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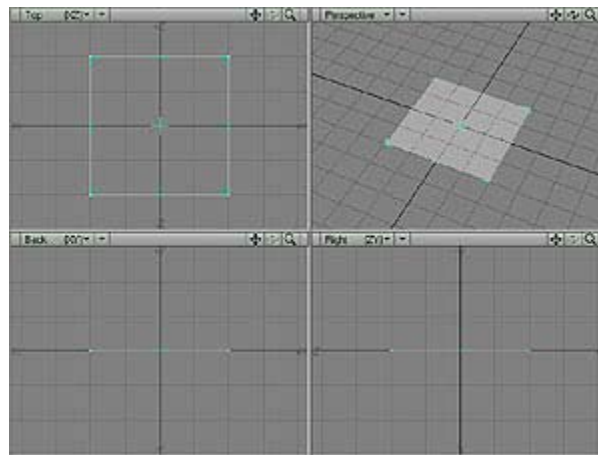
Global Illumination: Sky Domes in LightWave [6] - Brad Peebler

Tutorial in Global Illumination

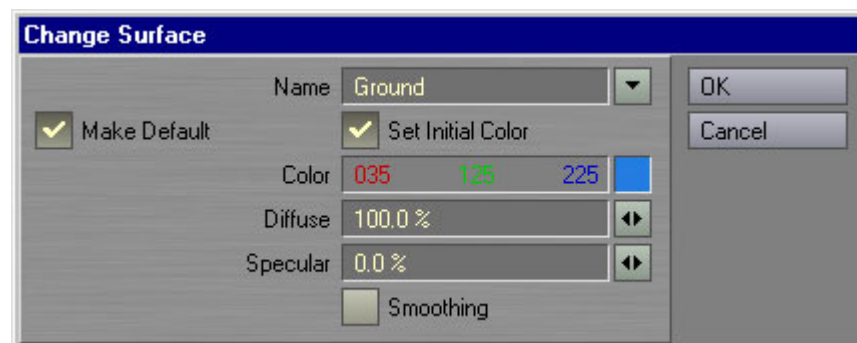
The radiosity engine in LightWave [6] makes it very simple to create the popular “Sky Dome” lighting environment. To create this set up the user only need create two primitive objects and the “hero” object. The primitives are a simple ground plane and a sphere with inward facing polygons.

Let's take a look:

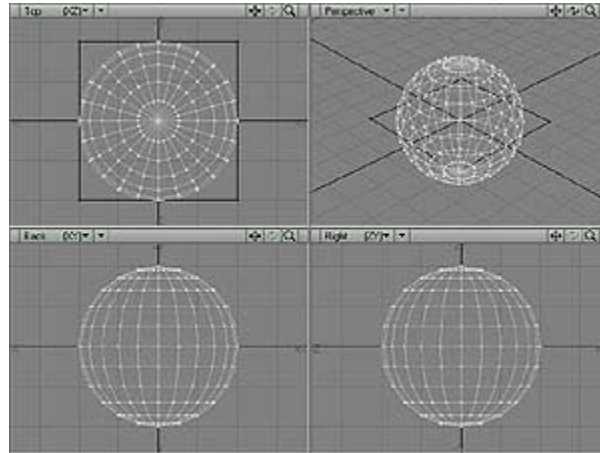
Begin by opening the Modeler environment. Zoom out (use the comma key for a short cut) so the grid size is set to 50 meters. In the top view drag out a 100-meter flat square. This will be the ground plane.



You can set the ground color by using the Surface control on the Polygon Tab under Transform (or use the <q> hotkey). On this panel you should name the surface “Ground” and set the color to a light blue shade for good contrast in the final render. Save this object as GroundPlane.lwo.

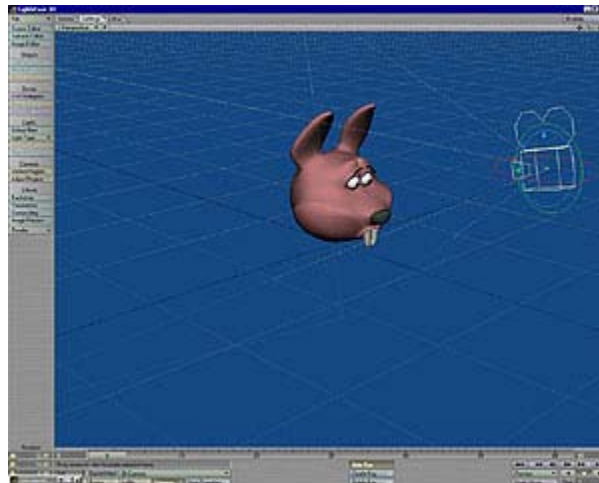


The next step is to create the sky dome that will be used for illuminating the scene. This is quite simple as all you need is a giant sphere. To make sure you have the appropriate scale, select the second layer on the Ground Plane object and drag out a sphere to match the ground.



Using the same method as the ground plane set the surface name to SkyDome and the color to bright white. Using the Flip command found on the Polygon tab (or the <f> hotkey), flip the polygons so that they are facing inward towards the ground. Now use the Cut command to remove the Dome from the GroundPlane object. Create a new object and paste the Dome back in. Save this as SkyDome.lwo. That's it! All the modeling is done. Now we can get to rendering.

