

CS 148: Introduction to Computer  
Graphics and Imaging

Fall 2025

# Lighting & Camera

Final Project CA Section  
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# What We'll Cover

Scene  
Demo

Lighting

Camera  
&  
Composition

Resources

Story

# Scene Demo

Going from a scene with no light to a complete project.

## Lighting #1 : Cozy restaurant table

- HDRI of restaurant – Visible on glass reflection
- Sunlight - Directional light through windows
- Volumetric rendering – God rays streaming inside

## Lighting #2 : Magician's altar

- Emissive potions – Volumetric rendering
- Contrastive color lights – Fantastical
- Rim light – Dramatic, foreboding

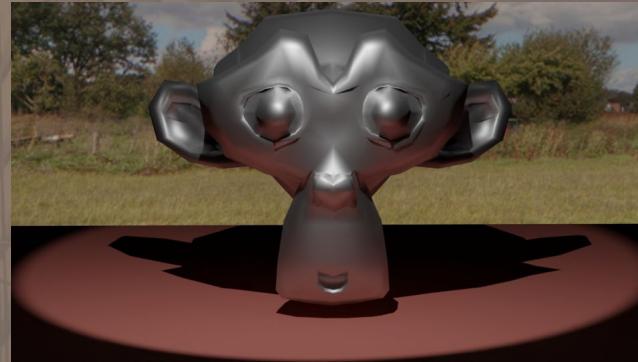


# Lighting : Types of Light



## Point

Emits equally in all directions. Adjust radius to soften shadows. Localized light source eg. lightbulbs, candles.



## Spotlight

Emit cone light. Adjust radius to soften shadows, blend to soften cone edge, spot size for cone width. Flashlights, headlights.



## Area

Emissive rectangular/elliptical surface. Adjust spread to focus/diffuse. Windows, screens.



## Sunlight

Lights everything evenly. Adjust rotation for direction, angular diameter for atmospheric diffusion. Outdoors, sunlight, moonlight.

# Lighting : Types of Light



## HDRI

Ambient illumination, realistic outdoor and indoor lighting



## Nishita Sky

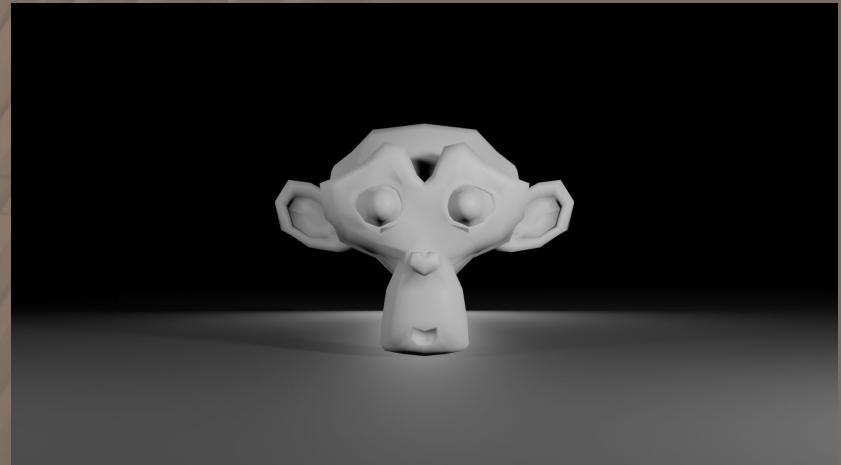
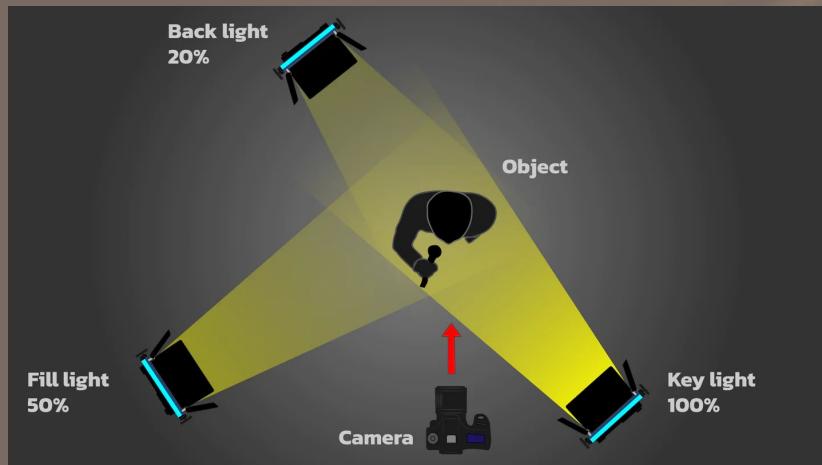
Realistic sky lighting dependent on sun position and atmospheric properties



