

*The Art and Science of Depiction*

# There Is No Passive Recording

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## There is no Passive Recording

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## 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

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## Overview

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

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## Plan

- Snapshot
- Perspective
- Speed and aperture
- Filter
- Lighting
- Processing and Print
- Make-up
- Retouching
- Discussion

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## Snapshot

- The “decisive moment” (Cartier Bresson)

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## Snapshot

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



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## Viewpoint

- 2D composition



Photo  
Peter Turner

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## Viewpoint

- High viewpoint



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## Viewpoint

- The choice of the viewpoint is not innocent



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## Viewpoint

- Same event
- Two radically different photographs



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## Special effects



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## Plan

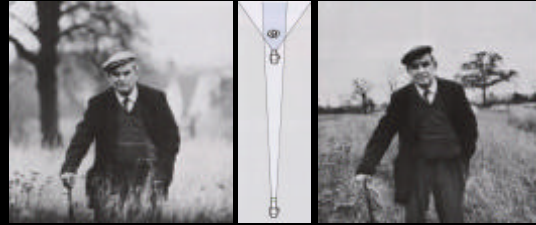
- Snapshot
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## Perspective vs. viewpoint

- Focal lens does NOT ONLY change subject size
- Same size by moving the viewpoint
- Different perspective (e.g. background)



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## Perspective vs. viewpoint

- Martin Scorsese, Good Fellas



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## Perspective vs. viewpoint

- Portrait: distortion with wide angle



Wide angle

Standard

Telephoto

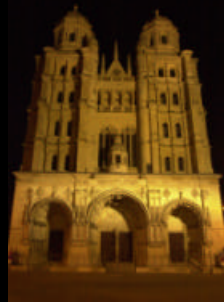
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## Architectural perspective

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



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## Architectural perspective

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

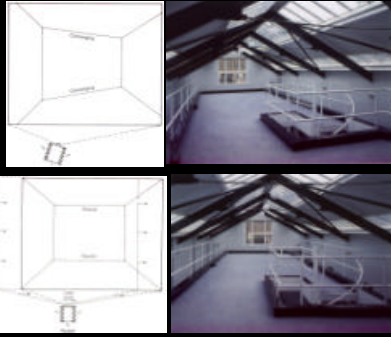


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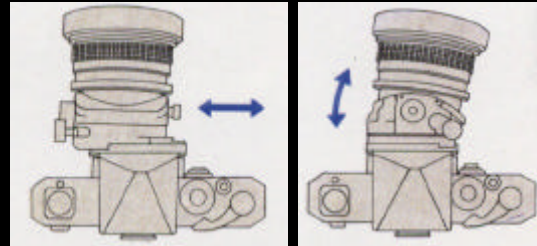
## Architectural perspective



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## Architectural photography

- 35mm SLR version



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## Digital perspective correction

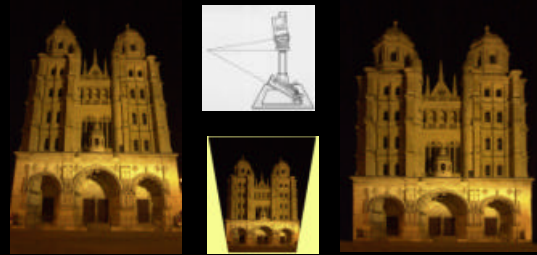
- Photoshop, distort



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## Digital perspective correction

- Photoshop, distort
- Can be done traditionally



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## Perspective distortion

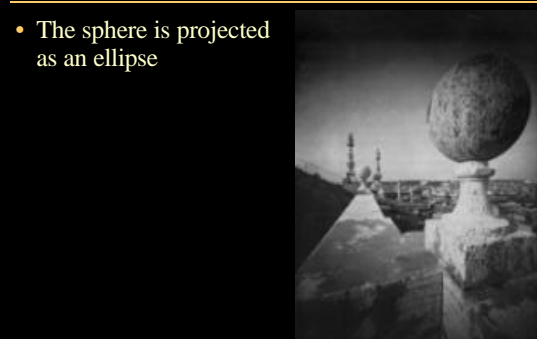
- Exterior columns appear bigger
- The distortion is not due to lens flaws
- Problem pointed out by Da Vinci



