The Art and Science of Depiction

There Is No Passive Recording

Frédéric Durand and Julie Dorsey
MIT - Lab for Computer Science

Introduction

• The quest for realism
  – Since the Greeks
  – Renaissance
  – Photography
  – Computer Graphics
• The myth of the naked eye
• Is there a perfect realism?
• Degrees of freedom of photography

Overview

• Show all the controls of photography
• Raise issues, install doubt about realism
• We will revisit these points through the class

Plan

• Snapshot
  • The “decisive moment” (Cartier Bresson)
• Perspective
• Speed and aperture
• Filter
• Lighting
• Processing and Print
• Make-up
• Retouching
• Discussion
Snapshot

- Freeze the action
- Is it realistic?
- This is reality though

Viewpoint

- 2D composition

Viewpoint

- High viewpoint

Viewpoint

- The choice of the viewpoint is not innocent

Viewpoint

- Same event
- Two radically different photographs

Special effects
Plan
- Snapshot
- Perspective
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Perspective vs. viewpoint
- Focal lens does NOT ONLY change subject size
- Same size by moving the viewpoint
- Different perspective (e.g. background)

Perspective vs. viewpoint
- Martin Scorcese, Good Fellas

Architectural perspective
- Problem: converging verticals
- Normal since we look upwards
- But disconcerting

Solution: view-camera
- Lens shifted with respect to film
Architectural perspective

Architectural photography
• 35mm SLR version

Digital perspective correction
• Photoshop, distort
• Can be done traditionally

Perspective distortion
• Exterior columns appear bigger
• The distortion is not due to lens flaws
• Problem pointed out by Da Vinci

Perspective distortion
• The sphere is projected as an ellipse
**Perspective distortion**

- The sphere is projected as an ellipse

**Perspective distortion**

- The photo of the photo looks distorted
- But the photo does not...

**Special effect**

**Special effects**

**Special effect: Ames room**

**Plan**

- Snapshot
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### Exposure

- Reciprocity speed-aperture

### Speed

- Slow shutter, motion blur

### Depth of field

- Complete focus
- Never happens for human vision

### Depth of field

- Selective focus
- In reality, we would be able to shift focus
- This is refused to us
- The photographer rules
**Plan**
- Snapshot
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**Filter**
- Diffusion
- Focus the attention

**Gradient Filter**
- The sky is too bright
  - Gradient filter for the top of the photo
- The house is too dark
  - Gradient filter for the bottom of the photo
**Stardust filter**
- Emphasize the brightness of the flare

**Polarizing filter**
- Control reflection
- Depending on orientation

**Polarizing filter**
- Control reflection
- Darken sky
- Depending on orientation

**Haze filtering**
- Haze is bluish

**Filter for black and white**

**Plan**
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**Photography Lighting**

- Provide enough light
- Fill-in shadows
- Model the shape
- Reveal texture
- Install ambiance

**Available light**

- Not always possible
  - Not enough light
- Selection
  - Sunset, sunrise, overcast skies
- Orientation with respect to the subject

**Time of Day**

- 8 am

**Time of Day**

- 10 am

**Time of Day**

- 12:30 pm

**Time of Day**

- 2:30 pm
Time of Day

- 3:30 pm

- 4:30 pm

Dynamic range

Fill-in

Painting With Light
**Three Point Lighting**

- Key light
  - Main and visible lighting
- Fill light
  - Fill-in shadows
- Back light
  - Emphasize silhouette
  - Make subject stand out
- Independent lighting

**Portrait Lighting**

**Portrait lighting**

- Strong back light

**Counter-example**

- The Godfather

**Counter example**

- Alfred Krupp photographed in 1963 by Arnold Newman
- Because Krupp had benefited from the nazis
- Un-friendly lighting
**Plan**
- Snapshot
- Perspective
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- Make-up
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- Discussion

**Processing and printing**
- Limitation of contrast
  - Typically 1 to 300
  - Reality often exhibits 1 to 10,000

**Tone Reproduction**
- Not linear

**The Zone System**

**Tone Reproduction**
- Not linear
  - Gamma correction
**The Print**

- W. Eugene Smith photo of Albert Schweitzer
- 5 days to print!

**Dodging and Burning**

- During the print
- Locally darken or lighten
- Use masks to expose some parts less
- Has to be done for each print!

**Dodging and Burning**

- Clearing Winter Storm

**Edge burning**

- Darken the edges
- Focus the attention, make the photo dynamic

**Plan**

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- Discussion
Facial problems in CGI

- E.g. Toy Story humans look bad
- Measurement of human reflectance

Measurement of human skin reflectance at Cornell University

Make-up

- Scars, monsters, etc.
- “Creative” make-up
  - Fancy!
- Corrective make-up
  - Hide wrinkles, etc
  - Balance the face
  - Not limited to the face!
- Make-up for pictures
  - Avoid highlights

Shading and highlighting

Corrective Make Up

- Depending on the shape of the face

Corrective lighting

An example
Is it fair?

Plan

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- Retouching
- Discussion

Retouching

- Politics...

Fakery

- Nessy
- Oprah

Touch-up: too dark face

Touch-up: silhouette
Touch-up: undesirable lines

Deforming lens

- Deform one part of the frame
- Stretched arm and legs

Touch-up: stretch and arm

Symmetry

Personal gallery
There is no passive recording

Personal gallery

Personal gallery

Photo-montage

Photo-montage
**Plan**
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**Discussion**
- What are we trying to control?

**What are we trying to control?**
- Perspective, composition
  - Viewpoint
  - Lens
  - View-camera, stretch, undistort
- Tones
  - Filter
  - Lighting
  - Processing and print
  - Make-up
  - Retouch
- Selection

**Discussion**
- Different ways to achieve an effect
- The end justifies the means
  - The final picture is the only criterion

**Assignment**
- Un-distort perspective: distort
Assignment

• Wire

Assignment

• Distracting elements

Assignment: rubber-stamp

• Magical tool: rubber-stamp

Assignment

• Before

Assignment

• After