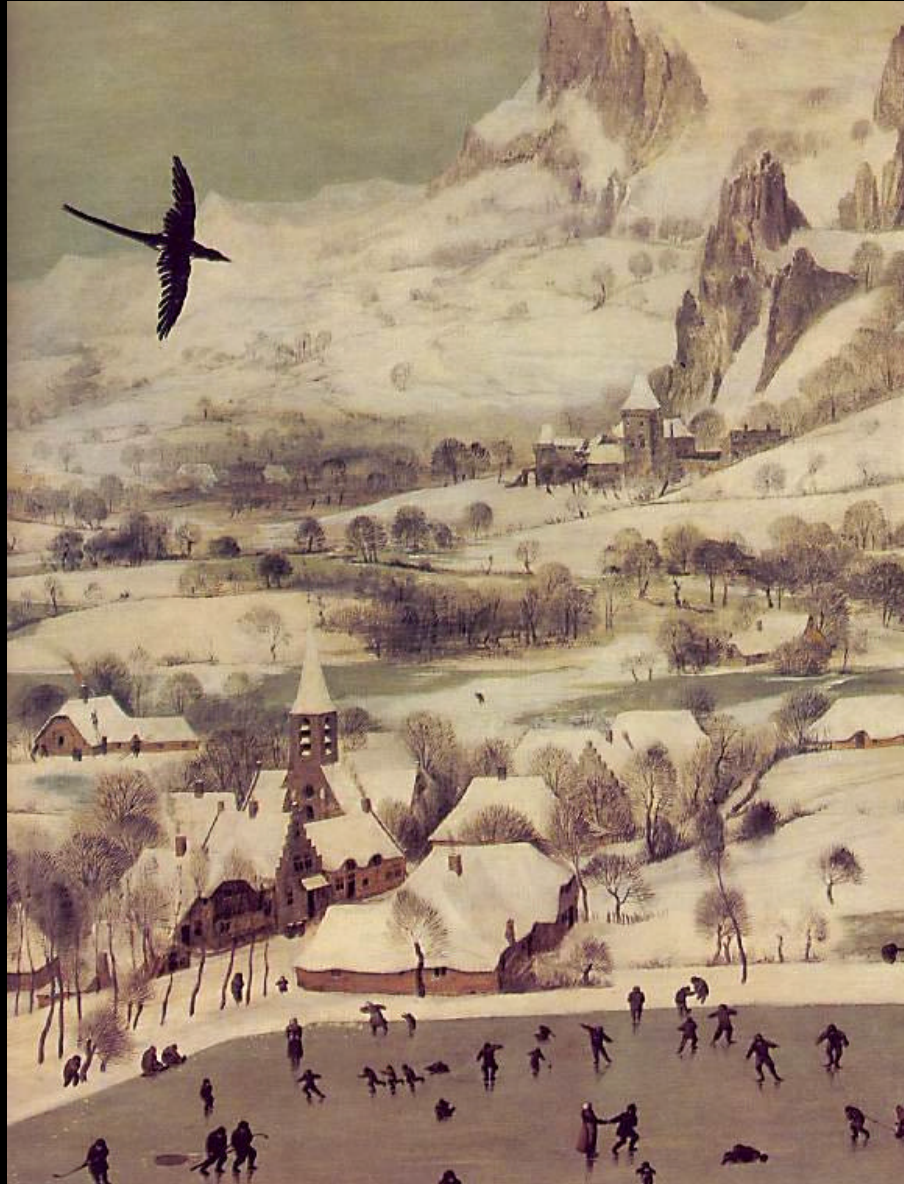
Position relative to the horizon



Limitations: Flatness

Position relative to the horizon

- Bruegel



Limitations: Flatness

Convergence of parallels

- Caillebotte



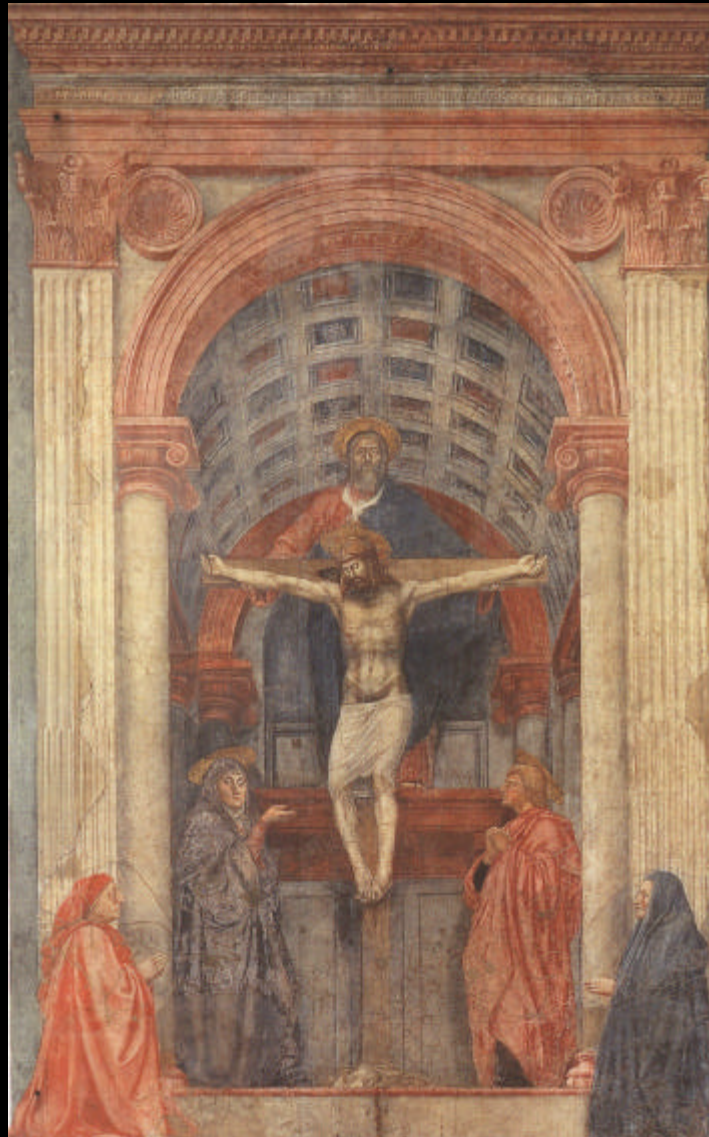
Limitations: Flatness

Linear perspective



Limitations: Flatness

Linear perspective



Limitations: Flatness

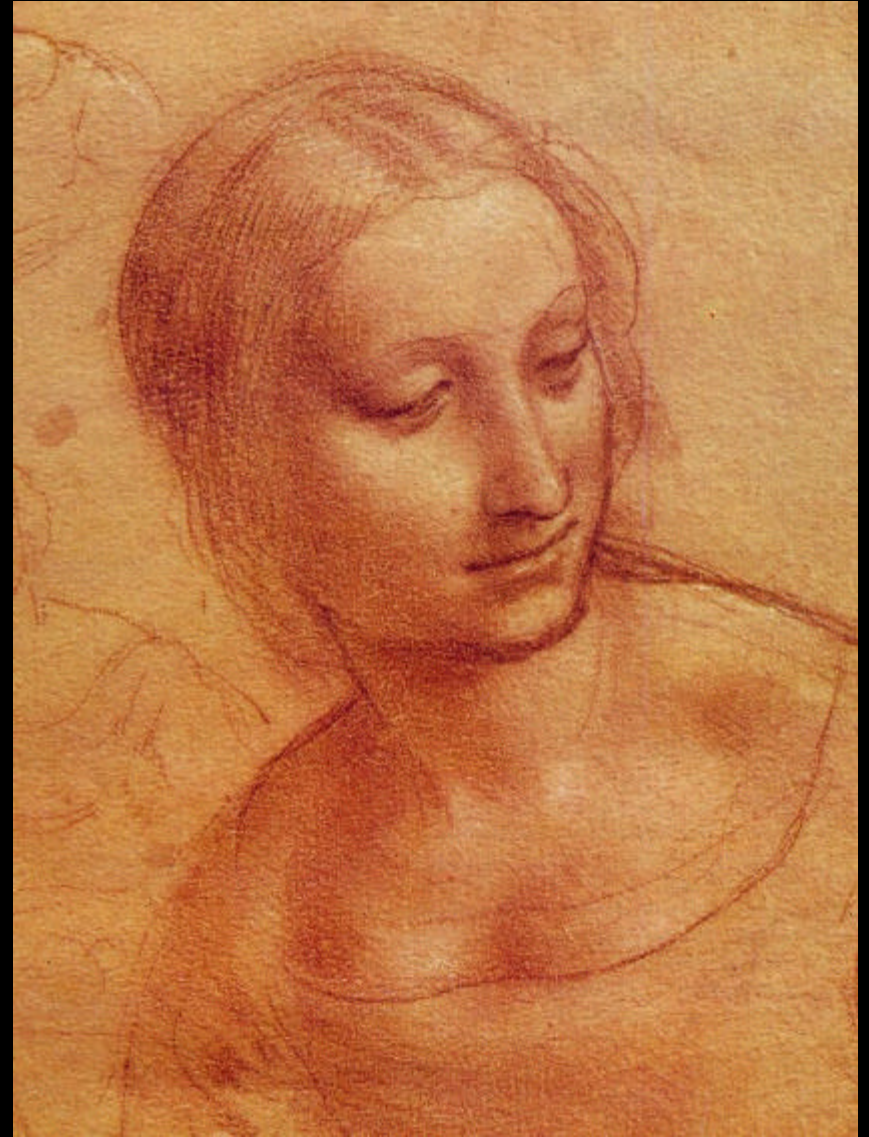
Linear perspective



Limitations: Flatness

Shading

