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
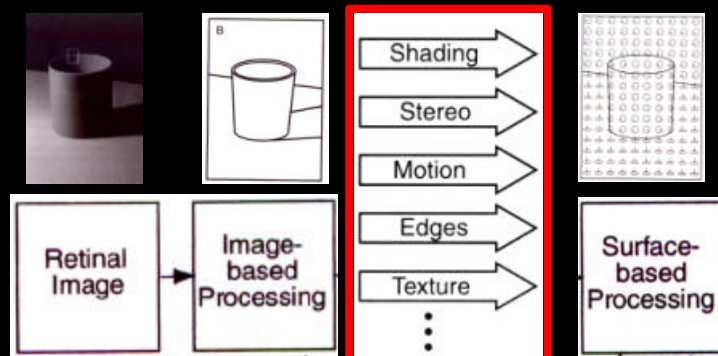- The contrast is limited
- The gamut (palette) is limited

The image is flat

Surface-based

- Visible surfaces, organization
- Distance, orientation

Depth cues

- Binocular
- Monocular
- Dynamic
- Pictorial

- Unconscious inference

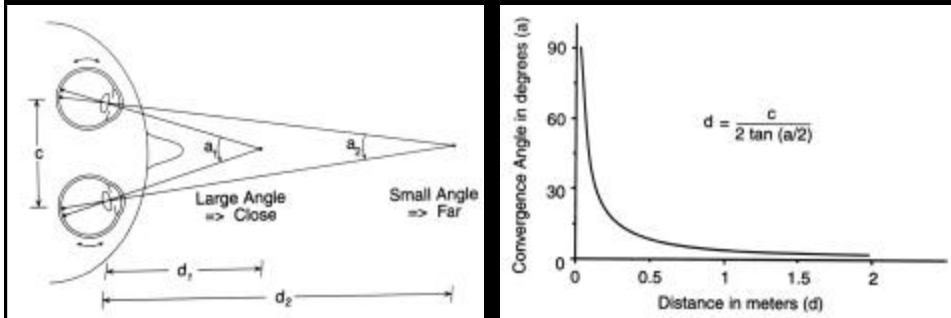Limitations: Flatness   5

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   6
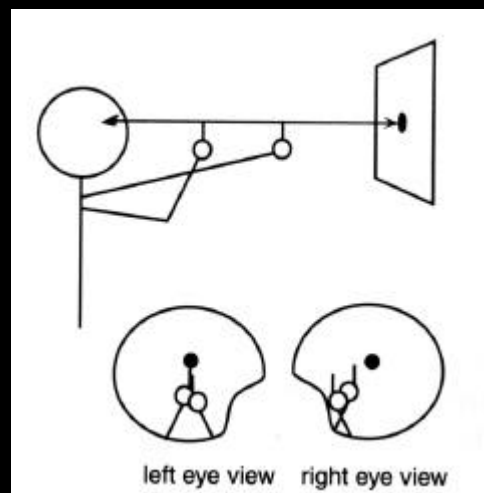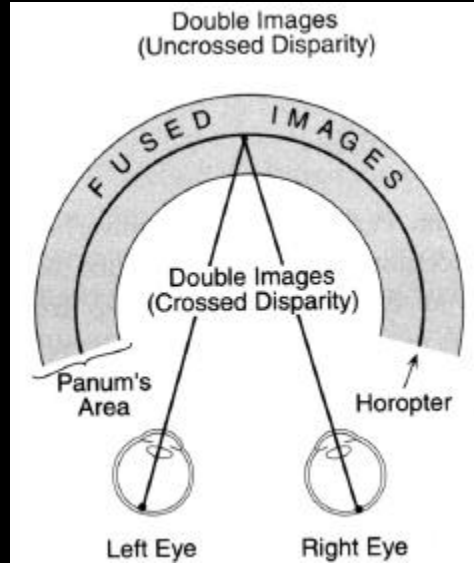
Convergence

