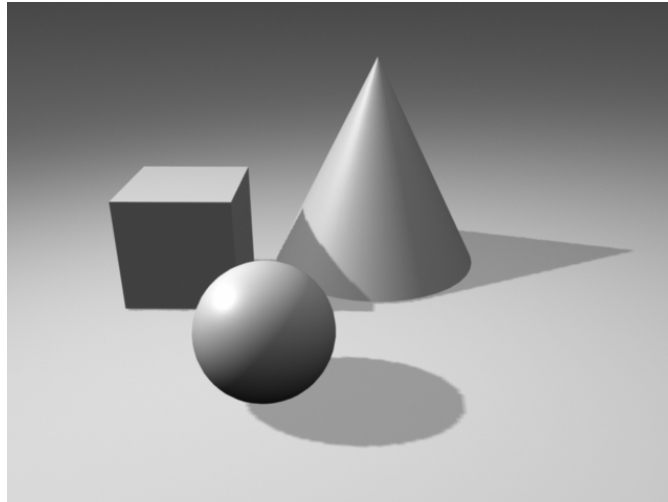


Cast Shadows

Maya 2013



Concept

- Cast shadows are defined on a per-light basis,
 - because shadow-casting computations can be time-consuming
- Cast shadows are off by default in Maya,
 - for the same reason

Model a simple scene

- Model a few primitives
- Model a flat plane under them
- Create a directional light or a spot light
 - (Ambient light is not usually used for cast shadows, so avoid that)

Hardware Rendering

- In the Persp window,
- >Lighting
 - >Use all Lights
 - to see the effect of your user-defined lights
 - **WARNING#1:** hardware rendering of lighting is of very poor quality
 - You need to do a software rendering to see the, true final result

- **WARNING#2:**
 - >Lighting >Shadows
 - will display a hardware rendering of the shadows
 - but only with certain graphics cards
 - If you don't have the proper kind of graphics card (Open GL),
 - you will not see hardware-rendered shadows
 - and will also not get an error message

Raycast or IPR Rendering

- To see accurate shadow rendering,
 - you need to do a final software rendering
 - Either raycast (Maya's default) or raytrace
 - See the *Raycast Rendering* and *Raytrace Rendering* tutorials in this set
- To see an interactive rendering of a raycast rendering,
 - use the IPR rendering window
 - IPR = Interactive Photorealistic Rendering
 - **WARNING:** The IPR renderer does not support raytracing
 - -- only raycasting
 - so...
- Do not turn on raytracing for now
 - See below for this

Depth Map Shadows

- This algorithm creates an internal picture from the point of view of the light
 - Each pixel of this internal picture contains depth information,
 - from the point of view of the light
 - This image is projected (mapped) onto the objects,
 - to create shadows
- It is the most common algorithm for casting shadows
 - It is faster than raytraced shadows
 - It is usually of very good quality,
 - but has a few limitations
 - It can be used with either the raycast or raytrace rendering algorithm

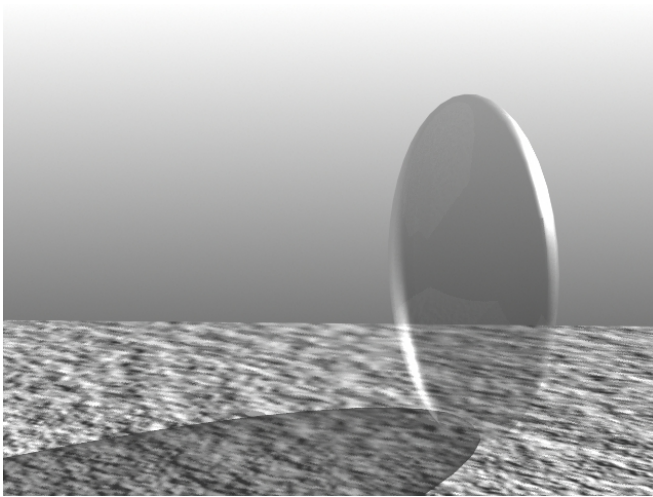
- Select your light
 - >Window >Attribute Editor
 - This will open up the *shape* node tab of your light
 - For example, *xxxLightShape1*
 - >Shadows
 - Go to the *Depth Map Shadow Attributes* tab/node
 - Turn on *Use Depth Map Shadows*
 - >Resolution
 - This is the resolution of the internal map image created by Maya
 - The higher the resolution, the better the quality
 - So, larger numbers => better quality shadows
 - but also slower calculations
 - >Filter Size
 - This filter will soften the edges of a shadow,
 - creating a “soft shadow”
 - Change it to 5 for now
 - For some scenes, you may need to increase it a lot more
 - Go to the *Shadows* tab
 - Shadow Color (default is pure black)
 - Make it gray for a lighter shadow
- Render your scene, with
 - >Render >Render Current Frame
 - This gives you a raycast rendering
 - which is Maya’s default
 - or
 - >Render >IPR Render Current Frame
 - Also gives you a raycast rendering,
 - but with real-time updating of any rendering changes you make

Object Specific

- For any object,

- You can turn off shadow casting or receiving
- >Windows >Rendering Editors >Render Flags
 - Select the shape node of the object you want
 - Cast Shadows On/Off
 - Receive Shadows On/Off

Raytraced Shadows



- For many situations, depth-map shadows are satisfactory
- Exception: Shadows cast by transparent objects
 - These require shadows that are not fully opaque,
 - because the object is not blocking 100% of the light
 - For this, you must use raytraced shadows
 - and the raytrace renderer
 - see the *Raytrace Rendering* tutorial in this set for more details
 - (TIP: You can sometimes fake transparent shadows with depth-map shadows,
 - by making the color of the shadow lighter)
- Raytraced shadows are more complex
 - and therefore slower to render
 - Only use them if you need to

- **WARNING:** the IPR window cannot do raytracing at all
- First, make one of your objects transparent
- >Window >Rendering Editors >Hypershade
 - >Create Material >Blinn
 - Double click the new Blinn icon to open its Attribute Editor
 - >Common Material Attributes
 - >Transparency
 - make it about 50%
- Create a spotlight
- Shine it on your transparent object
- Select your spotlight
- >Window >Attribute Editor
 - >Shadows
 - >Raytrace Shadows
 - Click on *Use Raytrace Shadows*
 - This will automatically unselect Depth Map Shadows
- >Render >Render Current Frame
 - You see no shadows!
 - Although you turned on raytrace shadows,
 - you haven't yet turned on the raytrace rendering algorithm itself
 - So...
- >Window >Rendering Editors >Render Settings
 - >Maya Software
 - >Raytracing Quality
 - Check on *Raytracing*
- Re-render your scene
- The object should now be transparent,
 - and its shadow should less than 100% black
- Try placing an opaque object next to the transparent object
 - The shadow of the opaque object should be darker
 - The shadow of the transparent object should be lighter
- If your transparent object is a sphere,

- The shadow should be darker around the perimeter of the sphere
 - And lighter in the interior areas

Soft shadows

- Depending on the type of light you are using,
 - Adjust *Light Angle*, *Light Radius*, or *Shadow Radius*
- **WARNING:**
 - It can be extremely difficult to get soft edges on raytraced shadows
 - It is frequently easier to avoid raytraced shadows for this effect