## Emissive Geometry

Creatively shaped glowing objects, eg. neon signs

# Three-Point Lighting

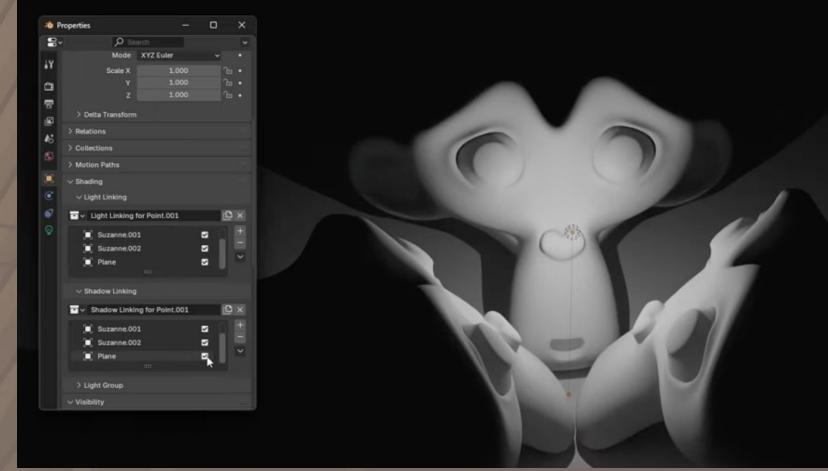


# Light Linking, Shadow Linking



## Light Linking

Control which objects are illuminated by a particular light source



## Shadow Linking

Control which objects create shadows due to a particular light source

# Lighting & Story : Position



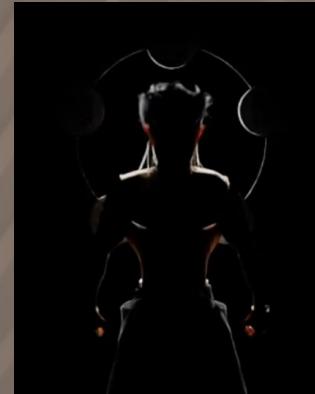
**Above**  
Sunlight, natural.



**Overhead**  
Indoor lights.



**Side**  
Emphasizes form.  
Duplicity, conflict.



**Back**  
Emphasizes form  
and texture.  
Mystery,  
anonymity.



**Below**  
Emphasizes light  
source. Eerie,  
centered, dramatic.

# Lighting & Story : Intensity



## High Intensity

Creates focal point. One is more prominent than everything else.



## Low Intensity

Moody, atmospheric. Attention is diffused. Balance.

# Lighting & Story : Size



## Smaller Light

Creates sharp shadows. Dramatic lighting.



## Larger Light

Soft, diffuse shadows for natural look.

# Lighting & Story : Shape



Keep in mind that the shape of your light shows on reflective surfaces and affects shadows. Be creative with the shape of your light to get the effect you want!