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## Perspective distortion

- The sphere is projected as an ellipse



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## Perspective distortion

- The sphere is projected as an ellipse



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## Perspective distortion

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



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## Special effect



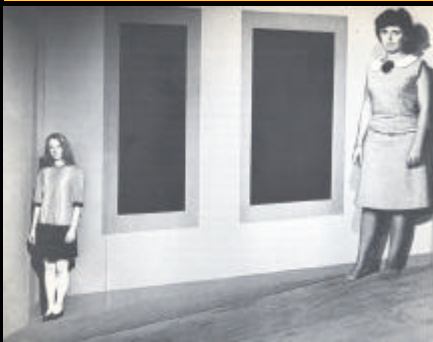
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## Special effects



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## Special effect: Ames room



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## Plan

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## Exposure

- Reciprocity speed-aperture

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## Speed

- Slow shutter, motion blur



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## Speed

- Fast shutter, freeze motion



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## Depth of field

- Depends on aperture and lens
- Selective focus



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## Depth of field

- Complete focus
- Never happens for human vision



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## Depth of field

- Selective focus
- In reality, we would be able to shift focus
- This is refused to us
- The photographer rules



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## Plan

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## Filter

- Diffusion
- Focus the attention



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## Gradient Filter

- The sky is too bright



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## Gradient Filter

- The sky is too bright
  - Gradient filter for the top of the photo



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## Gradient Filter

- The sky is too bright
  - Gradient filter for the top of the photo
- The house is too dark



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## 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



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## Stardust filter

- Emphasize the brightness of the flare



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## Polarizing filter

- Control reflection
- Depending on orientation



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## Polarizing filter

- Control reflection
- Darken sky
- Depending on orientation



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## Haze filtering

- Haze is bluish



No filter Blue filter Red filter

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## Filter for black and white



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## Plan

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## Photography Lighting

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

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## Available light

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

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## Time of Day

- 8 am



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## Time of Day

- 10 am



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## Time of Day

- 12:30 pm



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## Time of Day

- 2:30 pm



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## Time of Day

- 3:30 pm



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## Time of Day

- 4:30 pm



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## Time of Day

- 4:30 pm



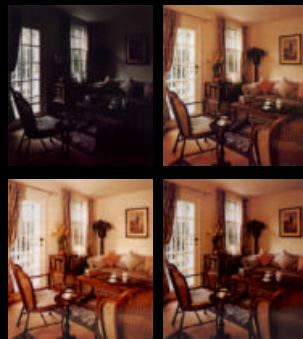
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## Dynamic range



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## Fill-in



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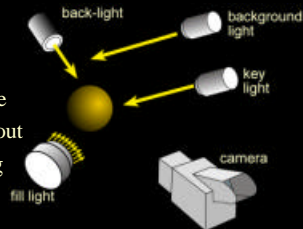
## Painting With Light



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## Three Point Lighting

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



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## Portrait Lighting



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## Portrait lighting

- Strong back light



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## Portrait lighting



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## Counter-example

- The Godfather



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## Counter example

- Alfred Krupp photographed in 1963 by Arnold Newman
- Because Krupp had benefited from the nazis
- Un-friendly lighting



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## Plan

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## Processing and printing

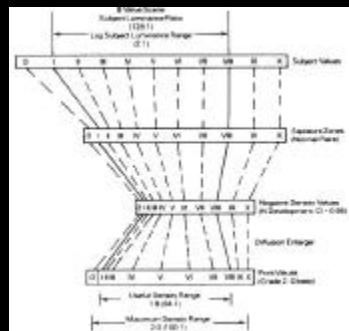
- Limitation of contrast
  - Typically 1 to 300
  - Reality often exhibits 1 to 10,000

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## Tone Reproduction



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Snapshot-Perspective-Speed, aperture-Filter-Lighting-Processing & Print-Make up-Retouching

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## The Zone System

The slide shows a grayscale calibration chart with 11 steps from black to white. To the right is a landscape image with zones labeled from 0 to 10. Below the chart are four small images showing different processing results of the same scene.