- Few meters

Large Angle => Close Small Angle => Far

$$d = \frac{c}{2 \tan (a/2)}$$

Stereovision

- Different image left/right eye

left eye view   right eye view
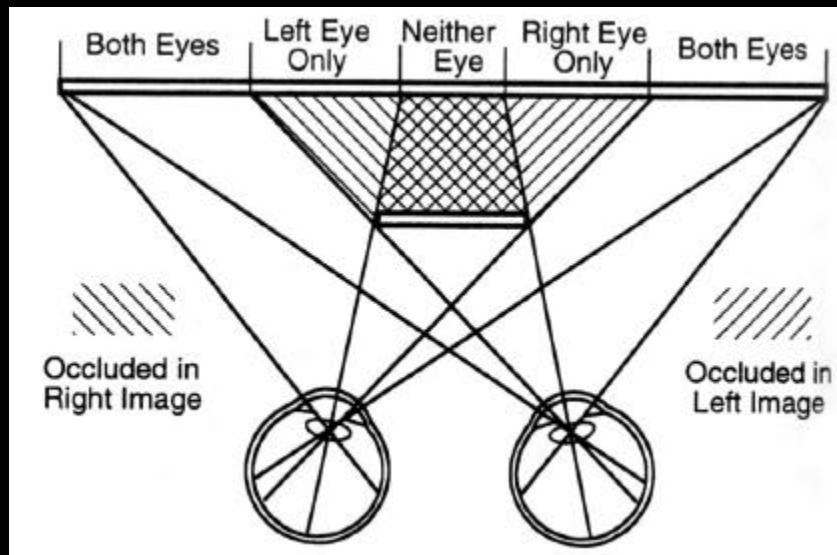
Panum fusion

