Rendering Environment Information--- special thanks to John Miller for his notetaking

Enter the Render Settings windows - Window > Rendering Editors > Render Settings.

With the new Window open click the drop down box for 'Render Using' and select **Mental Ray**.

If you do not see Mental Ray the plugin is probably not turned on, check the end of the tutorial quickly to learn how to turn plugins on and off.

Enter the Common Tab, this tab lists settings for your render, things like name, image size and format as well as other settings used in more complicated rendering.

For now we'll set our **File Name Prefix:** to something we can easyily find later when we save our image.

We also want to set our **Image Format** to something that is easy to use and high quality. Typyically we use .TIFF, for games we also use .TGA (targa) .JPG (jpeg) and .PNG. For now lets use .TIFF since we're are doing single still renders.

Scroll down to the bottom of the window, here we'll find more settings.

Here we can change the camera we will render out, our image sides, and its resolution. In the Presets drop down we can find many universal settings for quick use, take note that the larger the image size the longer we are going to have to wait for the render to finish.

Andrew reccommends the **Full 1024** setting under presets. Selecting this preset will change your settings.

Lets explore more of the tabs in the Render Settings Window.

Passes - We won't use this tab, its mostly for setting up sets of renders or batch rendering special passes.

Features - This tab will give us a lot of control over our render, most of the settings should be left AS IS, but its good to know that we can access many options for our render in this tab.

Quality - This tab obviously deals with the quality of our render. You will see a drop box called Quality Presets, here we can select preset options that will increase our renders settings and thus increase our time spent rendering. For now we will use **Production Quality.**

Indirect Lighting - This tab controls our Mental Ray lighting settings, they include controling bounce light, making a sun and sky and increasing our lights accuracy. We can also turn on Final Gatherer and Global Illumination.

Options - More options for complicated rendering processes.

Step by step instructions to create a rendering environment.

Open the Render Settings

Select **Mental Ray** from the Render Using drop down box

In the Common Tab scroll down to the Image Size, under the Presets drop down box select **Full 1024**

Switch to the **Quality Tab**, under the Quality Presets drop down box select **Production.**

Close the Render Settings Window.

Create a Camera by selecting **Create > Cameras > Camera.**

Look through the newly created Camera by selecting the new Camera and clicking **Panels > Look Through Selected**.

Turn on your **Resolution Gate** by clicking the on the button in your view port. It's a small blue circle inside of a rectangle, when you turn it on it should gray out part of your screen. This will help us aim our camera.

Fit your objects inside the the Resolution Gate Rectangle in your viewport.

Now lets lock our camera. Press Control + A to open the **Channel Box**. With your camera selected, grab all of the elements for the camera (scale, translate, rotate) right click and select **Lock Selected**. Now we can't move our camera.

Change your cameras name while you are in the Attritbute Editor by typing it in the Camera: text box. Remember this name.

While we are still in the attribute editor scroll down to the **Environment area** and press the drop down arrow. Slide the **Background color** bar until the black box Gray.

Switch back to the Perspective Camera by going to **Panels > Perspective > Perspective.**

You should now see your little green camera, leave it alone for now.

Clean up your scene by hiding any objects that you don't want see or show. Use Control + H to hide objects or add them to Layrs and hide them.

Enter the Hypergraph Hierarchy and clean out your scene so that its empty. Now when you want to render out a model, you can import it INTO this scene and render. We just want our Camera we made

Save your scene file. File > Save As. Save as a .ma, **rendering_env.ma**

Lets do a test render.

Click the Render View Window. **Window > Render Editors > Render View**. We should see our skeleton with a black background. This isn't good, we're rendering from the Perspective Camera, we took time to set up a specific camera so lets render from that camera.

In the Render View Window go to Render > Render > Rendering_Camera (or whatever you named your camera).

Now render a frame, we should have a Gray background. This is much better.

Lets make a background dome to render inside of.

Create a nurbs sphere and scale it up until its very large.

Cut the sphere in half by right clicking on the sphere and selecting **Isoparm**. Select the two Isoparms in the center of the sphere so we can cut them in half. Enter the Surfaces Menu Set by pressing F4.

Go to **Edit Nurbs > Detach Surfaces**. Select the two same edges again, and Detach Surfaces again, Yes... you have to do it twice, Now your Sphere is in two pieces. Delete one half.

