

Chapter 8- Raytracing

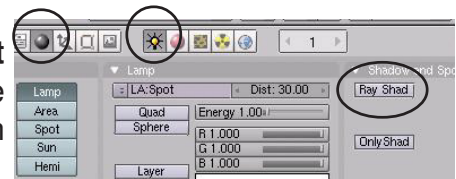
Raytracing is such an important addition to Blender that it has been placed in its own chapter. Raytracing is used to produce mirrored and reflective surfaces. It is also being used to create transparency and refraction (bending of images through transparent surfaces- like a magnifying glass or a lens). With raytracing, all Blender lights can cast shadows if you desire. Raytracing can produce some stunning effect, but can come at a high cost in rendering times. **Use it only where needed.** Don't try to raytrace everything. The professionals don't even do that. Watch any 3D show on T.V. and you will see it being used selectively. You can get some great shadow and texture effects with Blender's traditional spotlights and material settings at a fraction of the render times.

To get raytracing to work, you need to go to the *Render Buttons* and turn on "Ray" (for Raytracing- see previous chapter). Now you are ready to apply some of the raytracing features to your objects. *Until you do that you won't see any difference in your renders.*

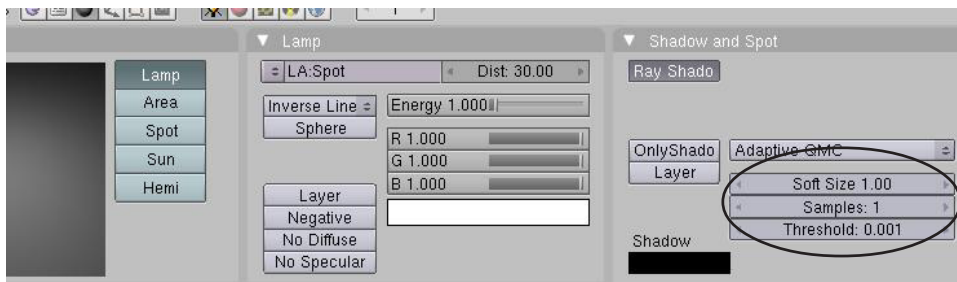


Lighting and Shadows

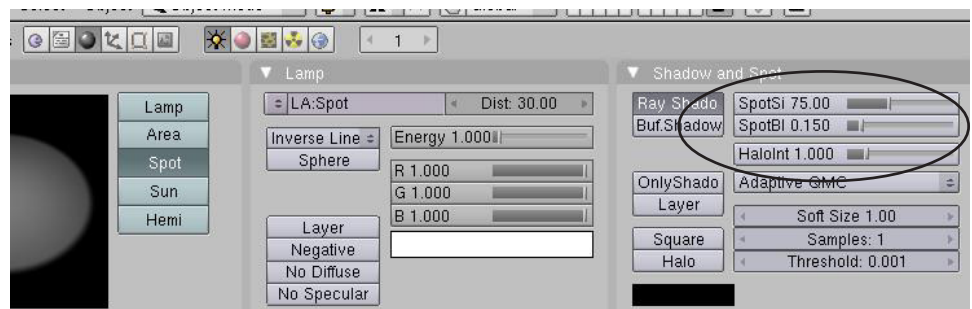
To get a ray shadow for a lamp, **select the lamp you want to cast shadows** (all types work with raytracing), go to the **Shading** and **Lamp** buttons, find the "Ray Shadow" button and activate it.



When you activate ray shadow, you will see a few setting for most of the lamp types. You will see "Soft Size" settings for edge softness and "Samples" for improved quality.



You will notice a few extra setting options for a ray spotlight. *Spotlight Si*, *Spotlight BI*, and *Halo Int* work the same as they do for a buffer shadow spotlight.



Reflection (mirror) and Refraction (transparency and distortion)

To create a mirror, or reflective surface on an object, select that object and add a material. You can also add textures to an object and have a mirror surface. In the material buttons, you will find a panel called “**Mirror Transp**”. All of the raytracing features are found in that panel. Press the “**Ray Mirror**” button and experiment with the reflection settings. The **Ray Mir** slider controls the amount of mirror. A full slider would be a perfect mirror.

For Transparency, press the “**Ray Transp**” button to activate it. Two main adjustments are **IOR** (Index of Refraction) is used to create the Lens effect and bends light. **Fresnel** is used to control the amount of transparency. There are some other setting that you may feel free to experiment with, but these are the main settings.

