

Lesson 6 – Lighting

Lighting Concepts

1. Direct vs Indirect

Direct Light (strikes surface directly)

Indirect Light (reflected from another surface)

2. Interior vs Exterior

Exterior – Sunlight. Mostly direct light. Indirect light important

Interior – Both direct and indirect. Indirect critical

3. Lighting requires:

1. Lights - One or more light sources,

2. Views - One or more views (typically cameras)

3. Exposure control – Manages light levels between source(s) and view(s)

4. Types of Light objects

Photometric - Based on physics. Works in all rendering engines

Standard – Original, non-reality, "artistic" lights. Effectively obsolete.

Arnold – Only in the Arnold renderer. Less-intuitive than photometric

V-Ray – Lights specifically for the V-Ray rendering engine

5. Temperature – Color of light, measured in Kelvin (warm < 5500K < cool)

Lesson 6 – Lighting (cont...)

Photometric

Sun Positioner – For exterior light (sun). Covered previously.

Target Light – “Position-able” target (use move transform, align, etc...)

Free Light – For perpendicular lights (vertical/horizontal). No target object.

1. Templates – Use with caution. Can’t make unexpected setting changes

2. General

Light Properties

On/Off – Turns light on or off. Use intensity to animate.

“Targeted” – Add/Remove target object

“Targ Dist” – Implied target for directional light (i.e spotlight)

Shadows

Ray Traced - Crisp, accurate (recognizes transparency)

Shadow Maps - Soft, less accurate (no transparency)

Others – Effectively obsolete

Distribution - How light radiates from source

Uniform Spherical – “sphere”

Acts like a "bare light bulb". Not recommended.

Uniform Diffuse - "hemisphere".

Effective generic distribution

Spotlight - "cone"

Hotspot & Falloff. Measured as angle from light-target axis

Start with the “falloff” double the “hotspot”

Photometric Web - External file required.

Additional “Distribution” rollout

Select “<Choose Photometric File>”

“IES” file most common

Available from many lighting manufacturer websites

Lesson 6 – Lighting (cont...)

Photometric (cont...)

3. Intensity/Color/Attenuation

Color

Presets:

D65 = "true daylight" (6500K)

D50 = "warm daylight" (5000K)

Kelvin (manual) – Warm < 5500K < Cool

Filter Color – Use for colored gel

Intensity – Light energy (IES file will set)

Candelas (cd) - Energy in a single direction.

Lumens (lm) - Energy in all directions (100-watt bulb - 1750 lm)

Incandescent - 10-17 lm/watt

Fluorescent - 35-100 lm/watt

Halogen - 12-36 lm/watt

Lux at (lx) - Energy at a certain distance. Light at the surface.

Dimming – Lowers (or raises) intensity without adjusting intensity value

4. Shape/Area Shadows. IES file may set these. Can adjust/override.

Point (single point)

Line (fluorescent tube) - Length

Rectangle (diffused panel, i.e. 4x2) – Length x Width

Disk (downlight) - Radius

Sphere, Cylinder (volumes) – increases rendering times

Rendering – Shape appears in image

In Arnold - Only "Disk" (CPU) and/or "Rectangle" (CPU/GPU) render

For IES – Must create an object with emissive material

Light Lister ("Tools" pull-down) – Manages basic settings of placed lights