

The Art and Science of Depiction

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<u>Motivations</u>

- What is "Realism"? What is "Photorealism"?
- Are photographs realistic?
- Are photographs photorealistic?
- What is Non-Photorealistic Rendering?



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<u>Realism vs. realism</u>

- A realistic image can be MORE than realistic
- E.g. dodging and burning
 - During the print
 - Locally darken or lighten using a mask





Generic pictorial issues

- A lot of issues are universal
- E.g. oil painting / photograph



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What and whom for?

- Trained image makers
 - Understand what they need
 - Provide more relevant tool
- Image-dummies
 - Automatic and semi-automatic
 - E.g. "gorgeous image" for CAD
 - E.g. "digital photo beautifier"
- Computers (100% automatic)

 E.g. can we transfer the art and craft of cinema into games?





Can art historians tell us?

- Well, a lot of translation is necessary
- They know what is good in an image
- Their language is descriptive, not generative
- Often limited to 14th-19th century Western art
- But recent art history works with general images













Other goals

- Multidisciplinary, make connections
- Different viewpoint on picture
- Correct scientific errors in art books
- Excuse to talk about cool stuff
- Excuse to look at cool pictures



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Disclaimer & epistemology

- What will be described are connections, correlations, NOT truths, causalities, explanations
- Moreover, they are often hypothesis not yet verified
- But we hope they offer insights



<u>Plan</u>

- Visual system and art
- Limitations of medium: compensation and accentuation
- Representation system

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Beware of the El-Greco Fallacy

- El-Greco, elongated characters
- Were supposed due to astigmatism
- However, pictures and real people would have been stretched equally
- Almost as fallacious as assuming painting should be inverted because our eyes invert what we see



























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 *Dimitations of the medium*Flatness Finite size, frame Unique viewpoint Static Contrast and gamut Can be eliminated Can be compensated Can be accentuated











Low contrast is also an advantage

- W. Eugene Smith photo of Albert Schweitzer
- 5 days to print!
- Things can be related because the intensity is more similar
- Balance, composition





Multiple Snapshots

 Marcel Duchamp Nude Descending a Staircase 1912





<u>Plan</u>

- Visual system and art
- Limitations of medium: compensation and accentuation
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<u>Map making</u>

- Which information will be represented
- Projection
- Which kind of symbols will be used
- Colour codes









































<u>Style</u>

- Coarse-grain style
 Different categories of drawing, denotation, tone
- Finer-grain
- Local style
- Parameterization
- Capture



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- Automatically deduce style from 3D renderings
- (semi)-Automatically capture style from image(s)



















Deforming lens

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











