
75% CGI Renders!
Images owned by IKEA

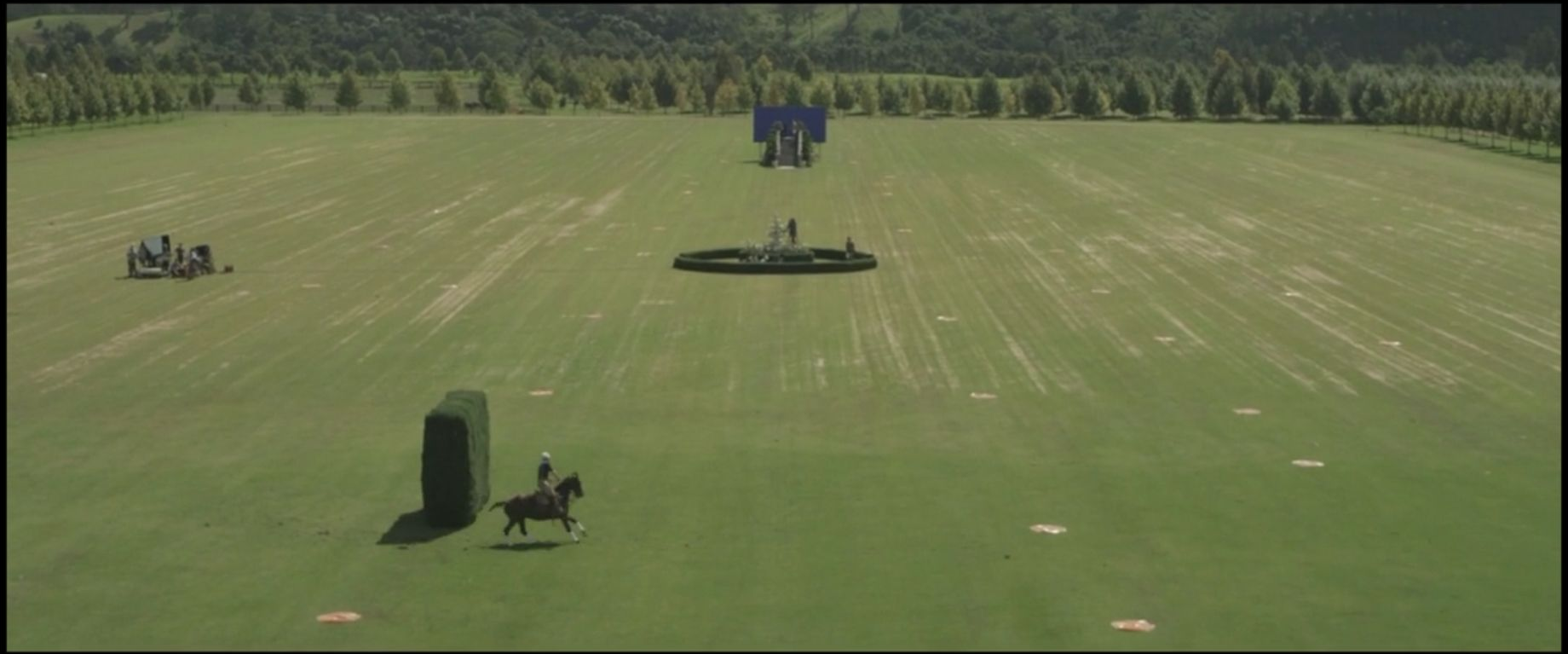
Photorealism Explained

The principles of photorealistic rendering

Why Photorealism is important

The Great Gatsby (2013)

Animal Logic VFX Reel



The Great Gatsby (2013)

Animal Logic VFX Reel

Game of Thrones

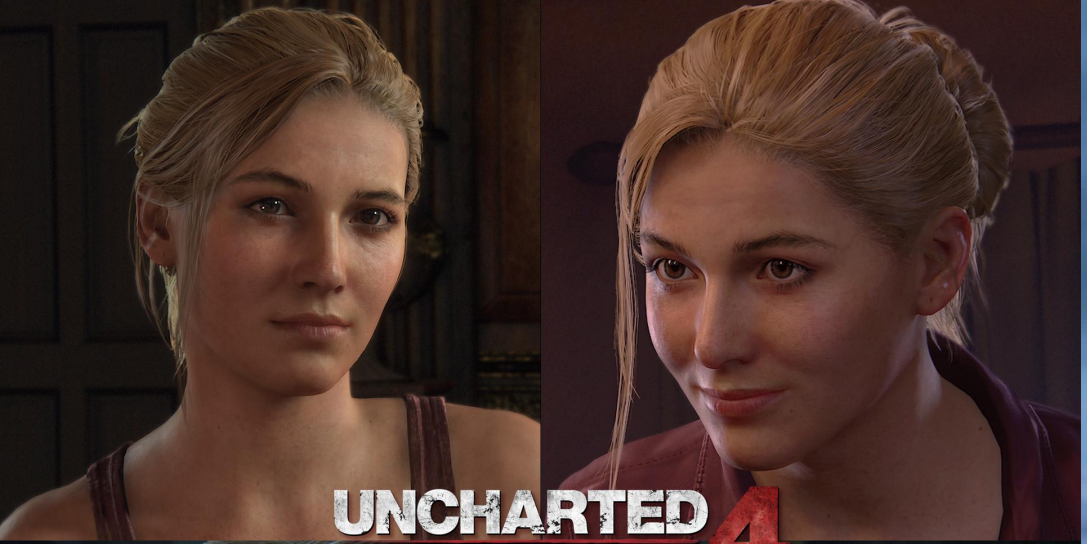

RODEO
Visual Effects Company
Game of Thrones

Captain America: Winter Soldier (2014)

The Curious Case of Benjamin Button (2008)

