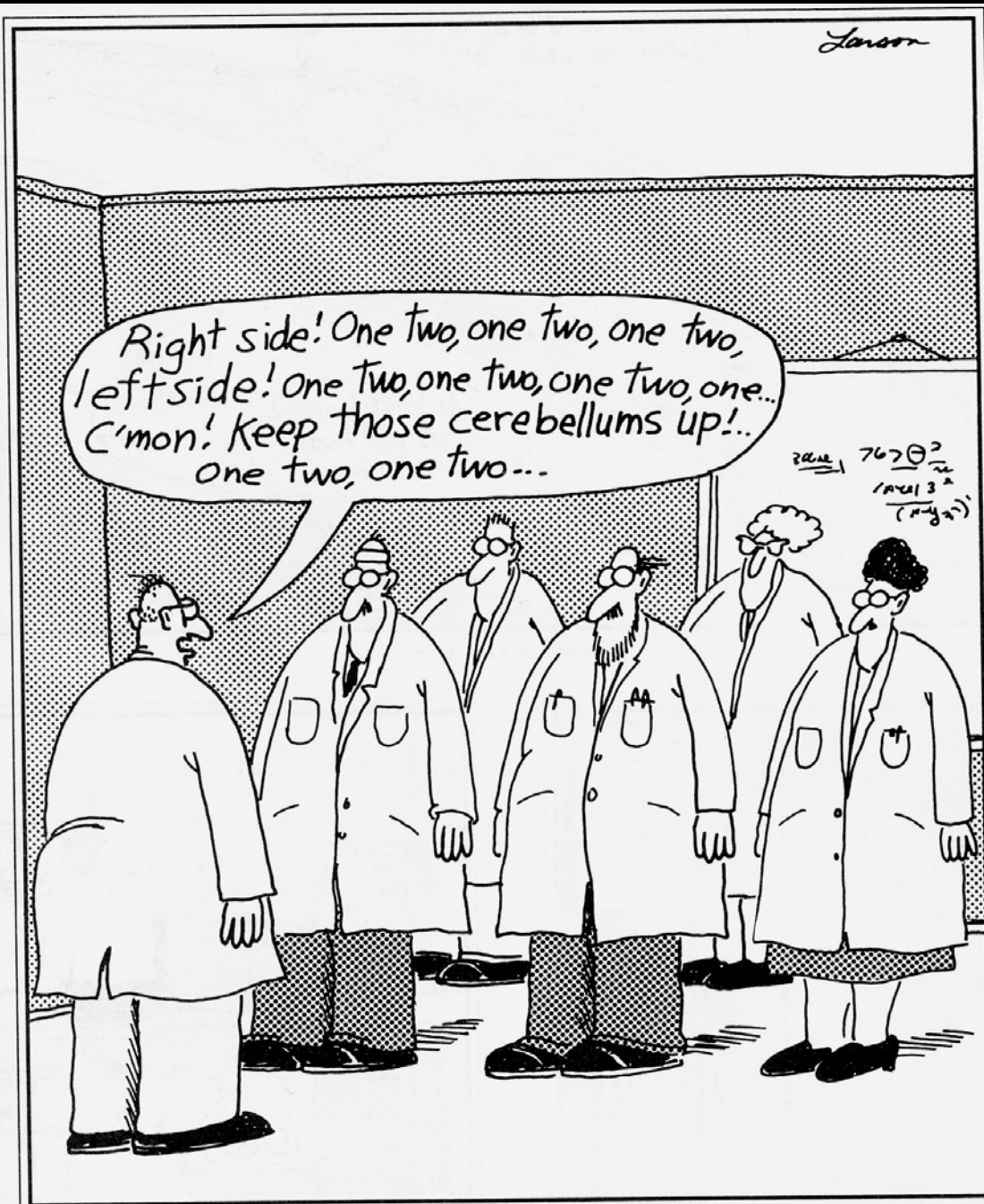


*Perceptual
and Artistic
Principles
for
Effective
Computer
Depiction*



Brain aerobics

*Perceptual and Artistic
Principles for
Effective Computer Depiction*

Frédo Durand

Laboratory for Computer Science

Massachusetts Institute of Technology