Stereopsis
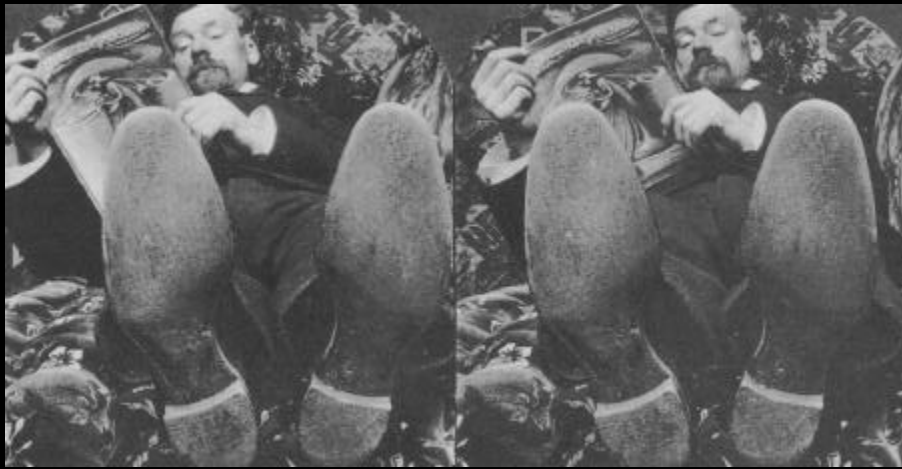
Stereo

Random dot stereogram
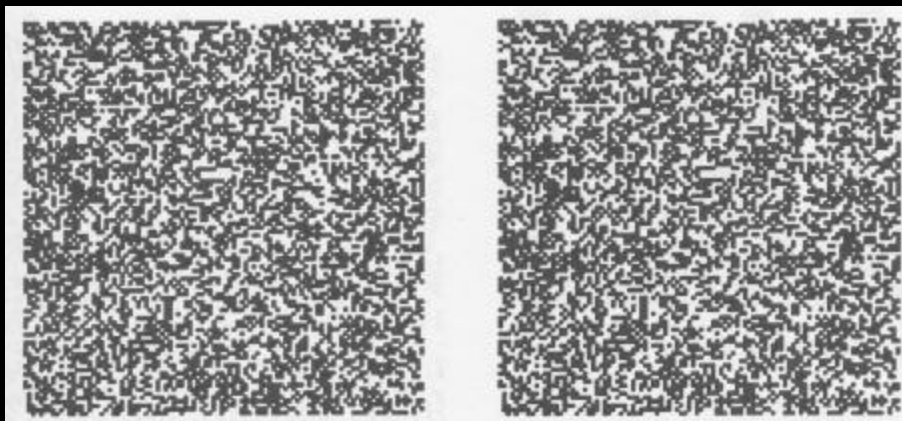
Pseudoscope

- Pictorial cues are stronger than stereo
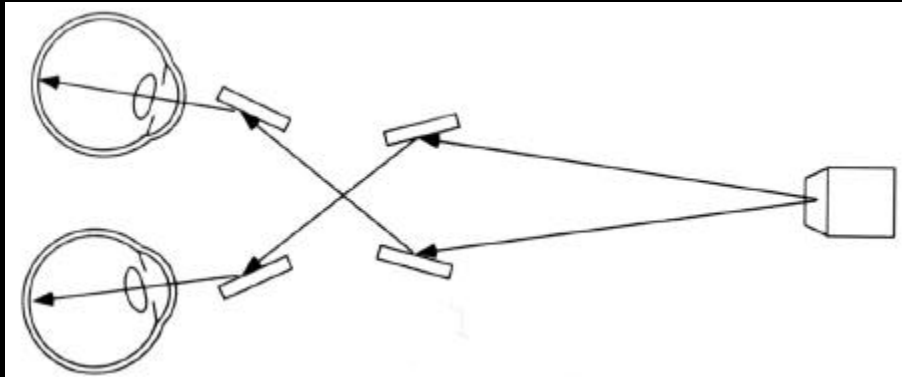
Accommodation

- Close distance (< 3 meters)