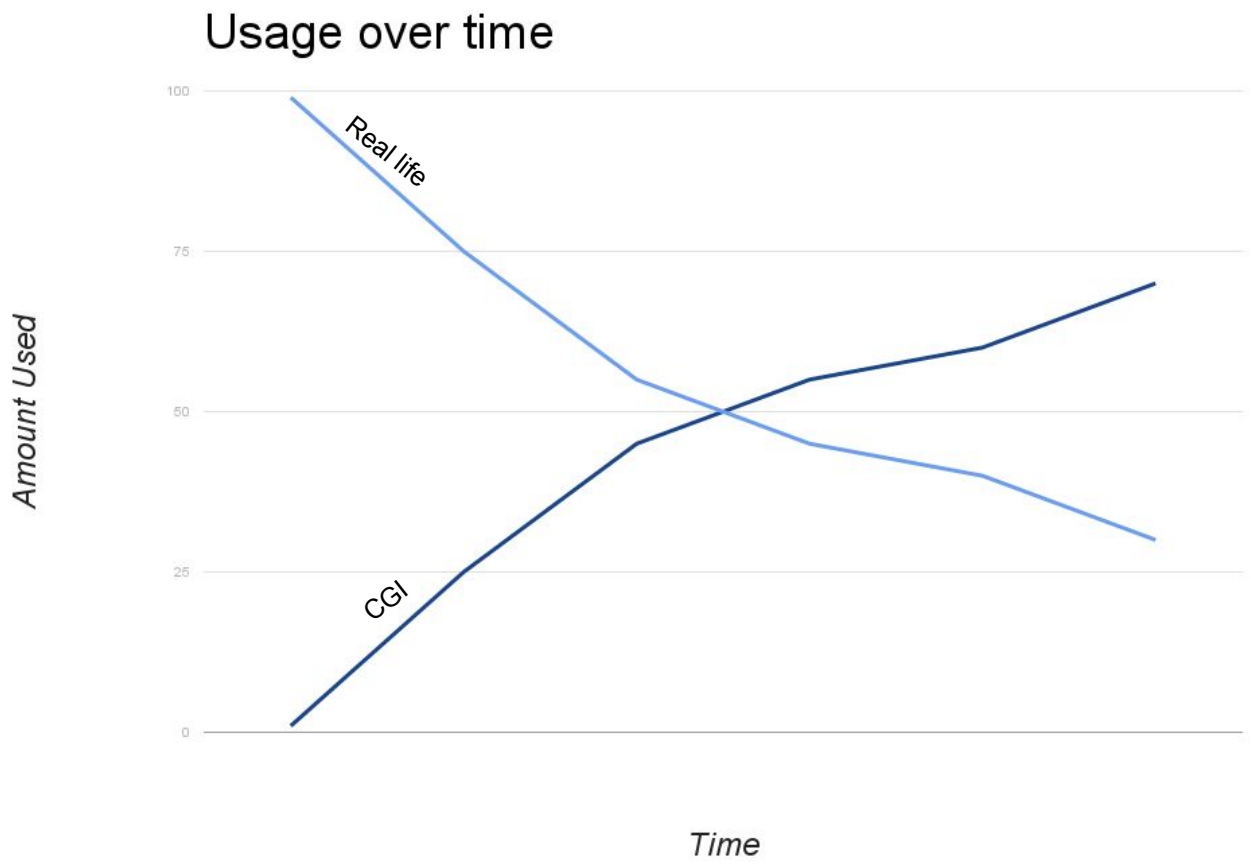
Watch: Realtime architectural walkthrough

From Youtube Channel: UE4 Architecture



Uncharted 4: A Thief's End (2016)
Naughty Dog

Images shared by Soa Lee on ArtStation


Usage over time
100
75
50
25
0
Real life
CGI
Amount Used
Time

Great news! :D

However...

They all want

Photorealism

Images owned by IKEA


Watch: Jurassic World VFX Breakdown - by Image Effects


LIFT EACH
CONNECTION
AT 4 PLACES
grand
theft
auto
FIVE

Image by Cornelius Dämmrich

Photorealism:

The *most important* goal for CG artists

“But what about…”

Big Hero 6 (2014)
Disney

Toy Story 1 (1995)
Pixar

Toy Story 3 (2010)
Pixar

Inside Out (2015)
Pixar

The Good Dinosaur (2015)
Pixar


Disney
FROZEN

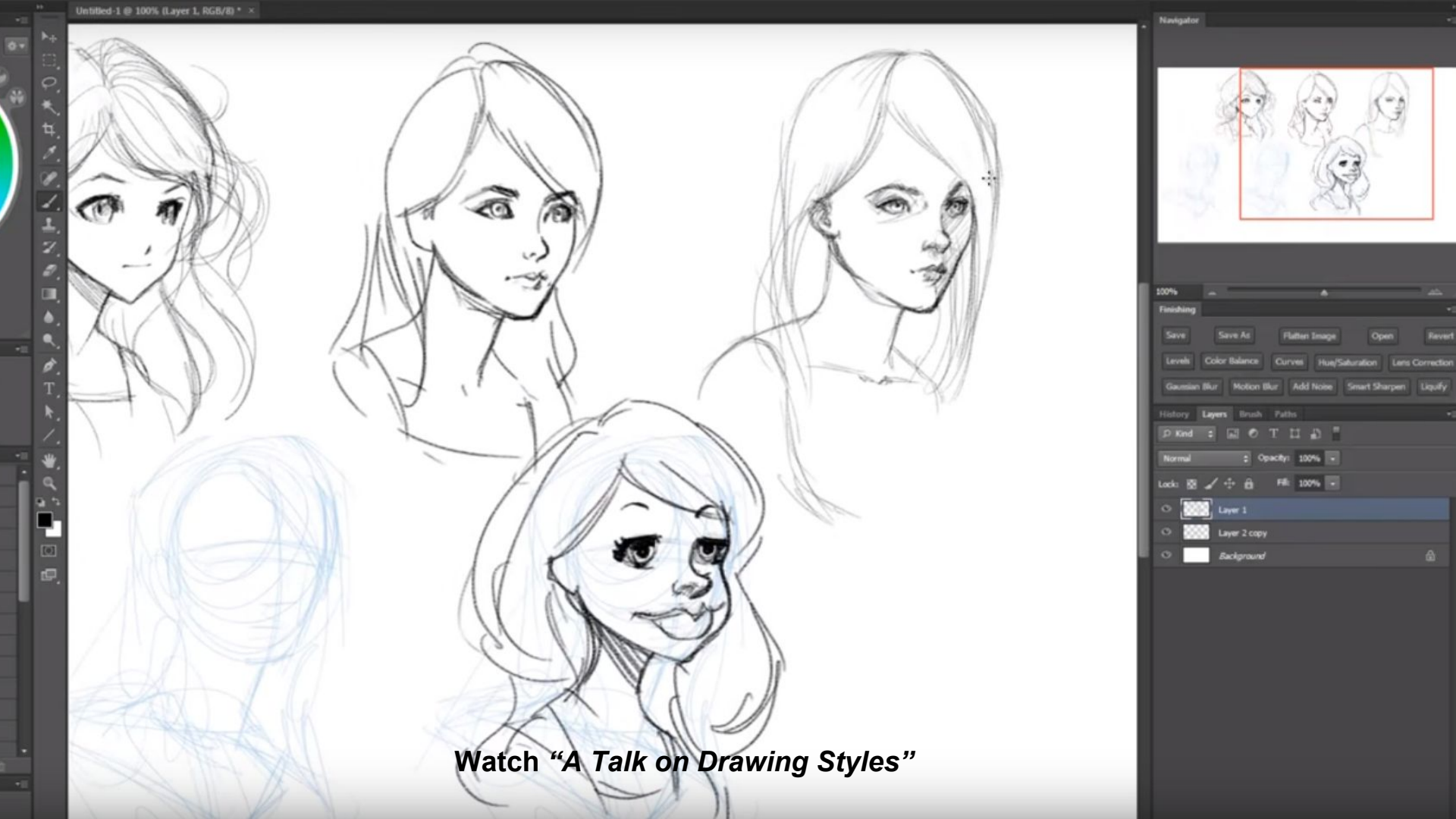
Art by **Jin Kim**
cosmoanimato.tumblr.com

Expectation

Choose one!