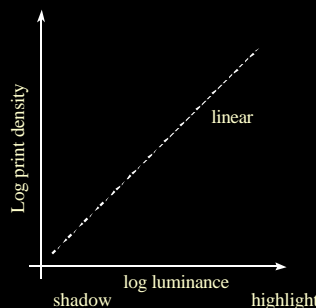
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## Tone Reproduction

- Not linear



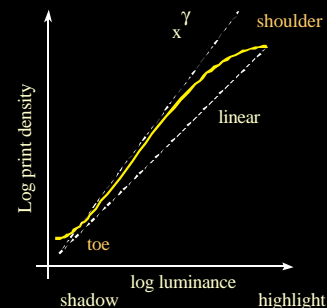
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## Tone Reproduction

- Not linear
- Gamma correction



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## The Print

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



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## Dodging and Burning

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



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## Dodging and Burning

- Clearing Winter Storm



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## Dodging and Burning



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## Edge burning

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



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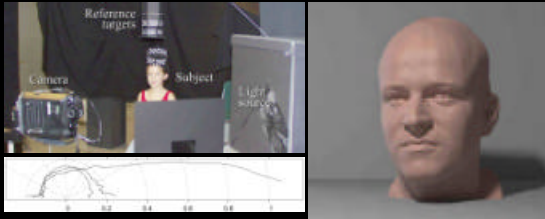
## Plan

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## Facial problems in CGI

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



Measurement of human skin reflectance at Cornell University

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## 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

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## Shading and highlighting



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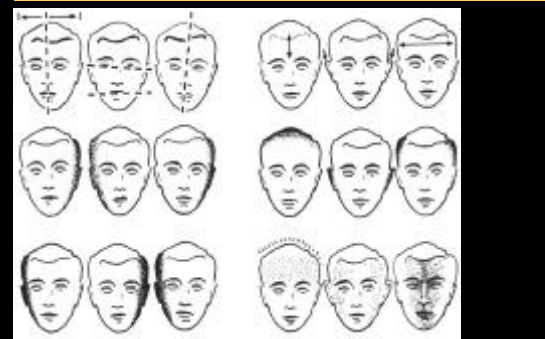
## Corrective Make Up

- Depending on the shape of the face



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## Corrective lighting



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## An example



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## Is it fair?



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## Plan

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## Retouching

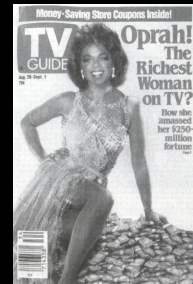
- Politics...



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## Fakery

- Nessy
- Oprah



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## Touch-up: too dark face



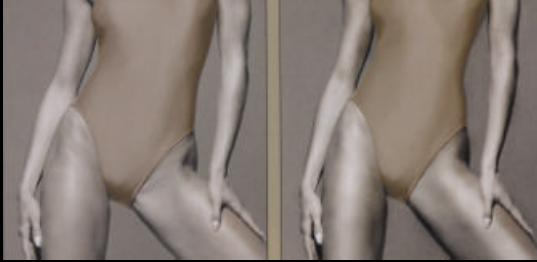
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## Touch-up: silhouette



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## *Touch-up: undesirable lines*



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## *Touch-up: stretch and arm*