- Chiaroscuro
- Da Vinci



Limitations: Flatness

Shading

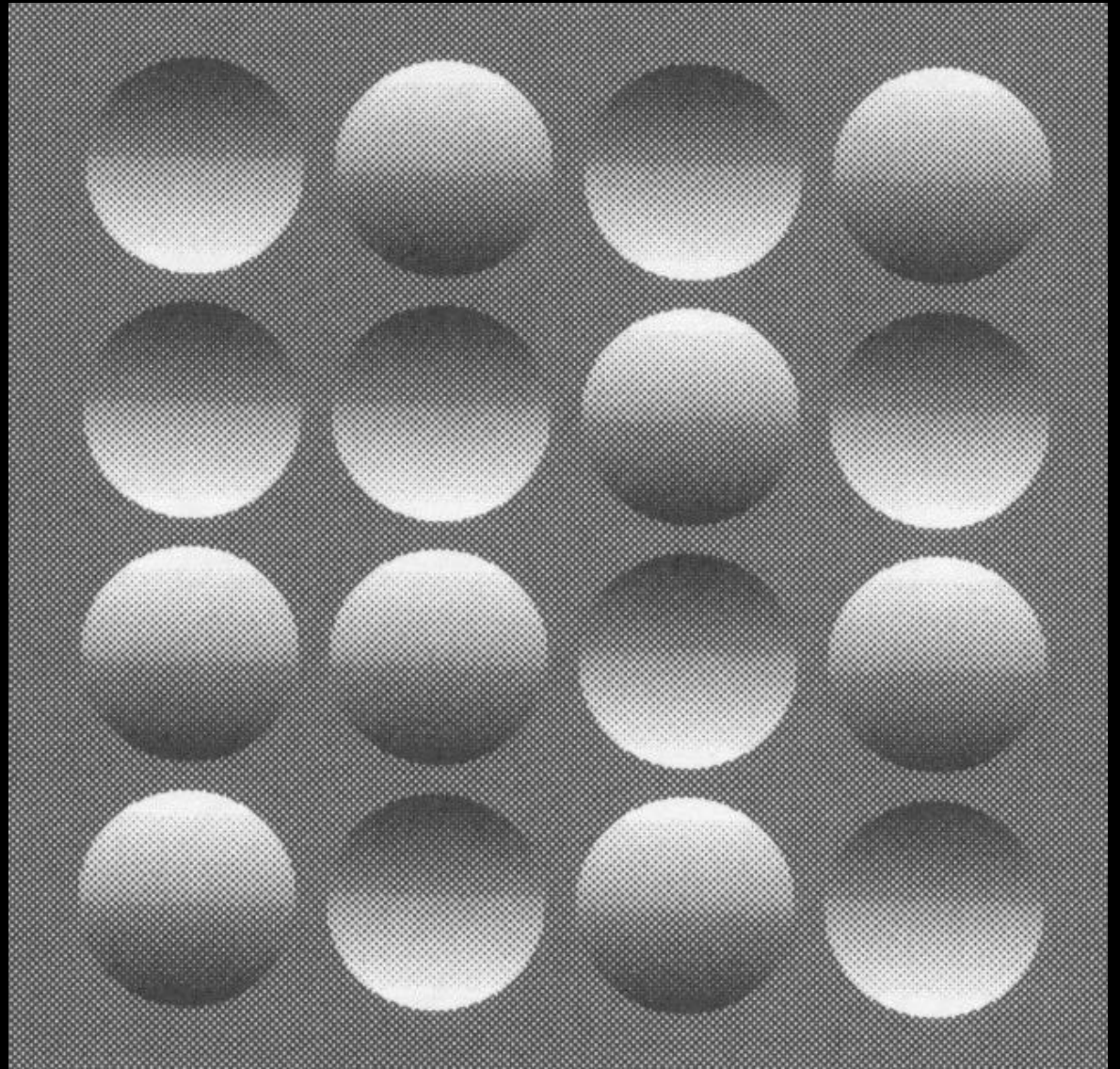
- Make up



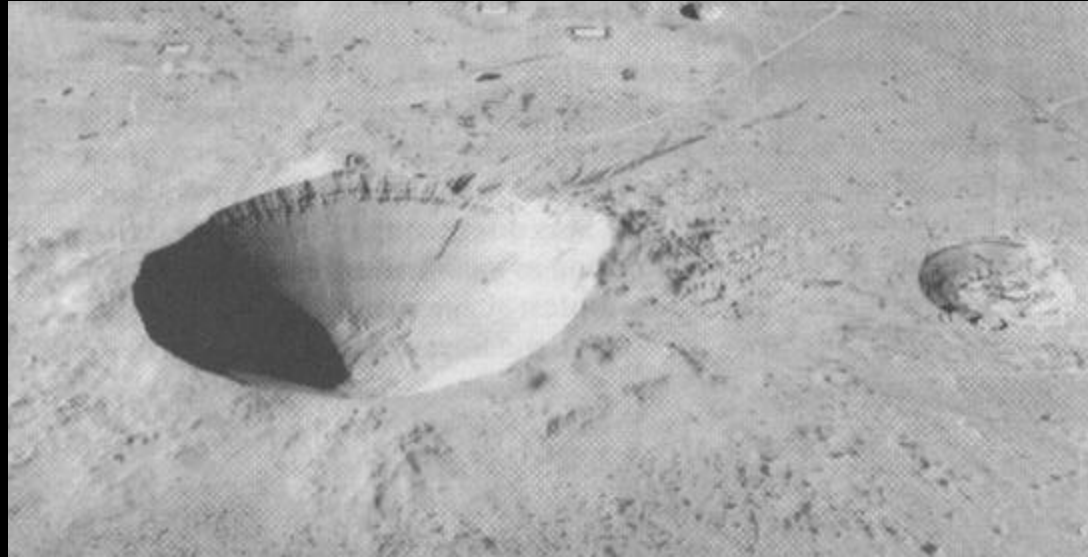
Limitations: Flatness

Lighting assumption & reversal

- We assume that the light is above

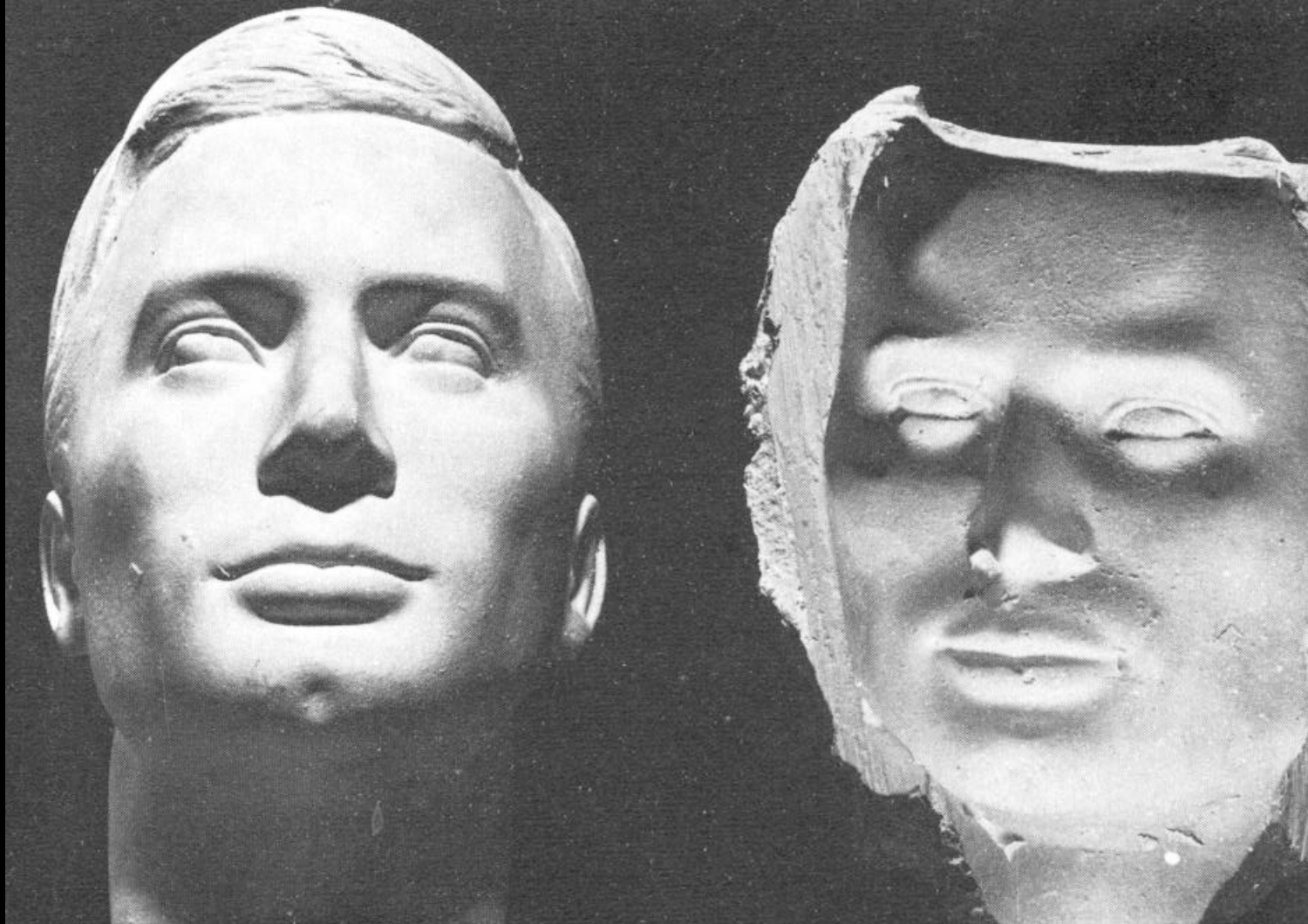


Lighting assumption & reversal



Lighting assumption & reversal

- faces



Limitations: Flatness

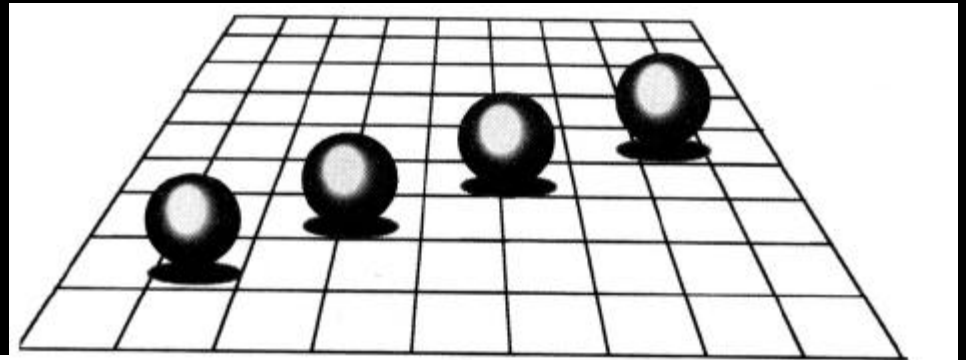
Lighting assumption & reversal