Realistic  Cartoony

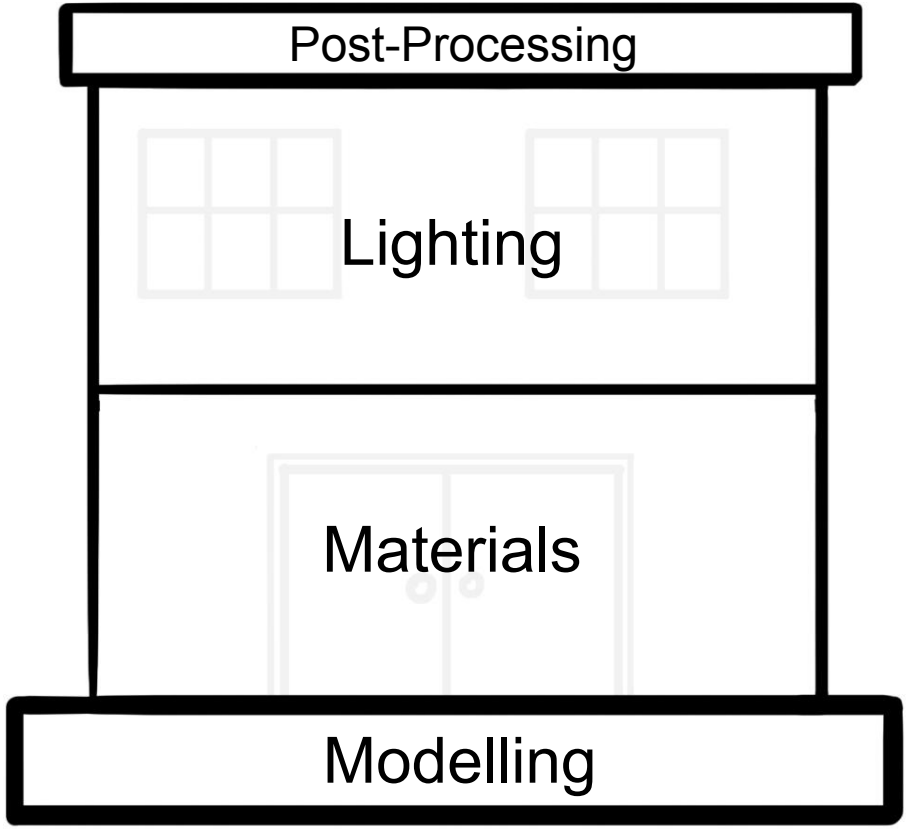
Reality



Watch *“A Talk on Drawing Styles”*

How to Achieve Photorealism

The 4 Building Blocks of Photorealism



The Third and the Seventh (2009)
By Alex Roman

*"…90% of the time, the **materials** and **lighting** carry the weight of creating truly photorealistic imagery."*
-Alex Roman, From Bits to Lens