Thick Lens → Close

Thin Lens → Far
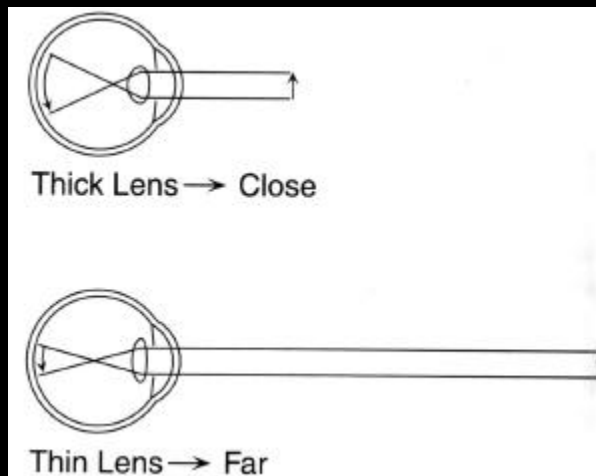
Accommodation

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

Accommodation

- Cartier Bresson

Parallax

- Movement

Pictorial cues

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

Occlusion

Occlusion

Occlusion

- Figure-ground…

Occlusion

No filter   Blue filter   Red filter
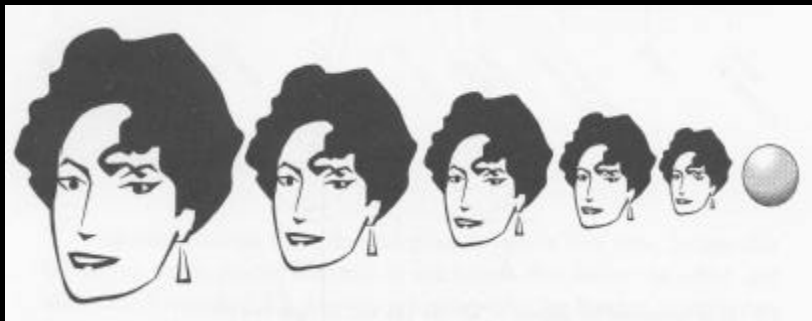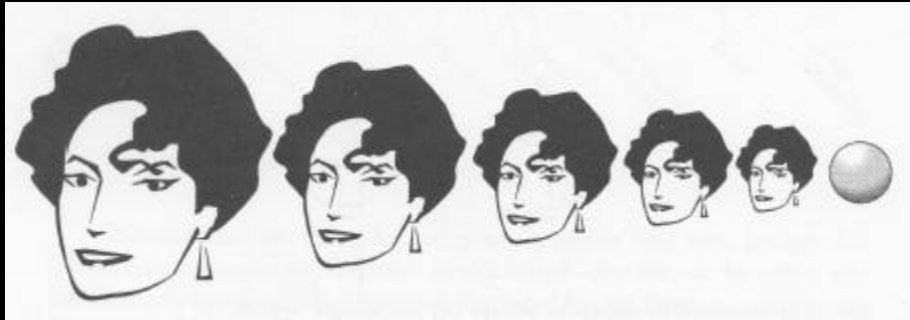
Relative size

Relative size

Familiar size

Familiar size

Familiar size – dissonance

- Magritte

Familiar size
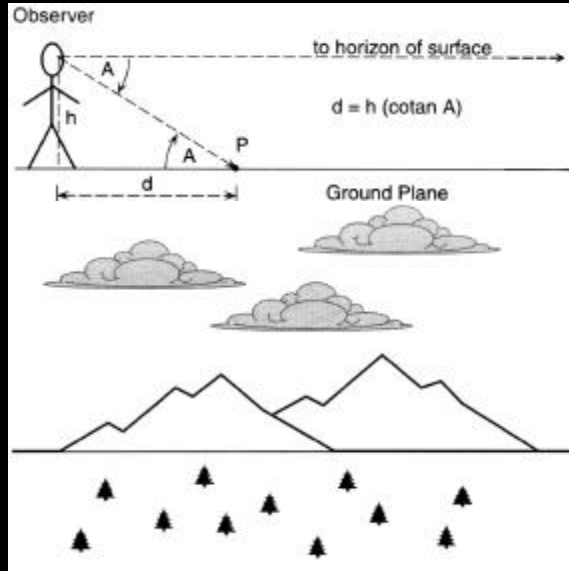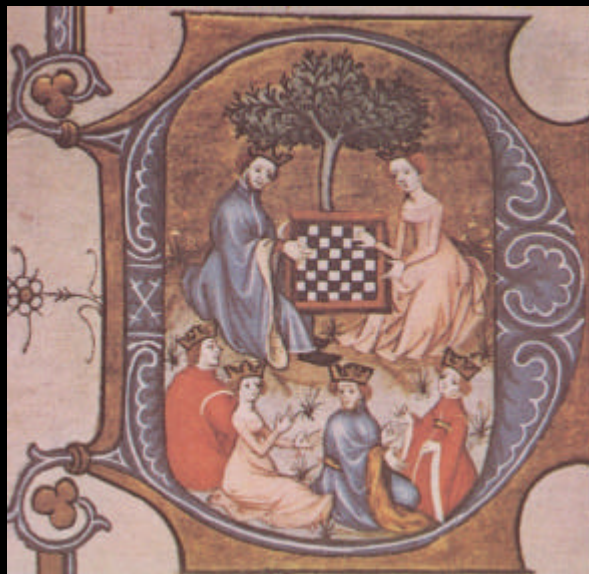
Position relative to the horizon