Introduction

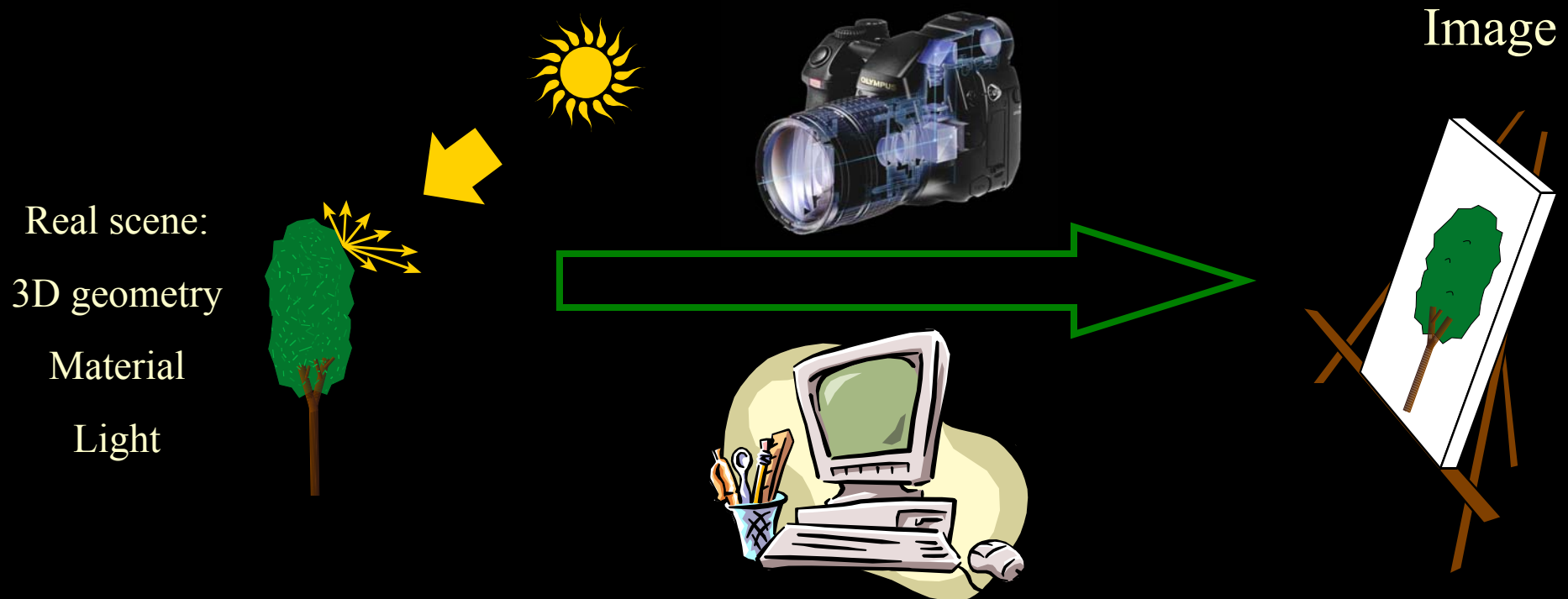
- Different views on picture making
 - Perception & cognition
 - Artistic practice
 - Computer graphics
- Connections between these fields
- Not directly an “how-to” course
- Not a reduction of Art