# Lighting & Story : Color Temperature



**Warm Colors**  
Inviting, cozy.



**Cool Colors**  
Calm, Mystery, Tension.

THIS IS NOT ABSOLUTE! Feel free to be creative with the unique atmosphere of your scene.

# Lighting & Story : Color Contrast



## High Contrast

Dramatic differences, intense storytelling, vividness.

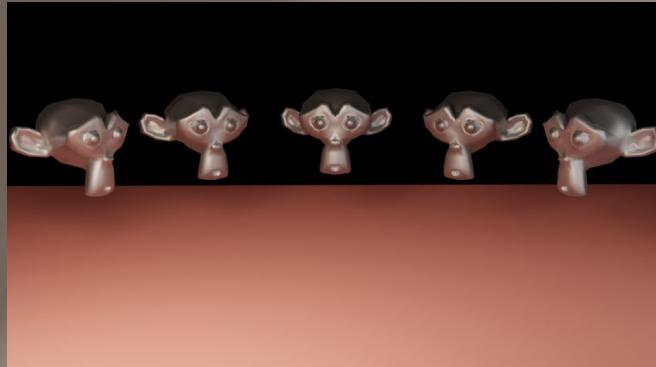
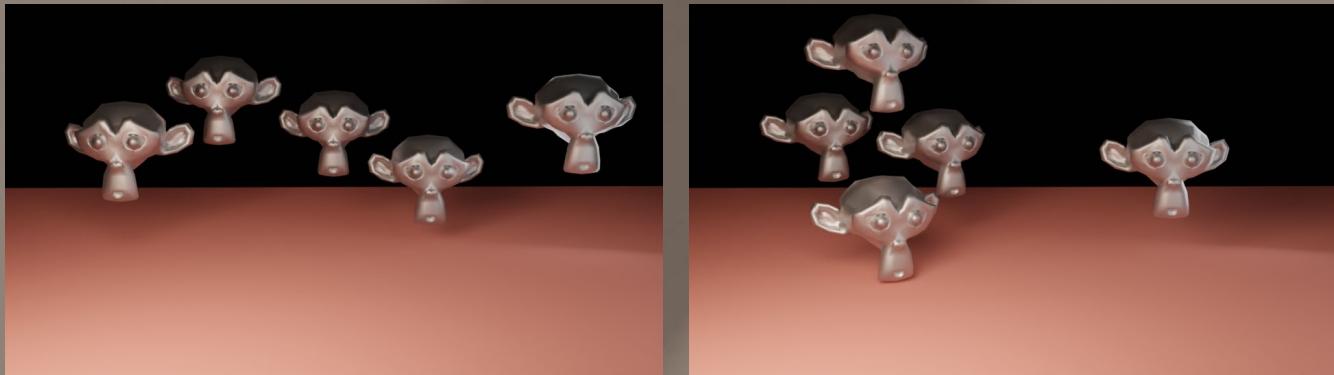