- Lucien Clergue, *Camargue*, 1940

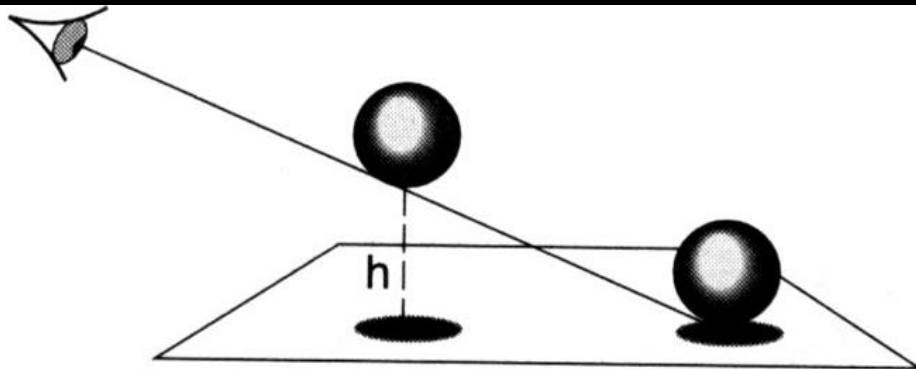


Limitations: Flatness

Shadow

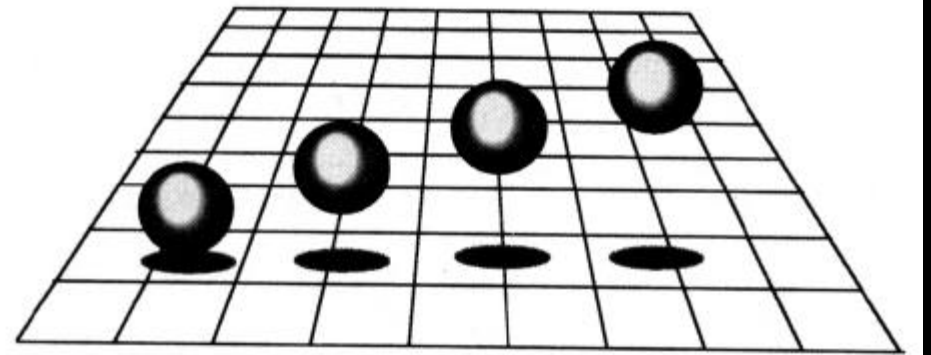


A



Panel B

Panel A



Shadow

- David



Limitations: Flatness

Shadow

- Caravaggio



Limitations: Flatness

Texture gradient



Limitations: Flatness

Texture gradient

- Constable



Limitations: Flatness

Aerial perspective

- Leonardo
Da Vinci



Limitations: Flatness

Aerial perspective