Post-Processing
Lighting
Material
Model
BLENDER GURU

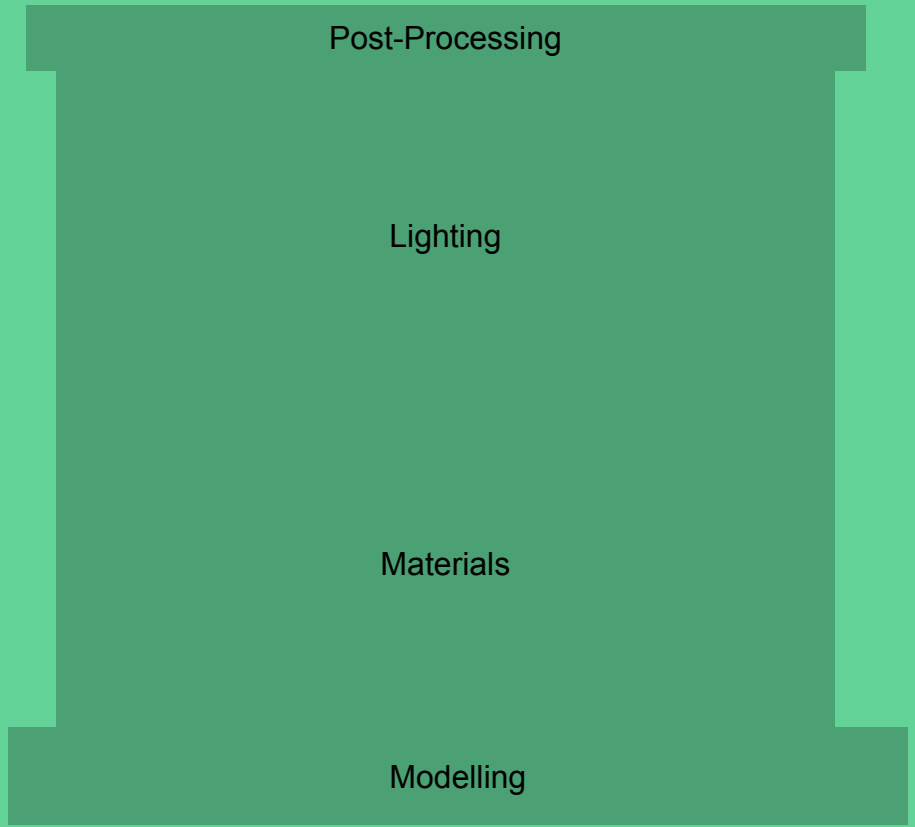
Image by Cornelius Dämmrich

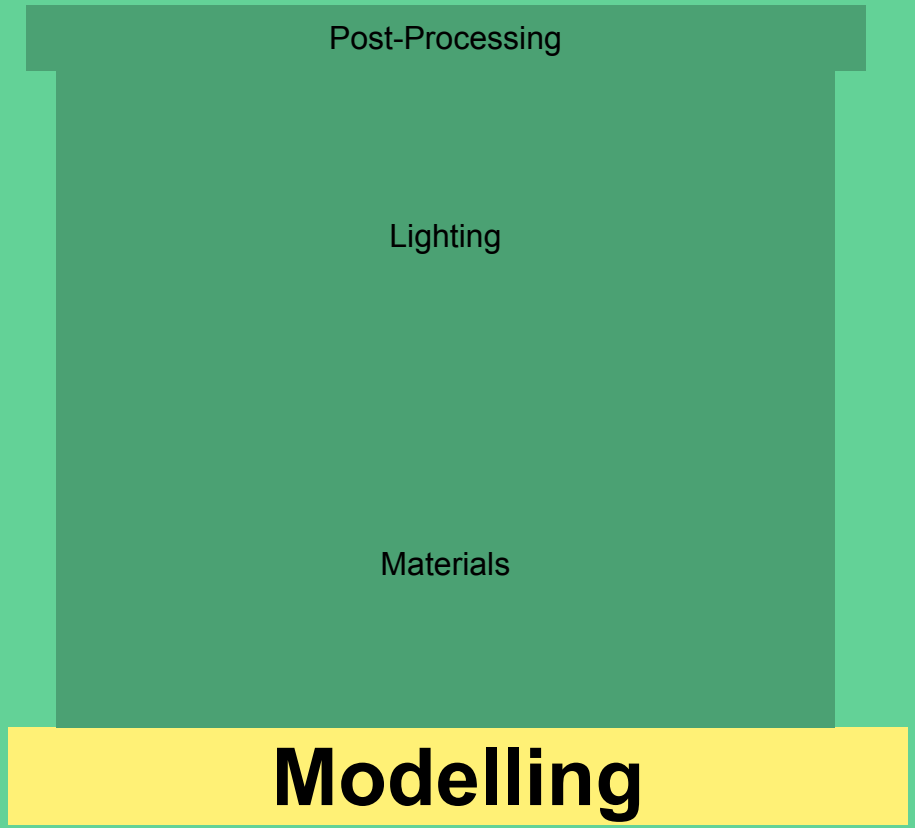
Post-Processing

Lighting

Material

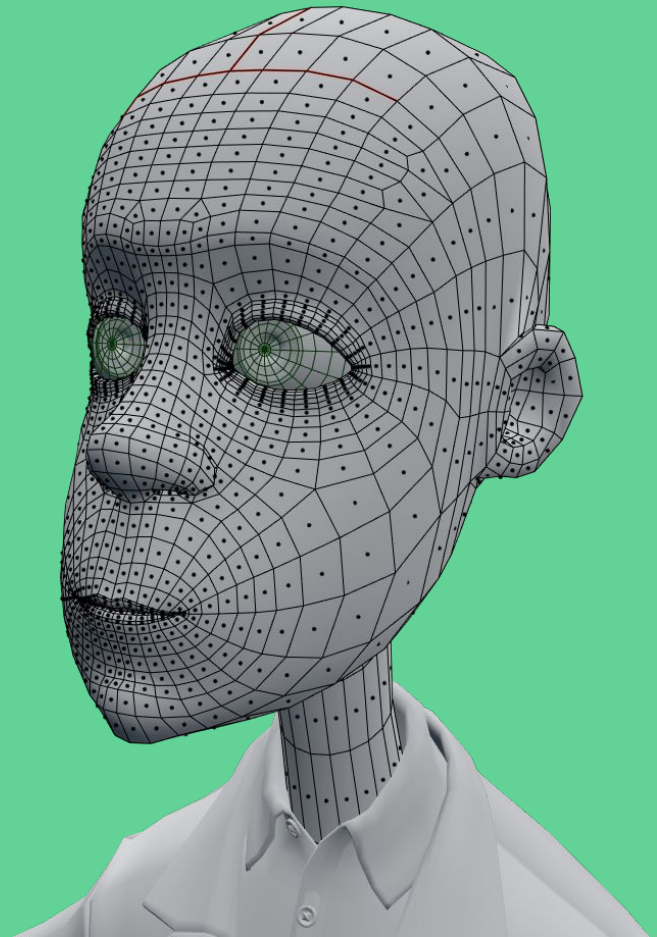
Model


Post-Processing
Lighting
Materials
Modelling

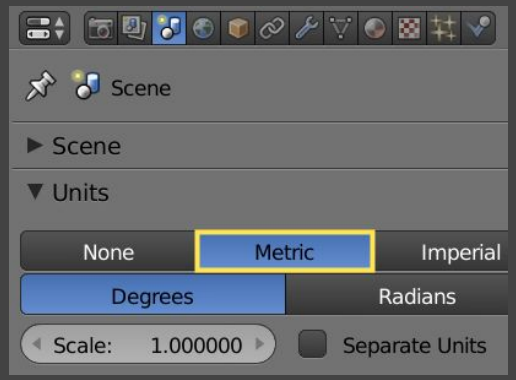

Post-Processing
Lighting
Materials
Modelling

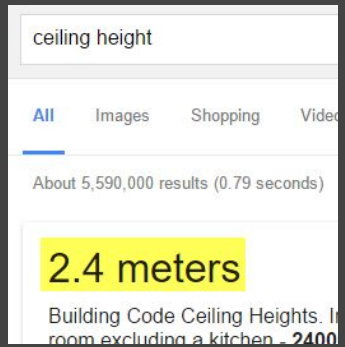
Photorealistic **modelling** is...

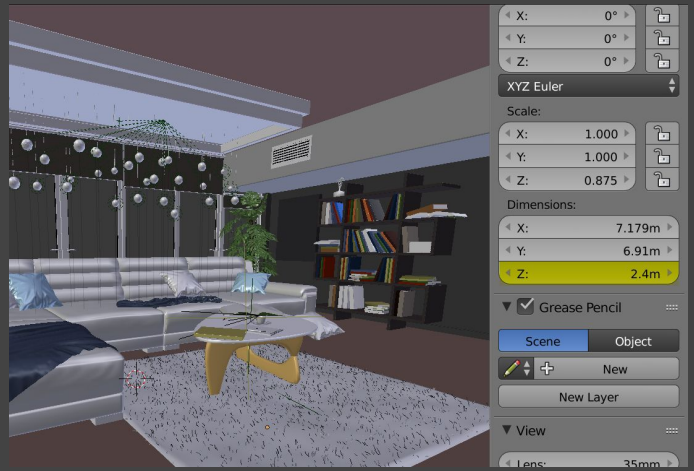
Matching the proportions and form of the real world object.