## Low Contrast

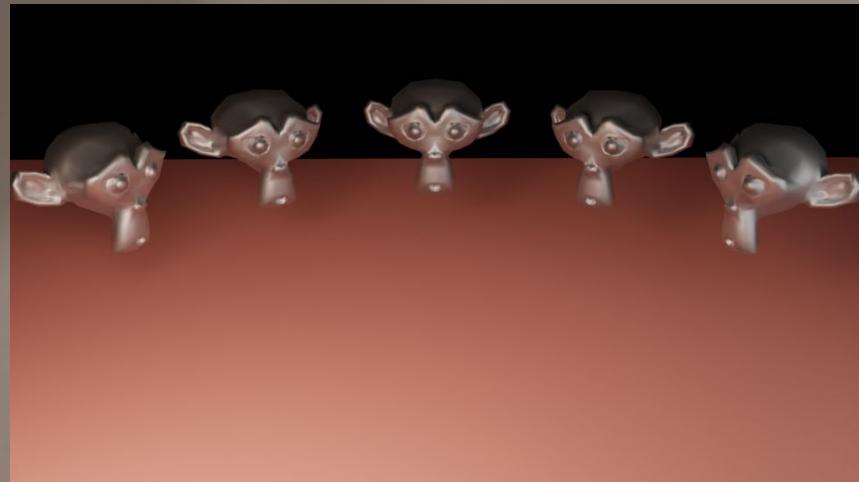
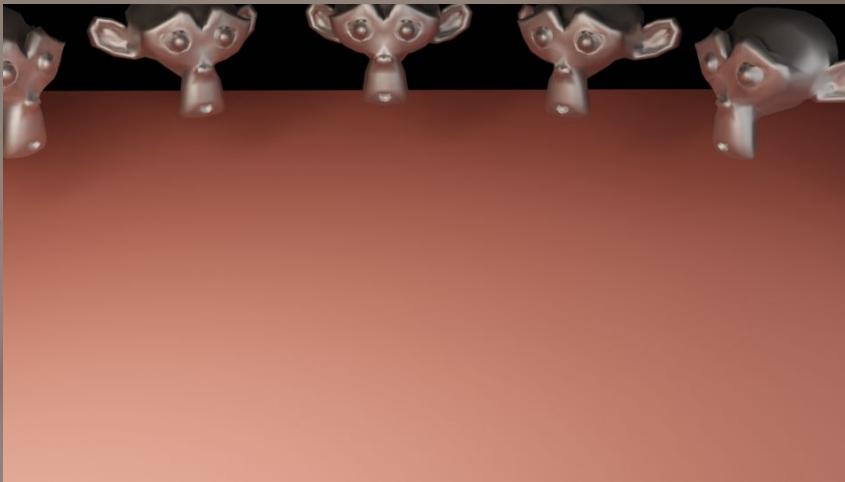
Soft, harmony, calm, natural.

# Composition

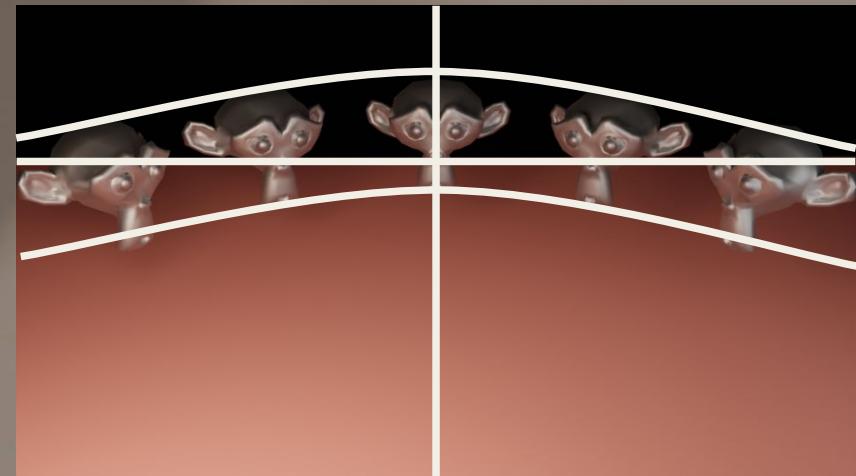
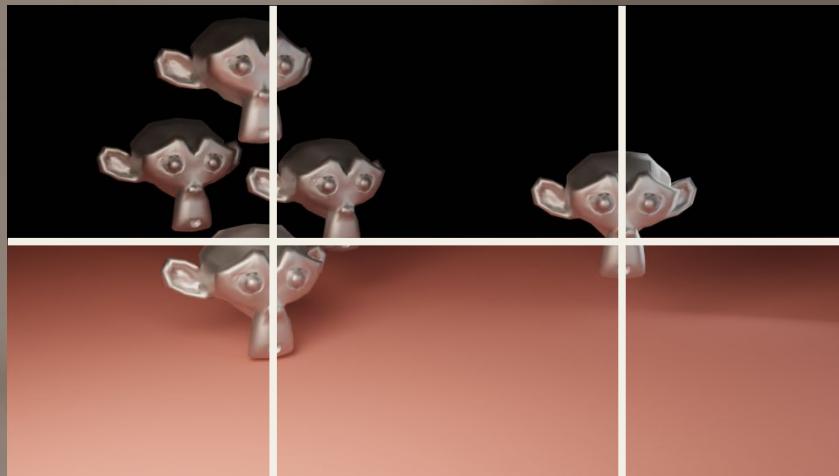
# Composition : Where are your objects?