Limitations: Flatness

Aerial perspective

- Constable



Limitations: Flatness

Aerial perspective

- Delacroix
- Saturation



Limitations: Flatness

Aerial perspective

- Pissaro



Limitations: Flatness

Inverted Aerial perspective

- Nash



Limitations: Flatness

Aerial perspective

- Darker colors tend to recede
- Rembrandt



Limitations: Flatness

Planes of light

- Goya
- Darker colors usually recede
- Makes picture dynamic



Planes of light

- Lighting



Limitations: Flatness

Planes of light

- Vermeer



Grouping

- Aerial perspective
- Depth of field
- Relative size

- Grouping with respect to one property results in grouping by distance

Perspective



Limitations: Flatness

Monet



Limitations: Flatness

Occlusion & horizon



Limitations: Flatness

Counter-example



Limitations: Flatness

Counter-example

- De Chirico



Limitations: Flatness

Depth cues and art history

Period	Relative size	Occluded objects	Shadow	Elevation	Texture gradients	Atmospheric perspective	Linear perspective
Prehistoric	Yes	Yes	Limited	Yes	Not generally	No	No
Egyptian	No	Yes	Not generally	Yes	No	No	No
Greek	Limited	Yes	No	Limited	No	Limited	Limited
Roman	Yes	Yes	Yes	Yes	Limited	No	Limited
Renaissance	Yes	Yes	Yes	Yes	Yes	Limited	Yes
Impressionist	Yes	Yes	Yes	Yes	Yes	Yes	Limited
Modern	Sometimes	Yes	Sometimes	Limited	Not generally	Not generally	Not generally