Art and Science

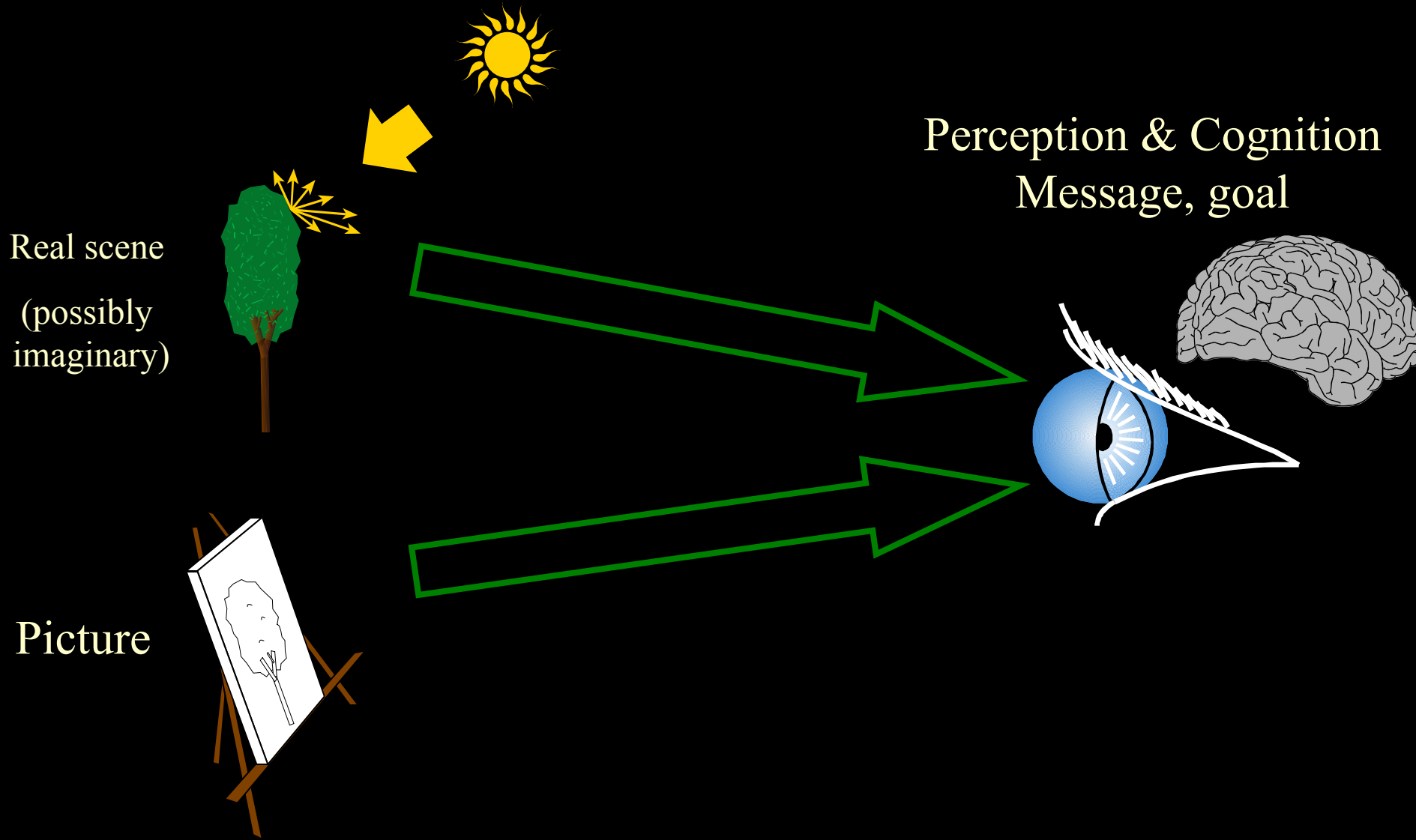
- Music
 - Psychoacoustics, harmony, musical scales, etc.
- Language
 - Grammar, linguistic, etc.
- Do not ruin the beauty of symphonies & poems
- Science provides insights, structure, context,
- But there is always some remaining magic and genius.

One-way image generation

- From 3D to 2D
- Optical simulation or recording



Depiction is actually more complex



Speakers

- We are computer scientists
- We use perception & cognition knowledge
- We try to learn from artists

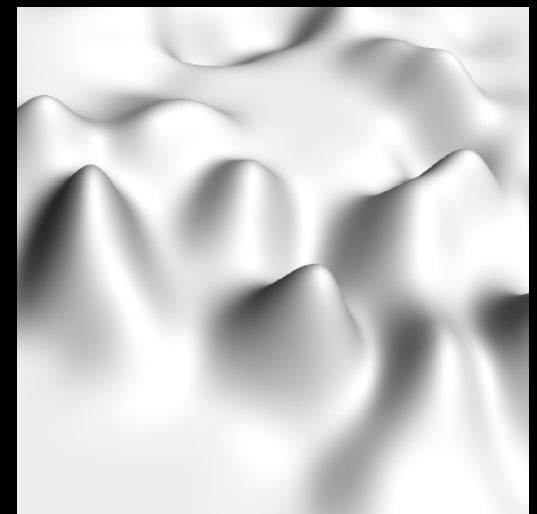
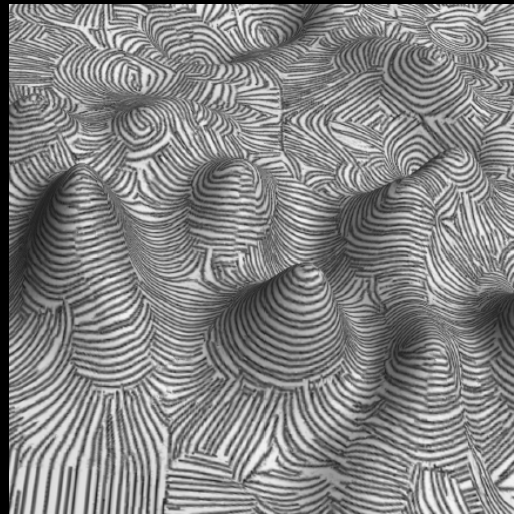
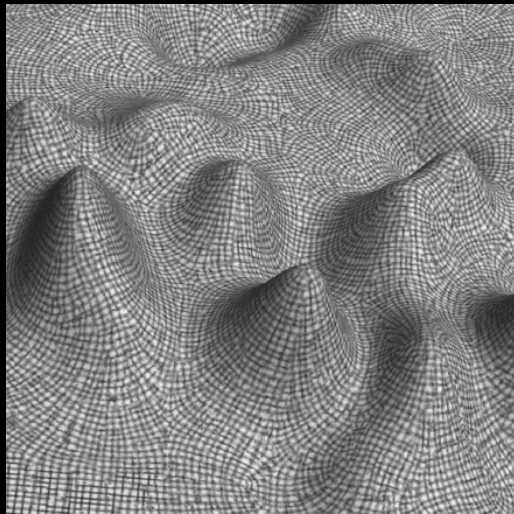
- Maneesh Agrawala, Stanford University
- Frédo Durand, MIT
- Bruce Gooch, University of Utah
- Victoria Interrante, University of Minnesota
- Victor Ostromoukhov, University of Montreal
- Denis Zorin, New York University