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## *Deforming lens*

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



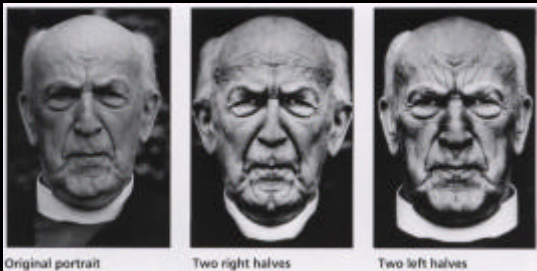
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## *Touch-up: symmetry*



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## *Symmetry*



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## *Personal gallery*



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*Personal gallery*



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*Personal gallery*



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*Personal gallery*



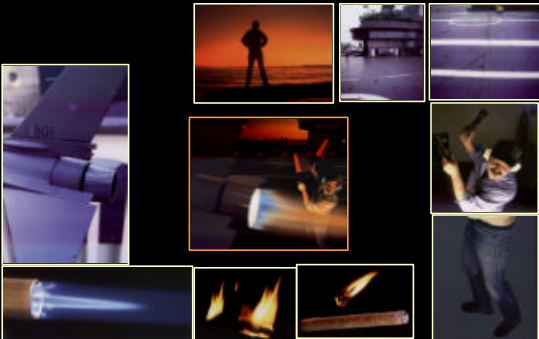
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*Photo-montage*



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*Photo-montage*



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*Photo-montage*



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## Plan

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## Discussion

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- What are we trying to control?

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## What are we trying to control?

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- Perspective, composition
  - Viewpoint
  - Lens
  - View-camera, stretch, undistort
- Tones
  - Filter
  - Lighting
  - Processing and print
  - Make-up
  - Retouch
- Selection

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## Discussion

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

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## Assignment

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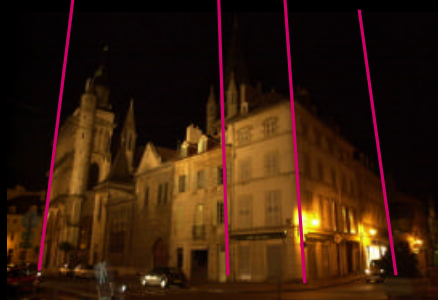
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## Assignment

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- Un-distort perspective: distort

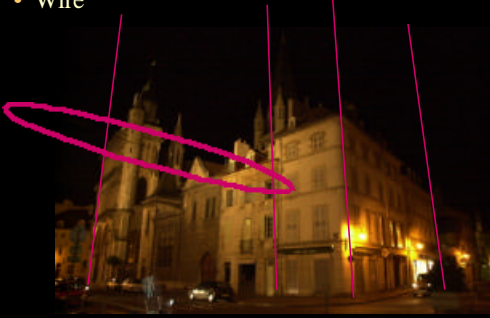


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*Assignment*

- Wire

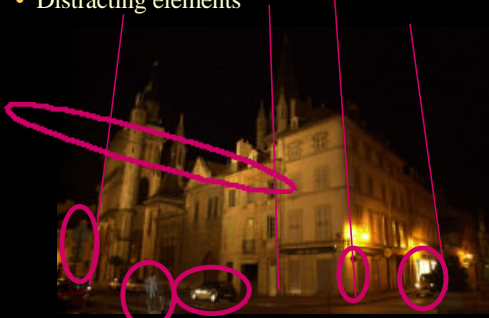


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*Assignment*

- Distracting elements

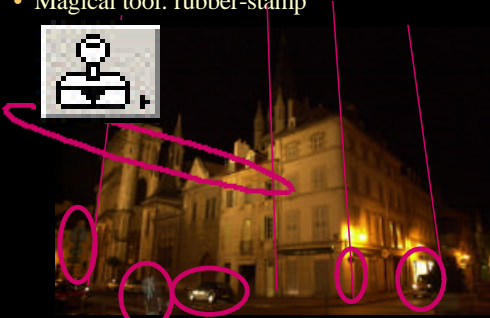


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*Assignment: rubber-stamp*

- Magical tool: rubber-stamp



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*Assignment*

- Before



There is no passive recording

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*Assignment*

- After



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