Position relative to the horizon

Position relative to the horizon

Position relative to the horizon

- Bruegel

Convergence of parallels

- Caillebotte

Linear perspective

Linear perspective

Linear perspective

Shading

- Chiaroscuro
- Da Vinci
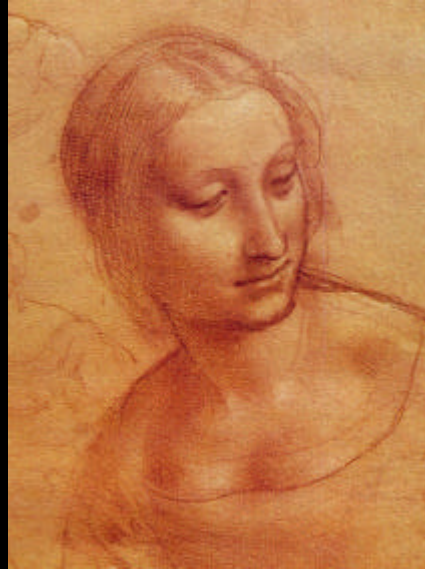
Shading

- Make up

Lighting assumption & reversal

- We assume that the light is above
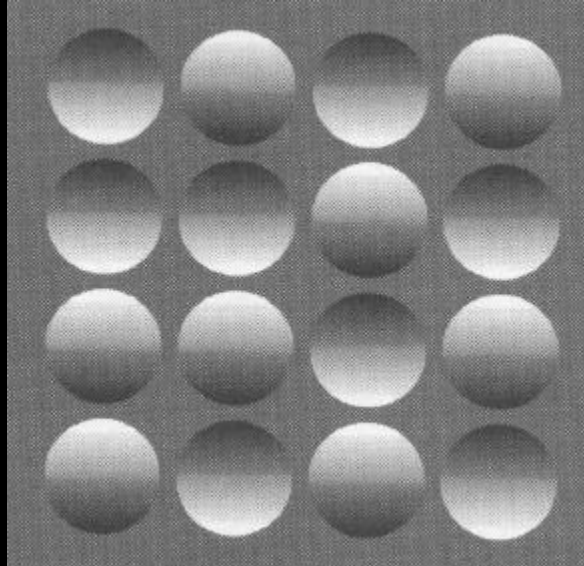
Lighting assumption & reversal

Lighting assumption & reversal

- faces

Lighting assumption & reversal

- Lucien Clergue, *Camargue,* 1940
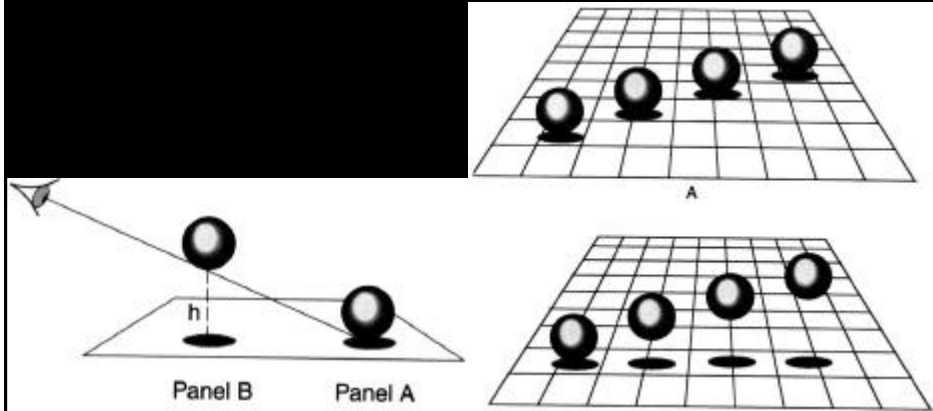
Shadow

Shadow

- David

Shadow

- Caravaggio

Texture gradient

Texture gradient

- Constable

Aerial perspective

- Leonardo
  Da Vinci

Aerial perspective

Aerial perspective

- Constable

Aerial perspective

- Delacroix
- Saturation

Aerial perspective

- Pissaro

Inverted Aerial perspective

- Nash

Aerial perspective

- Darker colors tend to reced
- Rembrandt

Planes of light

- Goya
- Darker colors usually recede
- Makes picture dynamic

Planes of light

- Lighting

Planes of light

- Vermeer

Grouping

- Aerial perspective
- Depth of field
- Relative size

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

Perspective

Monet

Occlusion & horizon

Counter-example

Counter-example

- De Chirico

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