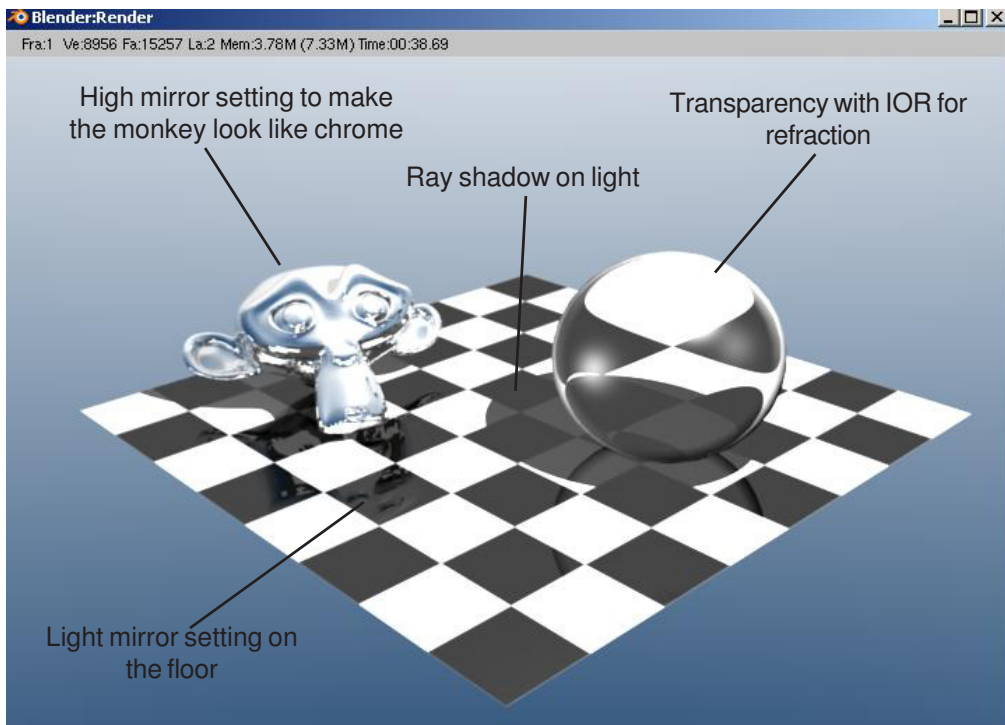
Mirror Settings:

- Turn mirror on/off
- RayMir- sets the degree of mirror
- Fresnel- controls degree of mirror
- Depth- controls quality
- Max Dist- controls how far away things reflect in the surface.
- What the mirror should fade to pas the Max Dist.



Transparency Settings:

- Turn transparency on/off
- IOR- (index of refraction)- used to provide distortion through a transparent object
- Fresnel- set how transparent the object is
- Depth- controls quality. If you are looking through a multiple layed object (like a drinking glass), this will help with realistic transparency.

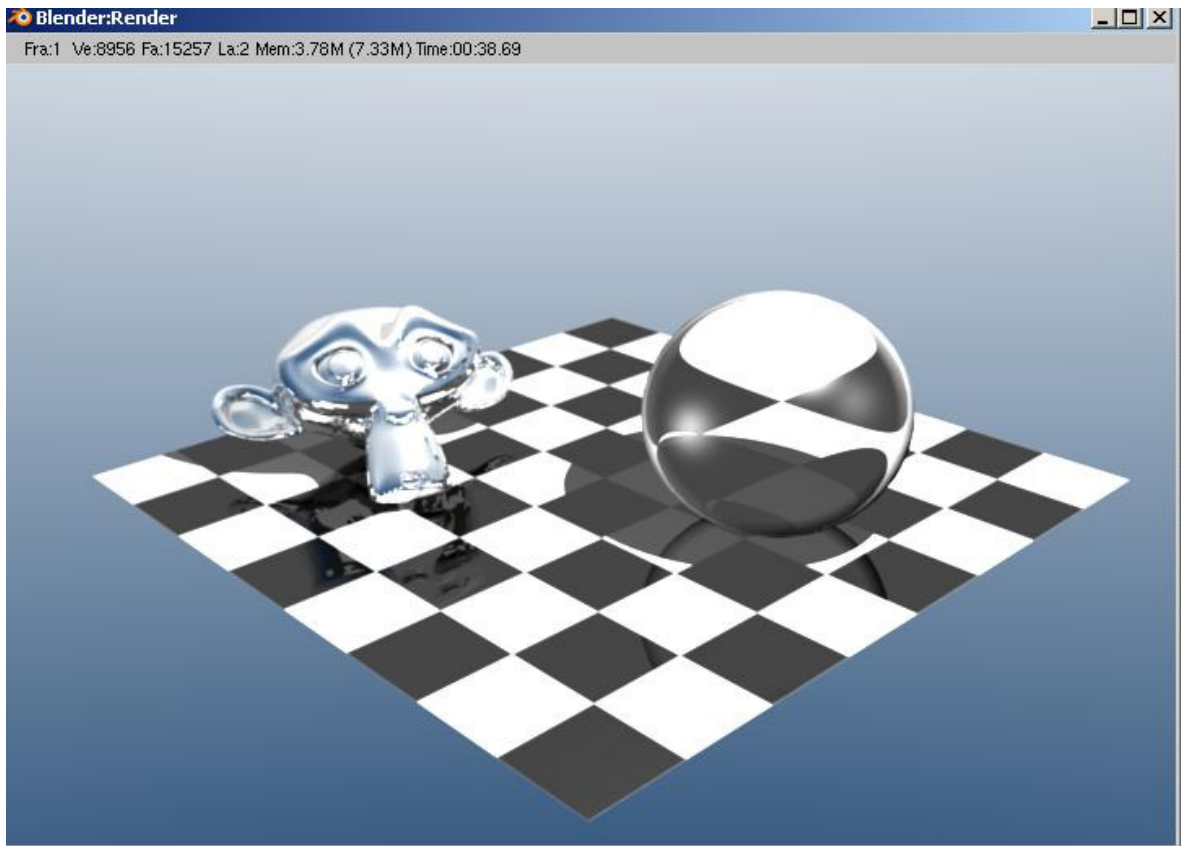


Raytracing Practice Exercise

Since we don't have many objects that would work well with mirror/transparency in our lighthouse scene (except the water, which would create a slow rendering), we will create a new scene for our raytracing exercise. Create any model you like using any meshes you wish and apply materials and textures. The scene must contain:

1. At least one lamp with **Ray Shadows**.
2. At least one object with **Ray Transparency**.
3. At least one object with **Ray Mirror**.

When finished, render an image and save it as a JPEG image.



***** Call the instructor when finished*****