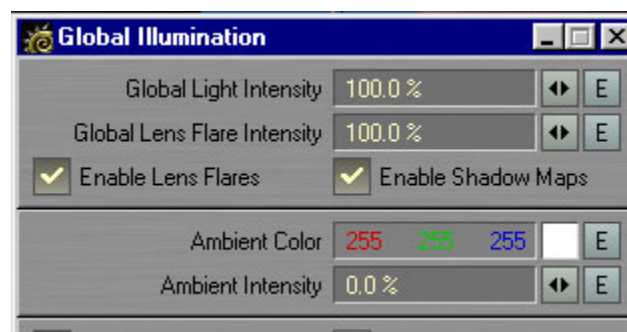
Open the Layout environment and load the SkyDome and GroundPlane objects. Once the SkyDome object is loaded, open the Surface Editor and change the Sky Dome surface to have 100% Luminous value. This will intensify it's strength as a light source. Now choose a "hero" object for rendering. Our example is the "Bucky" object found in the Objects/Characters directory. Bucky is a relatively simple object, but this will help exemplify how even simple geometry gains a more natural look when rendered under a sky dome. Because of the scale of the SkyDome and Ground plane you will need to move the camera back to the origin to get a good view of your "hero". (Tip: It will help to reduce the grid size once you get closer to the hero object.)

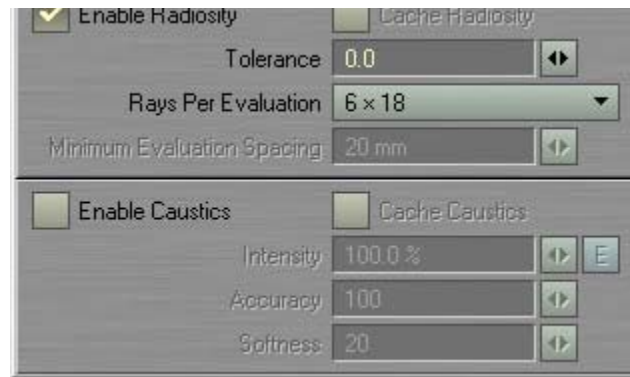


The next step is to remove all traditional light from the scene so that the only light comes from the Sky Dome. Rather than reducing the distant lights intensity simply deactivate Affect Diffuse and Affect Specular from the Light properties panel. This way you can still use the light for Open GL illumination.

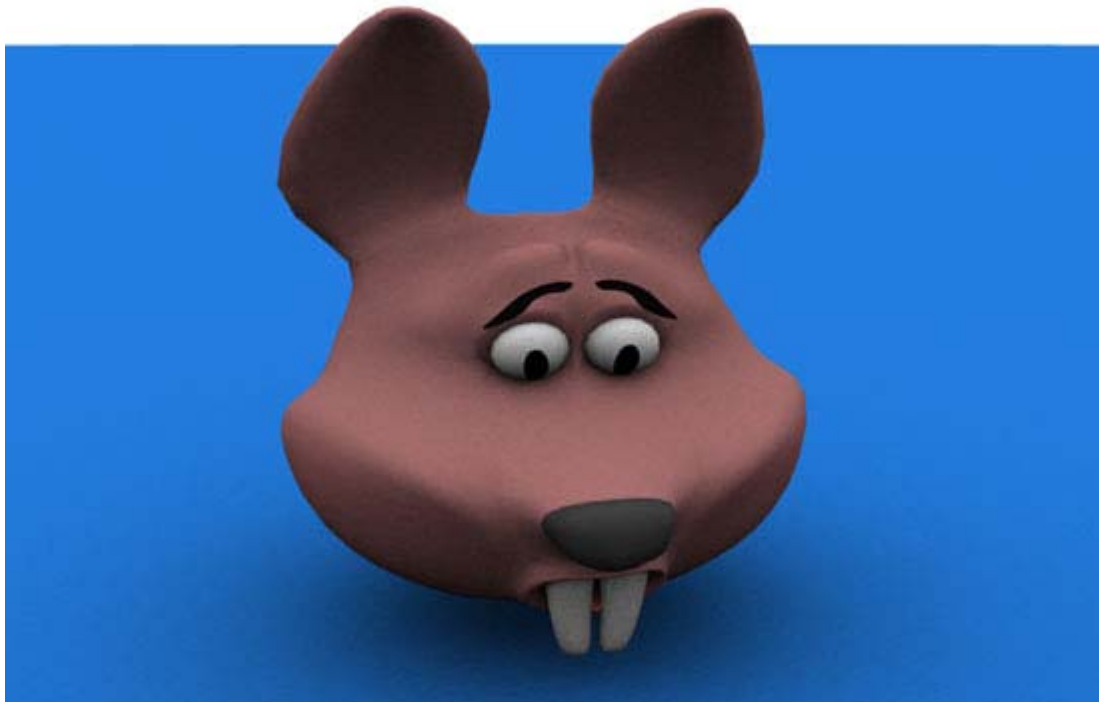


From the Light panel choose Global Illumination. From here you can reduce the Ambient Light intensity to 0%. Now your rendered scene has no traditional 3D illumination. The next step is to activate radiosity. Click on the Enable Radiosity button. This will activate the settings Tolerance, Rays Per Evaluation, and Minimum Evaluation Spacing. There is a full description of these settings in the LightWave documentation. For the purpose of this tutorial, simply set Tolerance to 0 and the Rays Per Evaluation to 6 x 18. With Tolerance at zero, every pixel in the image will be considered during the radiosity solution. With rays at 6 x 18 each pixel will fire 108 rays to determine its final color and brightness. This should provide a relatively fast solution that still looks quite good.





Before you make a test render, set the Camera resolution to 320 by 240 to cut down test render times. Use the F9 key to create your first test render. Voila!



Other Examples: [Click for Larger Image](#)



Tips!

1. Use a gradient on the luminosity based on Y distance to object to change the luminosity of the SkyDome so that the ground level is not so bright.

2. By using 2 spheres you can have an enviro sphere for lighting and for the cameras view. To do this make the light sphere slightly smaller and set it to Unseen By Camera on the Objects panel. Then the second larger sphere can be texture mapped or colored differently for a more interesting environment.



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