Overcoming the limitations of the medium

- 8:40 Limitations of the medium (Durand)

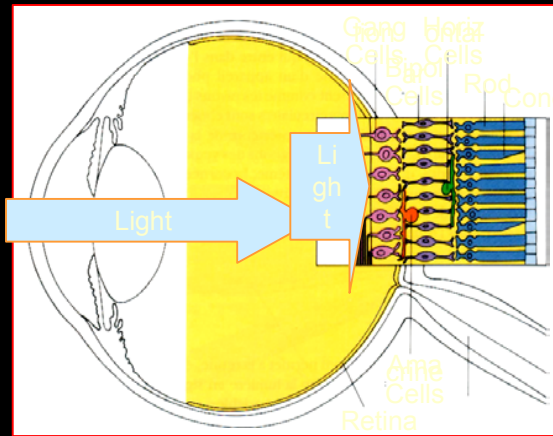
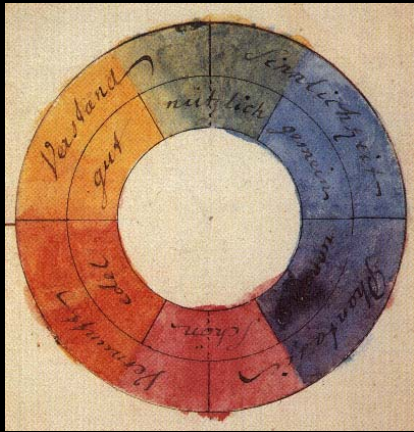


- 9:25 Perception & representation of shape and depth (Interrante)

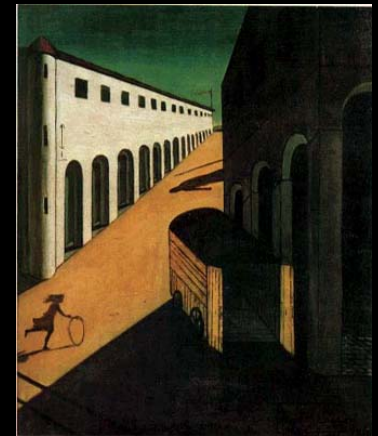


Color and Perspective

- 10:35 Color (Ostromoukhov)



- 11:25 Perspective and perception (Zorin)

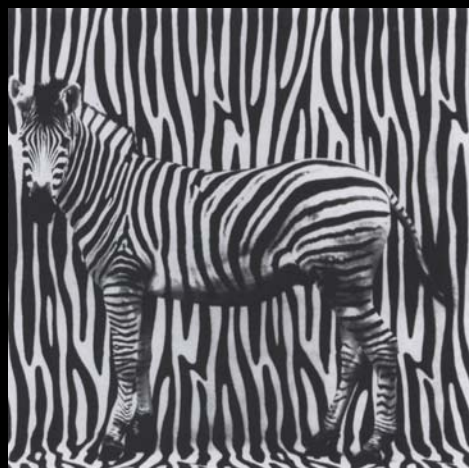
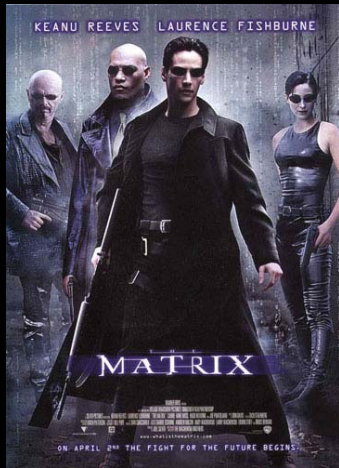