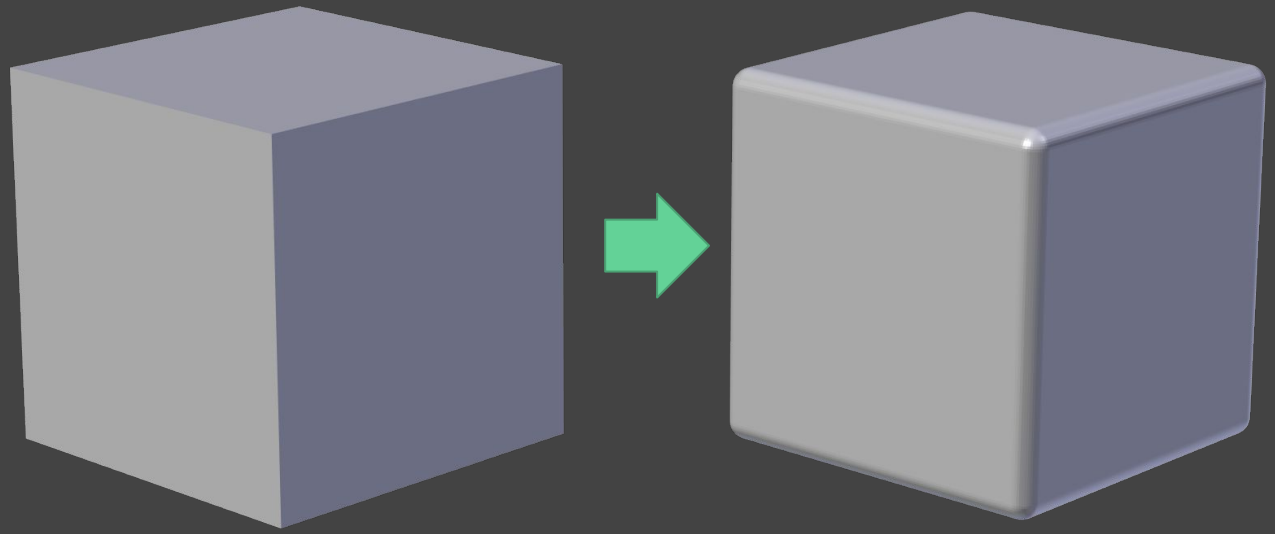
Tip #1: Keep it in Real World Scale







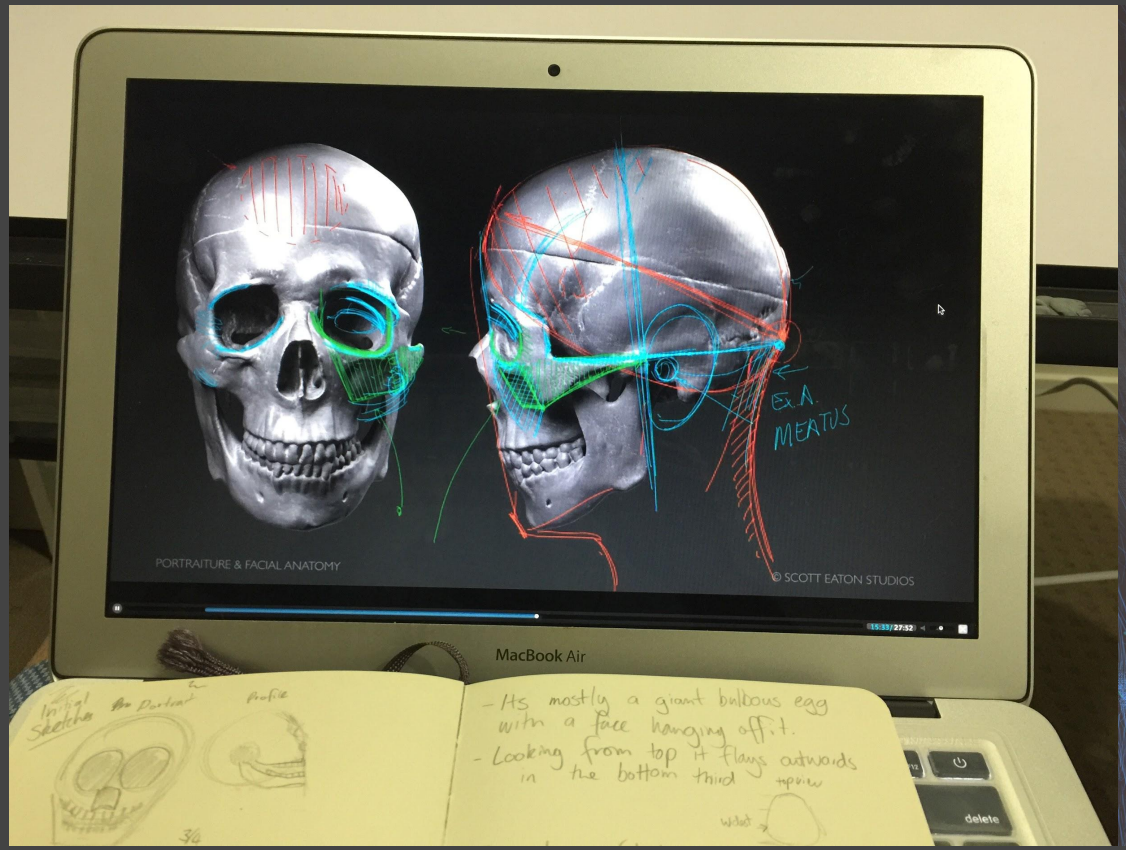
Tip #2: Never a sharp edge!

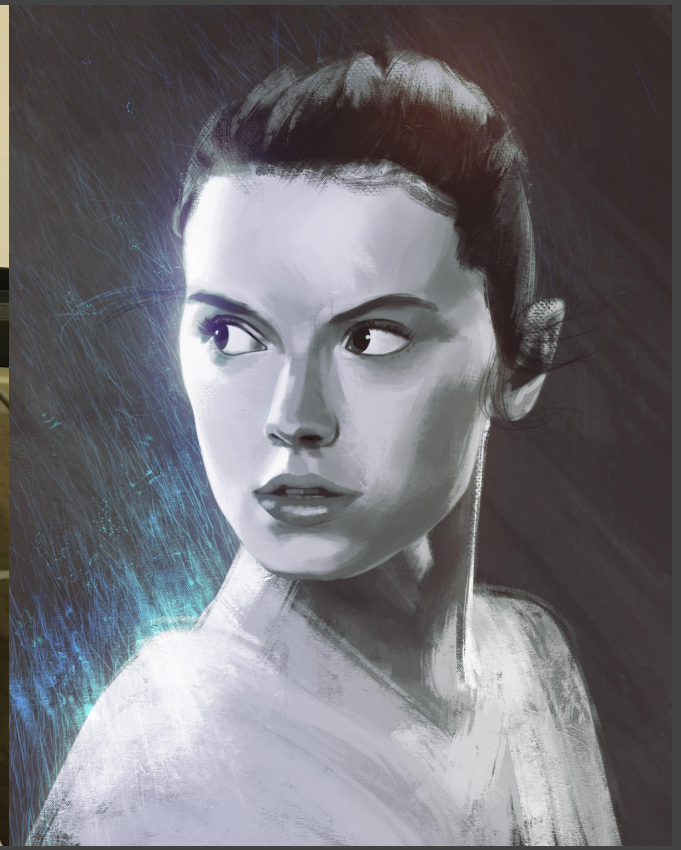


Tip #3: Use Reference!

(and nothing beats the real thing)

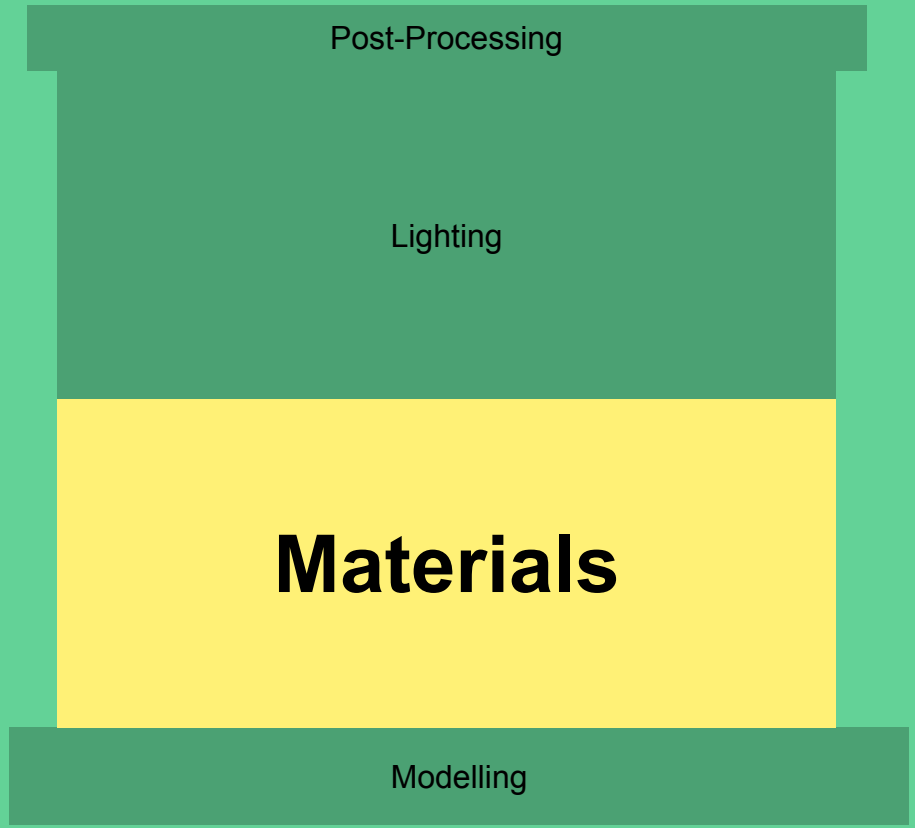
Tip #4: Know your anatomy





Modelling

1. Keep it in real world scale
2. Never a sharp edge
3. Use Reference
4. Know your anatomy


Post-Processing
Lighting
Materials
Modelling

Photorealistic **materials** are...