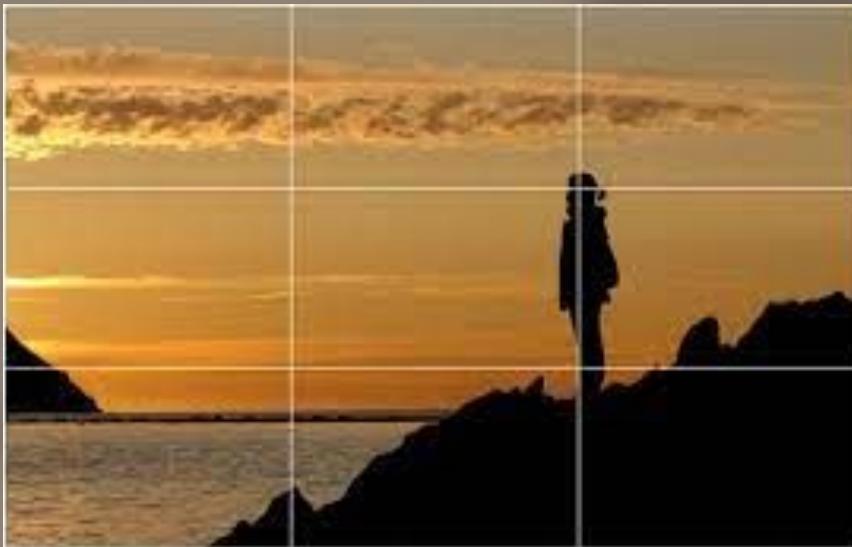
# Composition : Where is your camera?