Picture composition and organization

- 1:30 Focus and gaze (Durand)

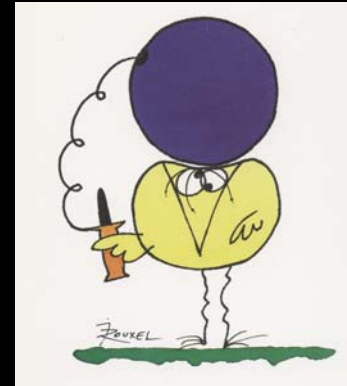
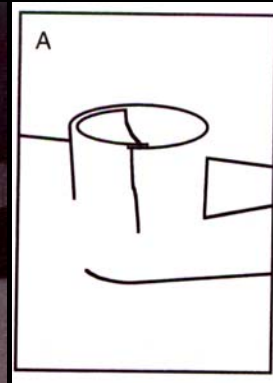
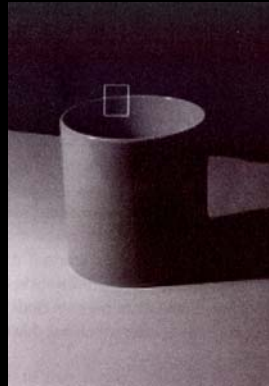
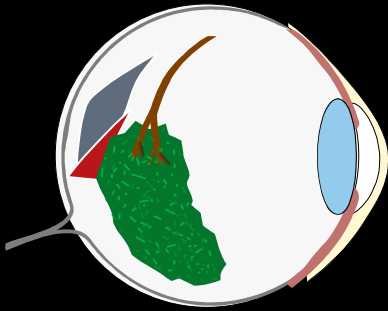


- 1:55 Gestalt and composition (Durand)
- 2:35 Neurological theories of aesthetic (Gooch)

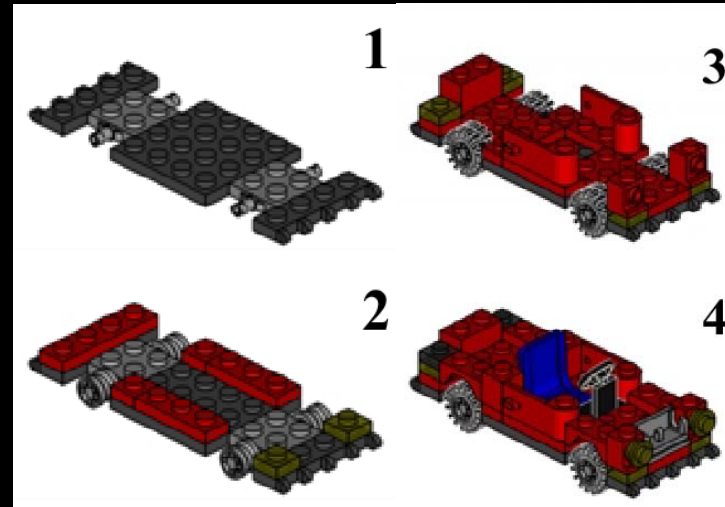
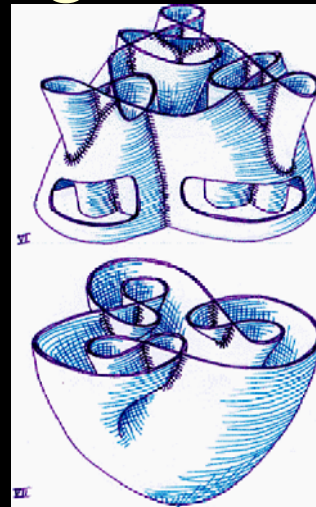
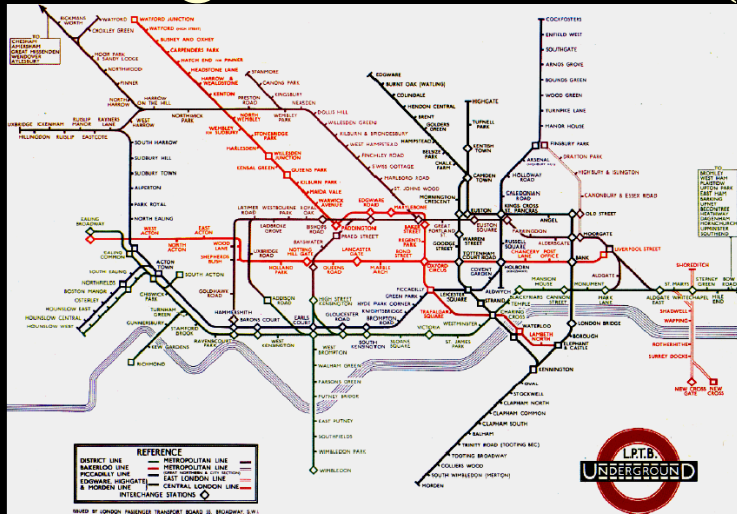