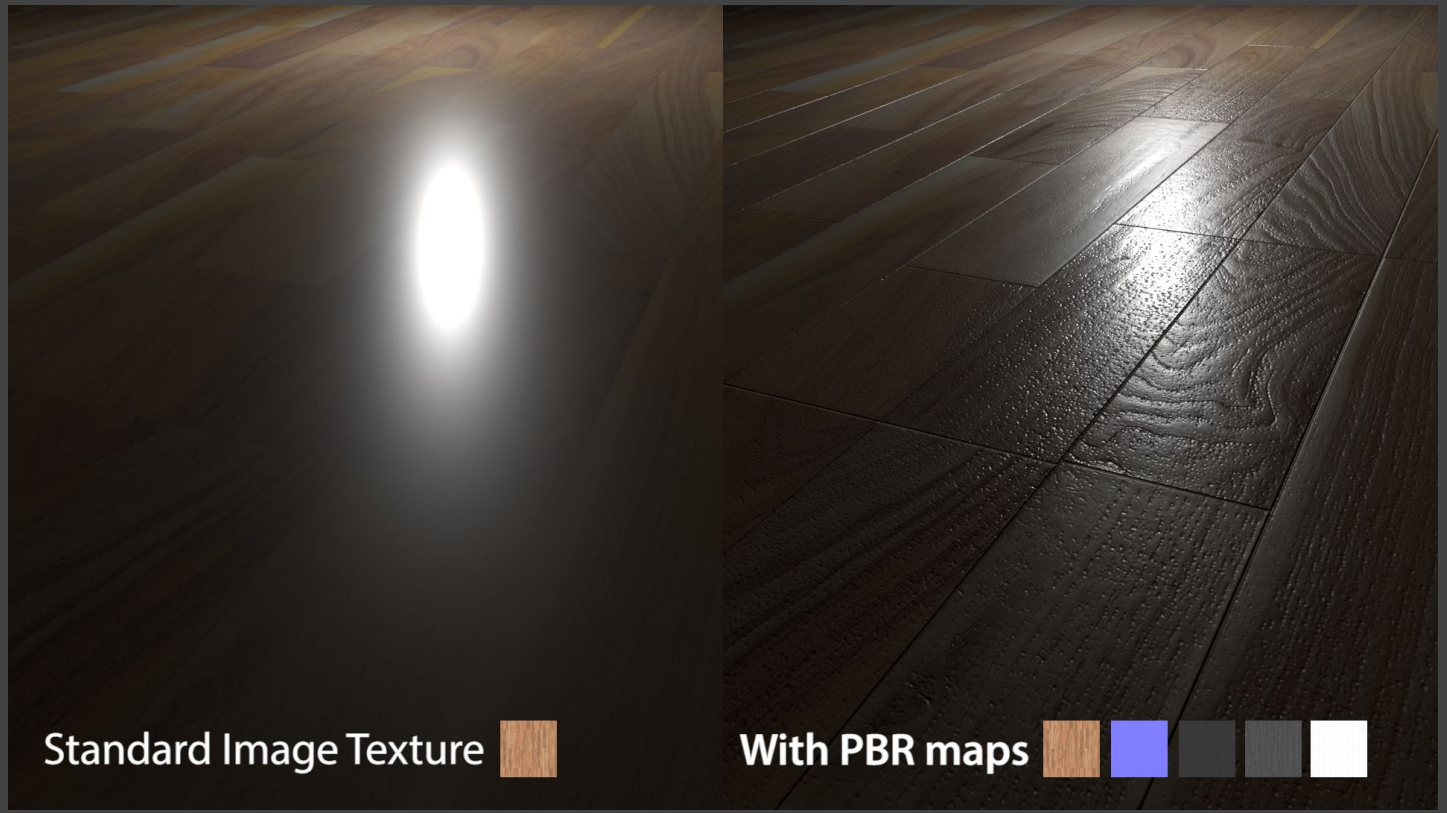
When the shading and textures matches real world materials.