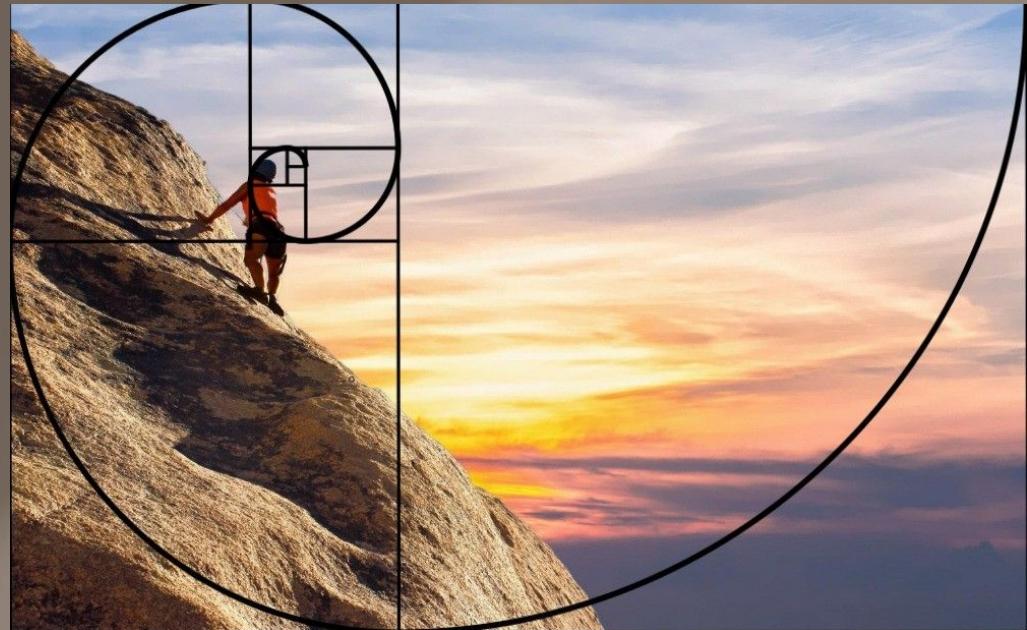
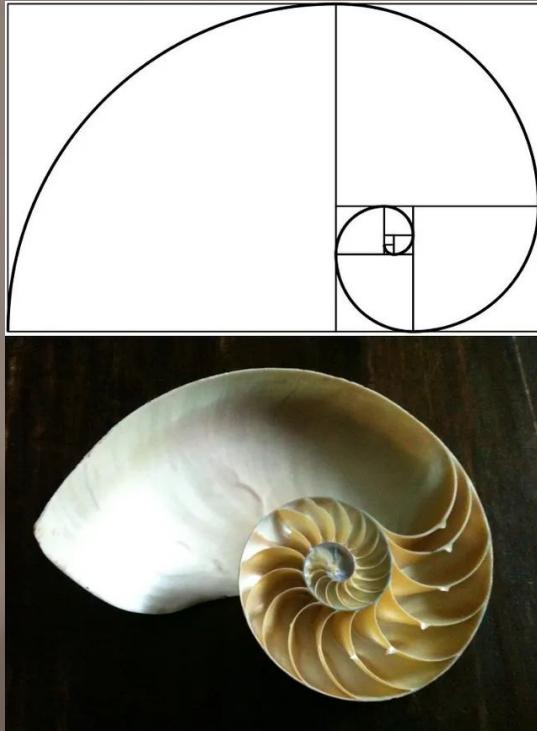
# Composition : Break Down the Image