Beyond projection

- 3:35 Computational vision and pictures (Durand)



- 4:25 Effective visualization and illustration using cognitive science (Agrawala)

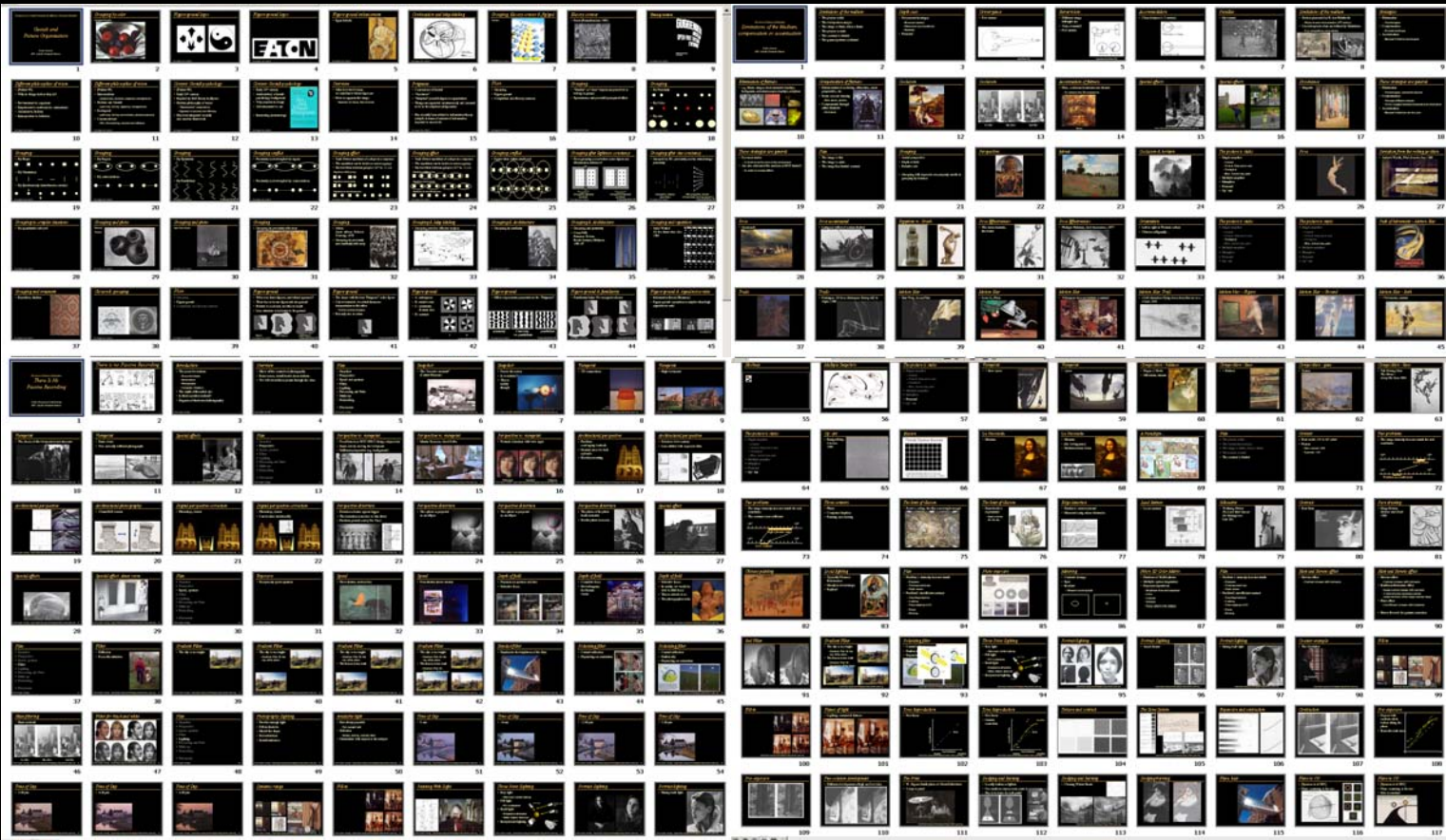


Please share your knowledge



Coming soon...