Tip #1: Use Physically Accurate Shaders

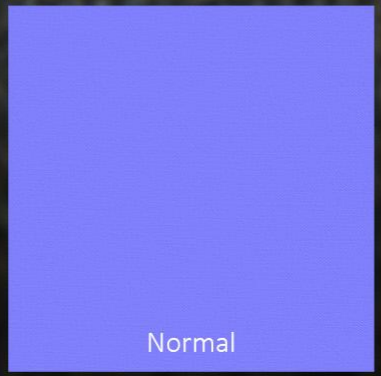
Traditional Shader

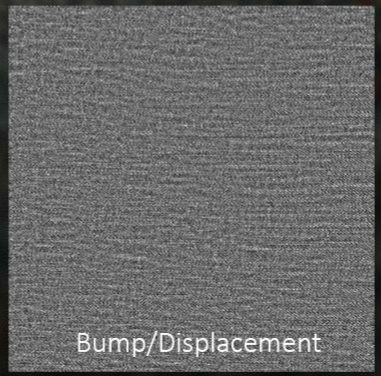
Physically Accurate Shader

Tip #2: Use PBR Maps



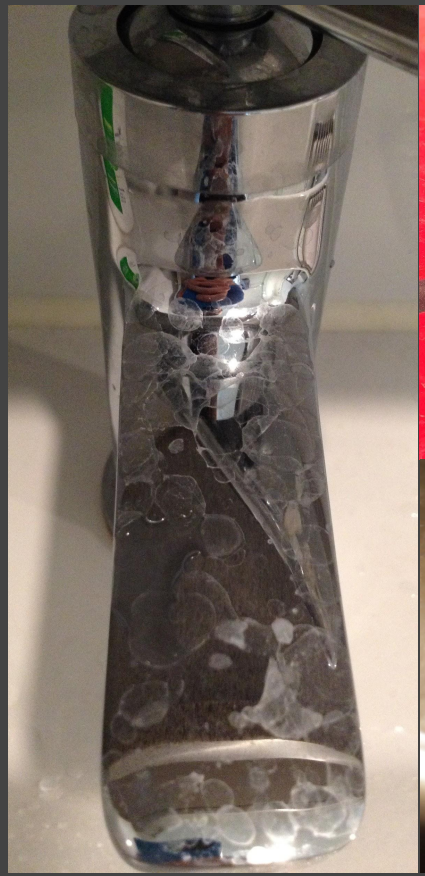
Tip #2: Use PBR Maps





Fabric Denim 002

POLIIGON

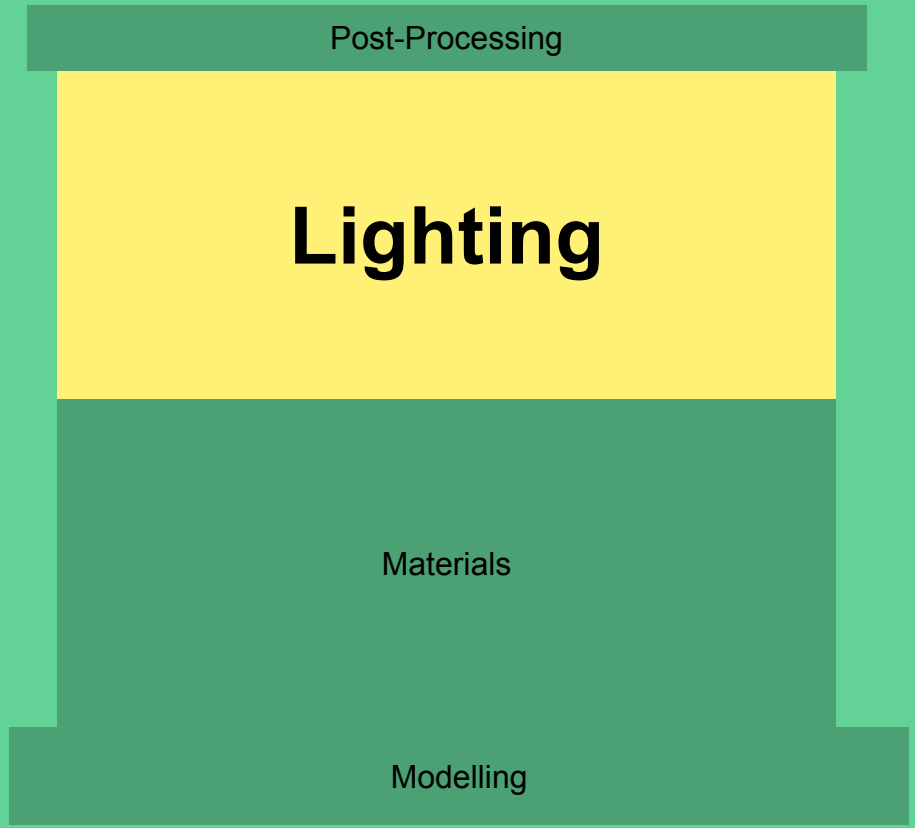


Tip #3: Use Surface Imperfections

Tip #3: Use Surface Imperfections

Materials

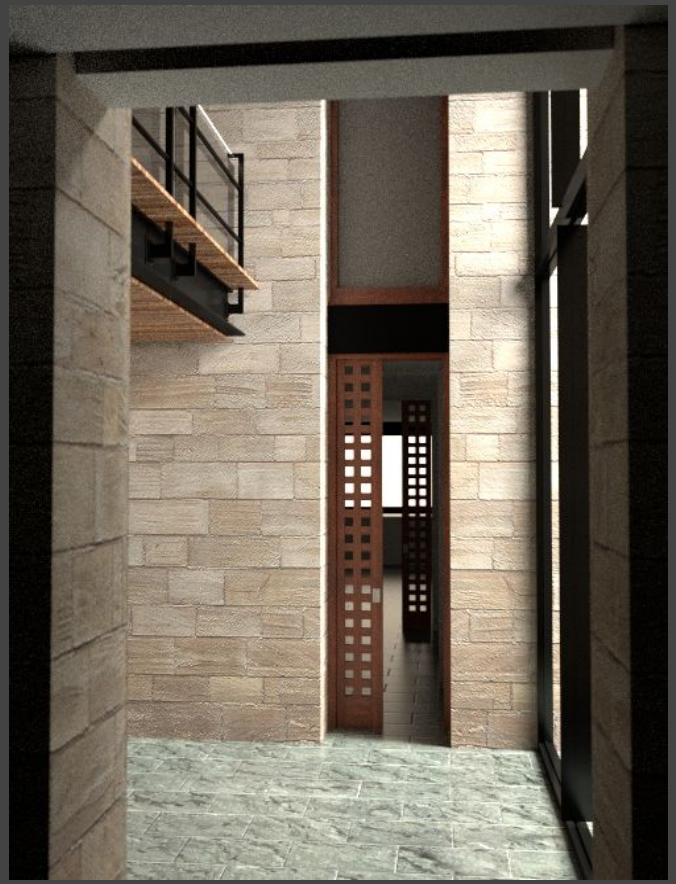
1. Use physically accurate shaders
2. Use PBR Maps
3. Use Surface Imperfections


Post-Processing
Lighting
Materials
Modelling

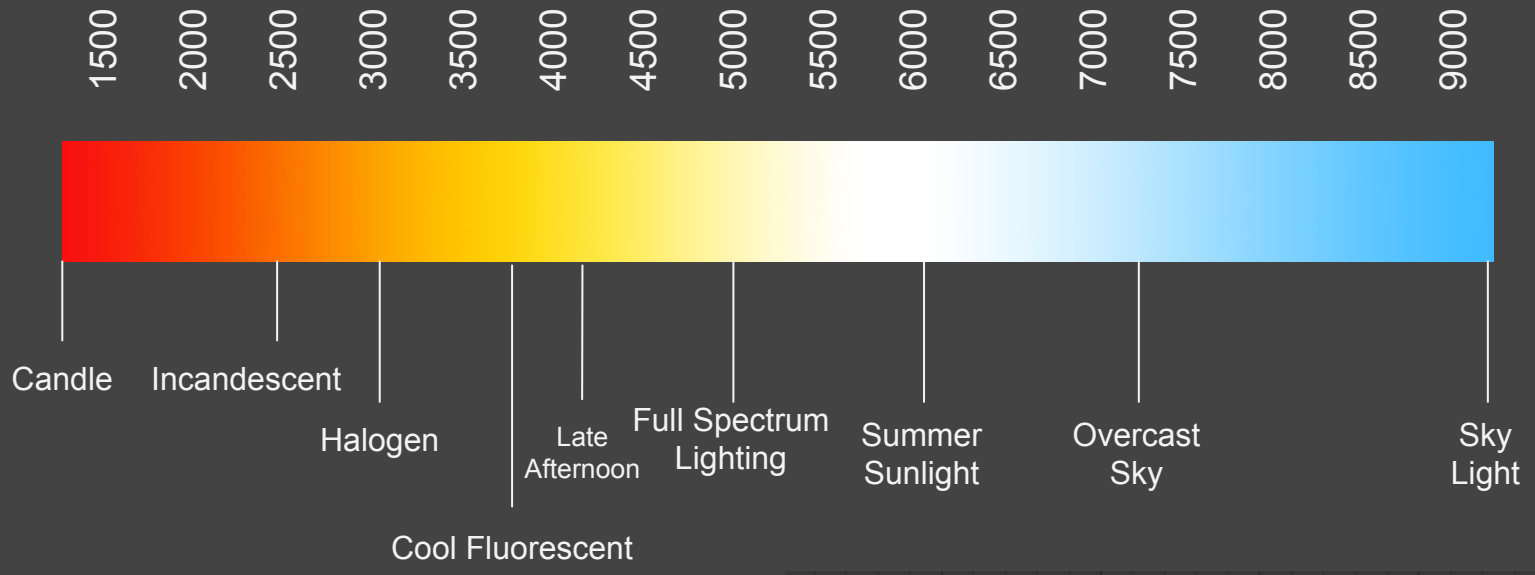
Photorealistic **lighting** is...