# Rule of Thirds



# Golden Spiral

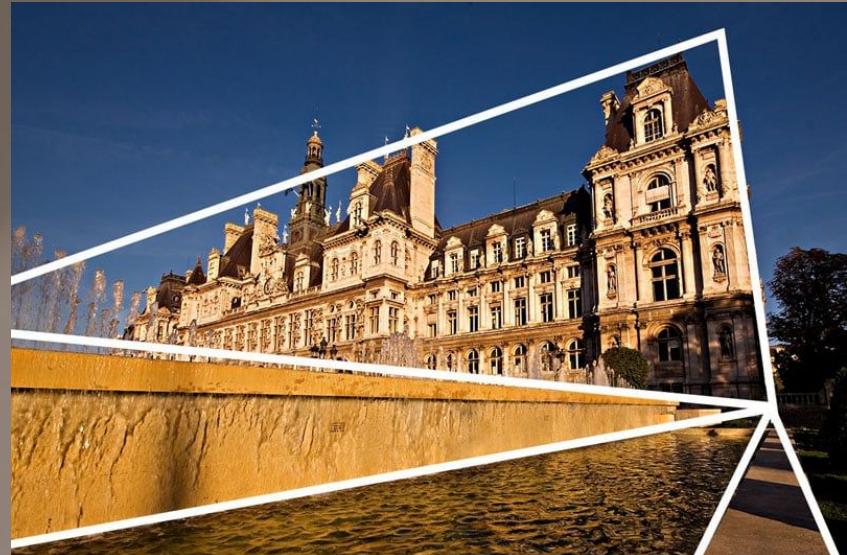


# Golden Triangle

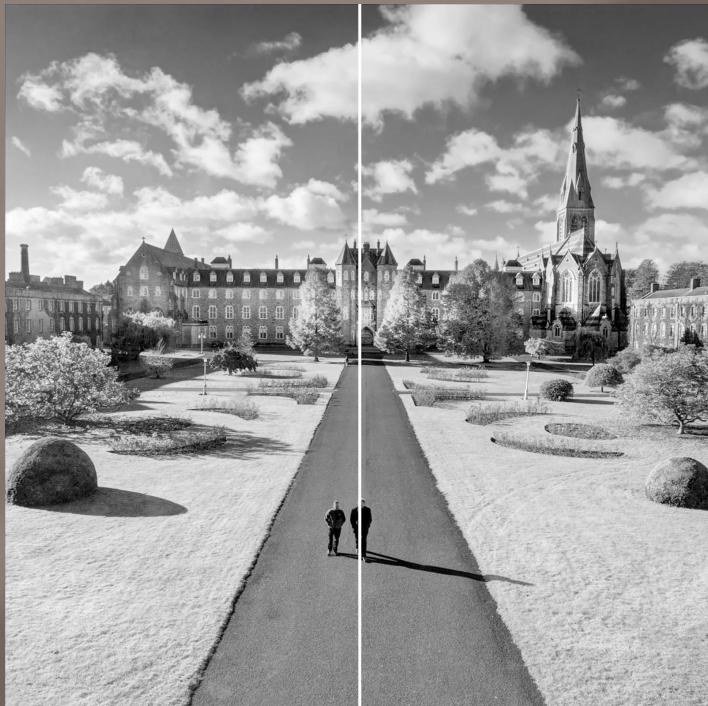


When using the golden triangle, the leading lines in the image should form a triangle. Interesting points may lie where the grid lines intersect

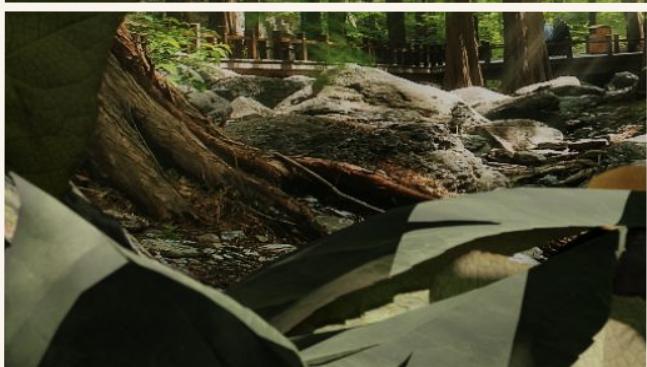
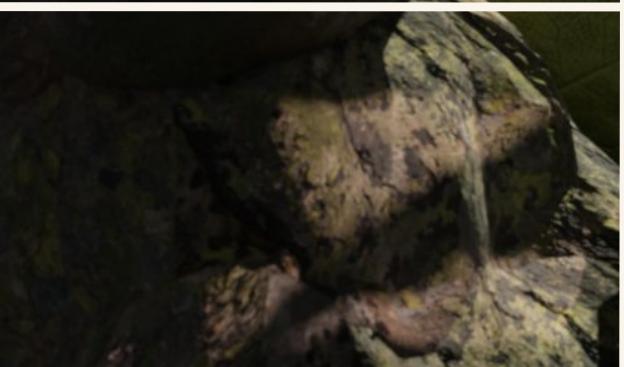
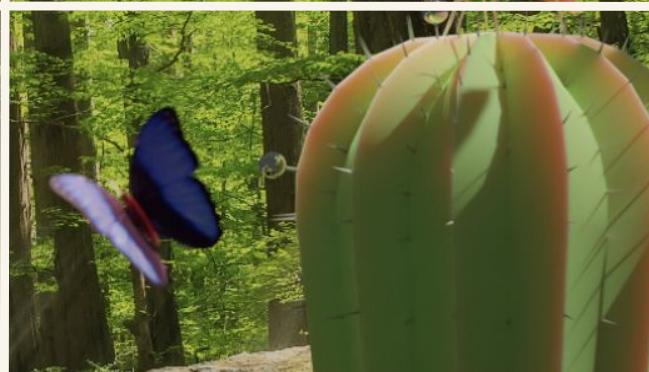
# Lines & Shapes