- Web page:
<http://gfx.lcs.mit.edu/ArtScience02/>
- Latest version of slides



8:40 Limitations of the medium

9:25 Perception & representation of shape & depth

10:35 Color

11:25 Perspective and perception

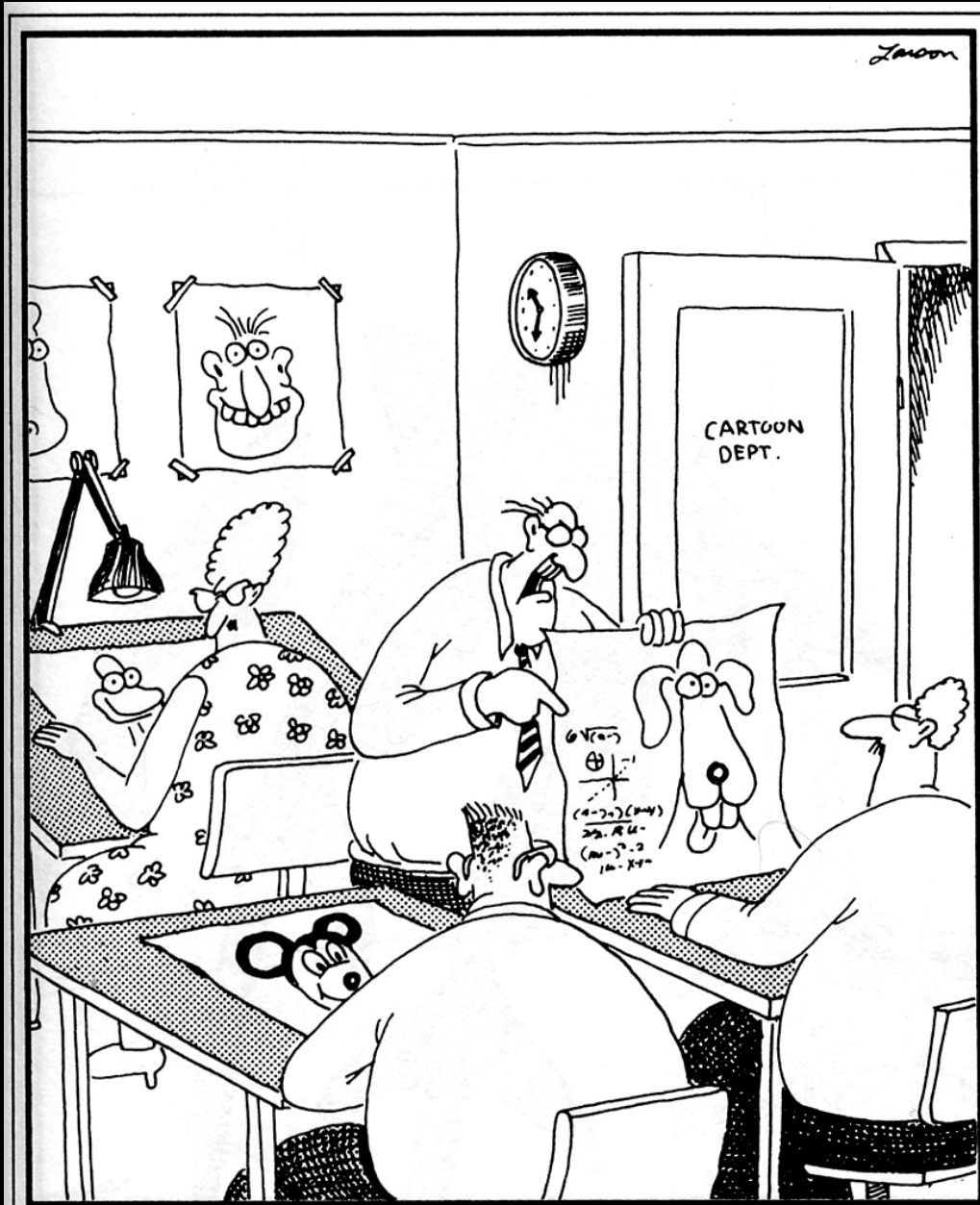
1:30 Focus and gaze

1:55 Gestalt and composition

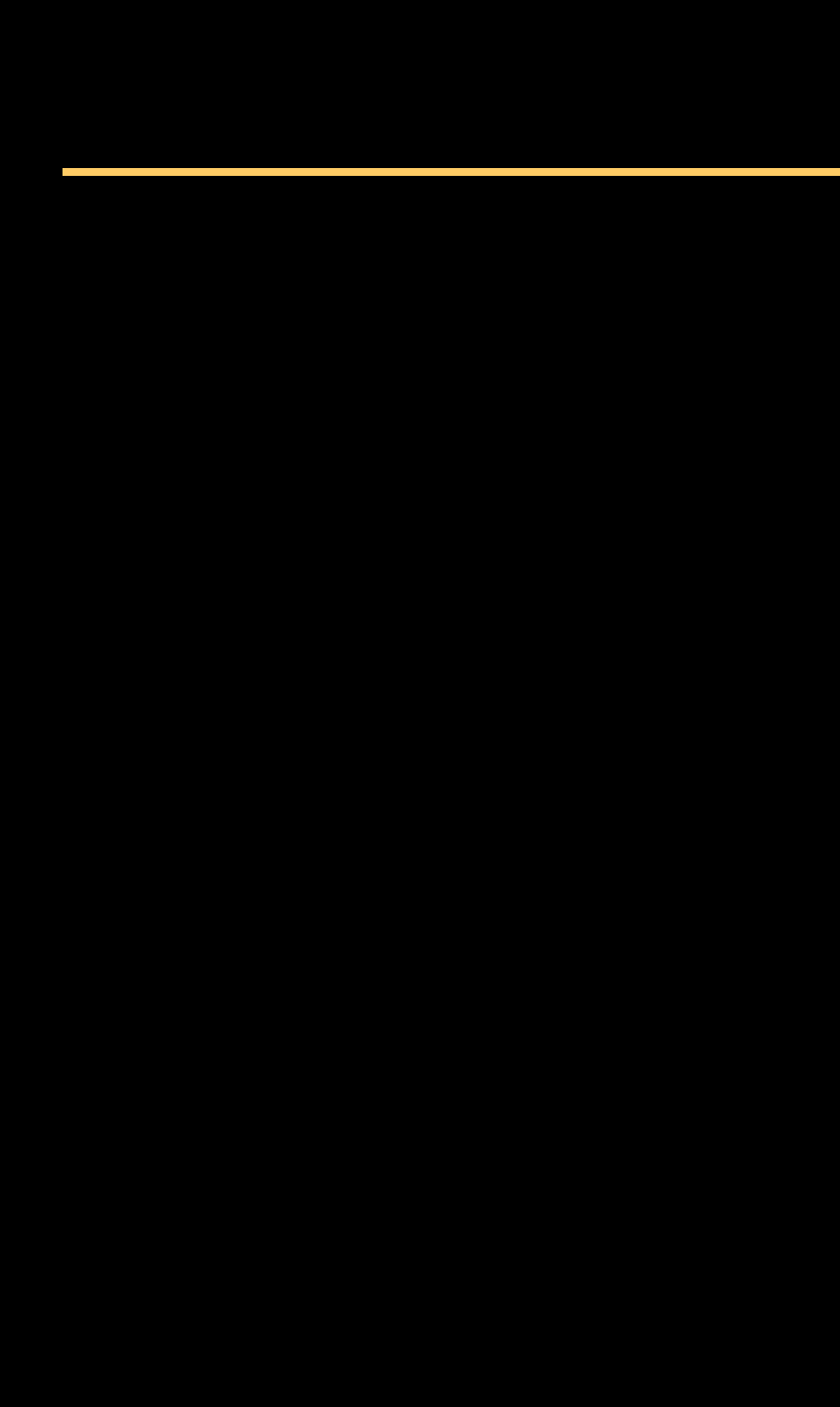
2:35 Neurological theories of aesthetic

3:35 Computational vision and pictures

4:25 Effective visualization and illustration using cognitive science



“Hey! What’s this, Higgins? Physics equations?... Do you enjoy your job here as a cartoonist, Higgins?”



An example: color

- Blue & yellow are *opponent* in the visual system
- Van Gogh's painting uses this effect
- The existence of color opponents has implications in visualization and color technology