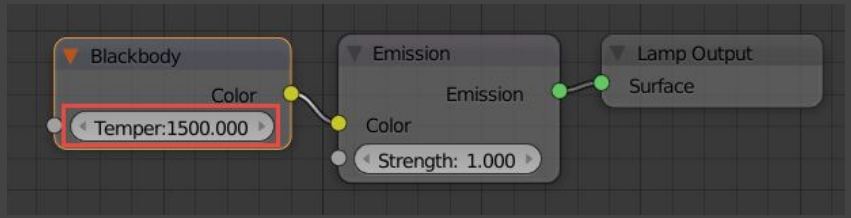
Light that matches the color, direction and intensity seen in real life.

Tip #1: Use real-world light *direction*



Tip #2: Use the correct color





Tip #3: Don’t forget reflections!

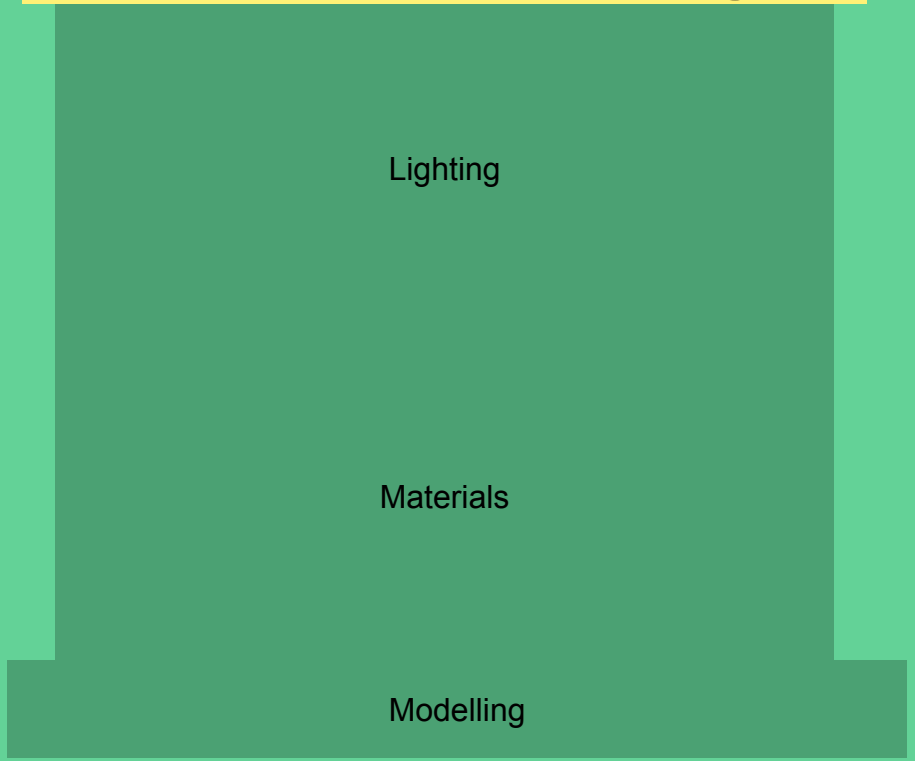
Pro-Lighting:

Skies

Lighting

1. Use the real-world *direction*
2. Ensure the correct color
3. Use HDRs if possible

Post-Processing



Photorealistic **post-processing** is...

Recreating imperfections from real life cameras.

“I think very strongly that one should come to CG as one does to **photography**. You can have **perfect technical mastery and still fail** as an artist if you frame, compose or light your shot in a poor way.”

-Bertrand Benoit, Architecture Academy Interview

1. Glare


Glare
Image
Streaks
Medium
Iterations: 3
Color Modu: 0.250
Mix: 0.000
Threshold: 1.000
Streaks: 4
Angle Offset: 0°
Fade: 0.900
Image

2. Motion Blur

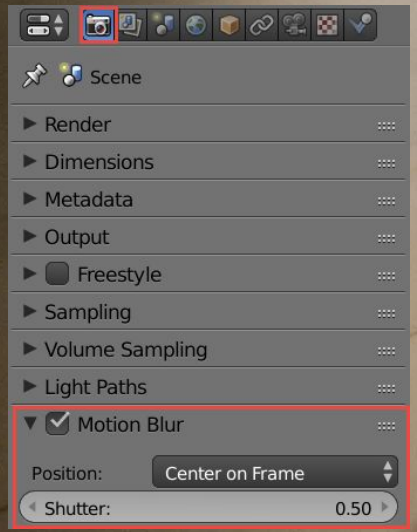


Image by Frank Monnerjahn

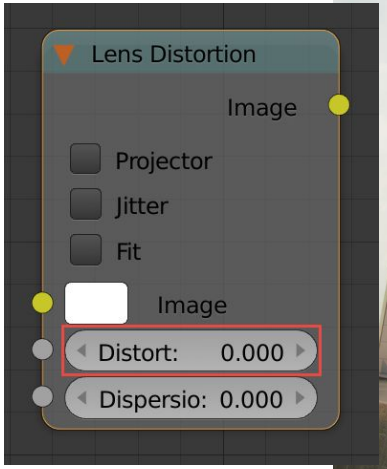
3. Depth of Field

Image by Steve Jurvetson

4. Chromatic Aberration

Image by John M

5. Barrel Distortion



Post-Processing

1. Glare
2. Motion Blur
3. Depth of Field
4. Chromatic Aberration
5. Barrel Distortion

Modelling

1. Model to real-world scale
2. Bevel everything
3. Reference is king!
4. Know your anatomy

Lighting

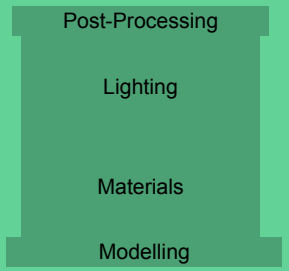
1. Use the real-world *direction*
2. Use the correct color
3. Don’t forget reflections!

Materials

1. Use physically accurate shaders
2. Use PBR Maps
3. Add surface imperfections

Post Processing

1. Glare
2. Motion Blur
3. Depth of Field
4. Chromatic Aberration
5. Barrel Distortion




Go make some awesome renders!


Post-Processing
Lighting
Material
Model
BLENDER GURU


Post-Processing
Lighting
Material
Model
BLENDER GURU