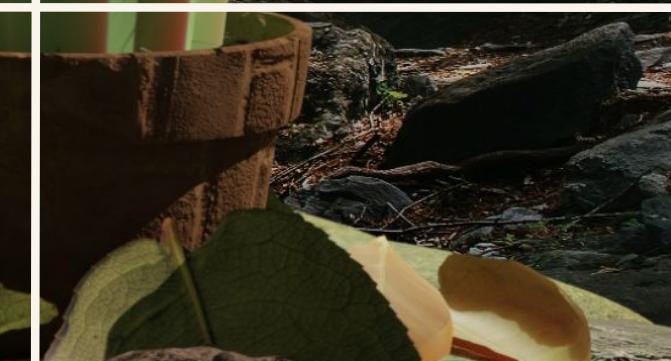
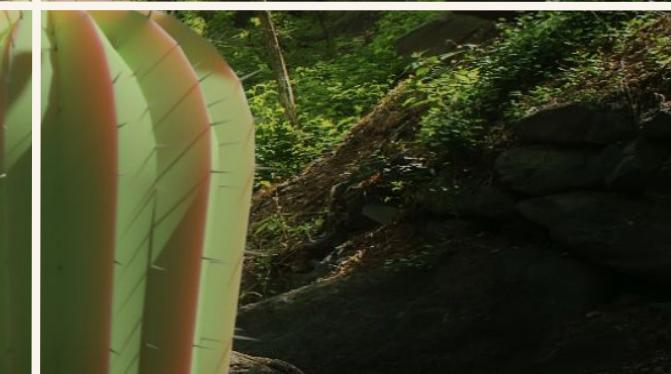


# Centering & Symmetry













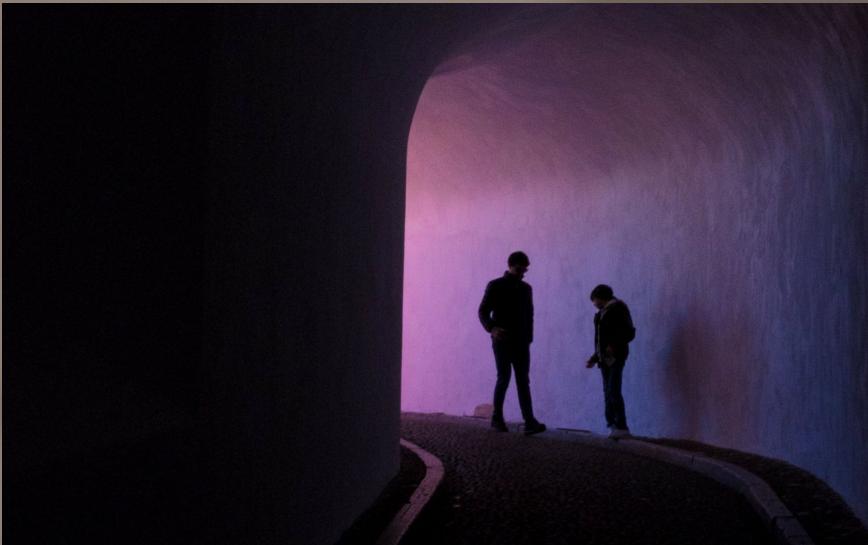
# Foreground & Background



# Camera Angles



# Negative Space



# Resources

## The Art of Good Images

### Lighting

- [High Contrast God Rays](#)
- [Sun Rays with Natural Shadows](#)
- [Underwater God Rays](#)
- [Forest Fog](#)
- [Subsurface Scattering for Translucent Objects](#)
- [Realistic Fire](#)

### Camera

- [Fix Viewport Clipping](#)
- [Focal Length](#)
- [Depth of Field](#)
- [Fisheye Effect](#)
- [Lens Flare](#)
- [Motion Blur](#)