Name your new awesome Dome, freeze transforms and delete all its history. Organize your scene in the Hypergraph Hierarchy by selecting the nodes and group them (Control + G). Rename the group Rendering. This will keep our scene organized, now all our lights and other RENDERING SPECIFIC objects can be placed here.

Save your render_env.ma again.

Now we need our materials to assign to our objects and our backdrop. Enter the Hypershade window by going to Window > Rendering Editors > Hypershade.

Click twice on the Lambert twice to make two new lamberts.

Rename Lambert2 to Backdrop_mat. Change the Lamberts color to almost white.

MMB (middle mouse button) drag your material from the Hypershade Window to your Dome. It should change to the color of your material.

Rename Lambert 3 as Object_mat, make it almost white. Assign the Object_mat to your model.

Save your rendering_env.ma

Lets do another test render from our Rendering_camera.

It looks alright but we can do a lot better.

Lets store the render so we can look back on our past failures. Click the button that looks like an arrow going into a box, this will store the render, you can also remove renders by clicking the arrow leaving the box. You can scroll through the renders by sliding on the scroll bar at the bottom.

Turn on Final Gatherer in the Quality tab under the Render Settings.

Render again. Store this render and flip between the two. Notice the differences in quality as well as the difference in time it took to Render.

Select your Dome and open the attribute editor.

Click on the BackdropShape node (tab) scroll down and open up the Render Stats drop down. You'll see a list of things this dome can do while being rendered. Lets turn off **Casts Shadows, Recieves Shadows** and **Primary Visibility.**

Do another Test Render, now the dome is gone but we still get its bounce light.

Setting up Lights

Create a spot light by clicking Create > Lights > Spot Light.

Postion it by clicking on the light then Panels > Look Through Selected.

Press 7 to switch to Lighting Mode, now you can move your light around easily, aim it at your object.

In the attribute editor you can play with some of the light settings. Try changing the color slightly or the cone angle to focus it.

Test render, looks alright, lets get some shadows in their.

Select your light and go to the attribute editor. Scroll down to the Shadows tab, drop it down. Scroll down further and select Use Ray Trace Shadows. Increase your light radius a little bit and increase shadow rays to 20.

Create and area light to act as a bounce. Place this light on the oppisite side of your spot light. This is going to soften our shadows and light the other side of our model.

Insert a pont light Create > Lights > Point Light. Place it behind your model (near the top) to create a sort rim of light on your object. Adjust its color and brightness so that it is not overpowering.

Do some more renders and tweak the settings.

Adding Ambient Occlusion

Enter the Channel Box.

Select Render (next to display). You are now looking at your Render Layers.

Click on the New Layer button (blue ball, yellow sun, white plane). Rename this layer AO_Layer

Notice that your Master Layer has a red X, meaning it won't be rendered, click it and remove the Red X.

Select your object and enter the Attribute Editor, go to the AO_Layer tab, click on Presets > Occulsion. A new window will open.

Select the mib_amb_occlusion tab and click on it, Change your Samples to 40 (from 16) This will increase our quality and our render time.

enter your Render Settings tab, notice some of the text is Orange, these are settings being effected multiple render layers.

Enter the features tab, right click on the word **Final Gatherer** and select **Create Layer Override** then Uncheck the box for Final Gatherer.. This will stop our AO layer from using Final Gatherer since we already have Final Gatherer on our Master layer.

Return to the Channel Box and click Options > Render All Layers (you might have to do this twice to get the check to work.)

Now do a few test renders, you'll first see a normal render using Final Gatherer, then, a second pass will bring in the AO render.

If you bring in a new object to render (like your cell phone) You will need to add the new object to the AO layer. To do this, select your new object, right click on the AO layer and select Add Object To Layer

Plug-ins Tutorial

To turn plug ins on and off go to Windows > Settings/Preferences > Plug-in Manager.

With the new window open you'll see a list of check boxes, these are all plug-ins for maya, most of them we do not need for day to day Maya use. However your home machine might be different than a school computer, to enable Mental Ray for our Rendering Setup, we'll need to turn on the Mental Ray plug-in.

Scroll down the list of plug-ins until you find **mayatomr.mll,** check the 'load' check box and close the window. Now when you return to the Render Settings, you should see Mental Ray under your Render using.