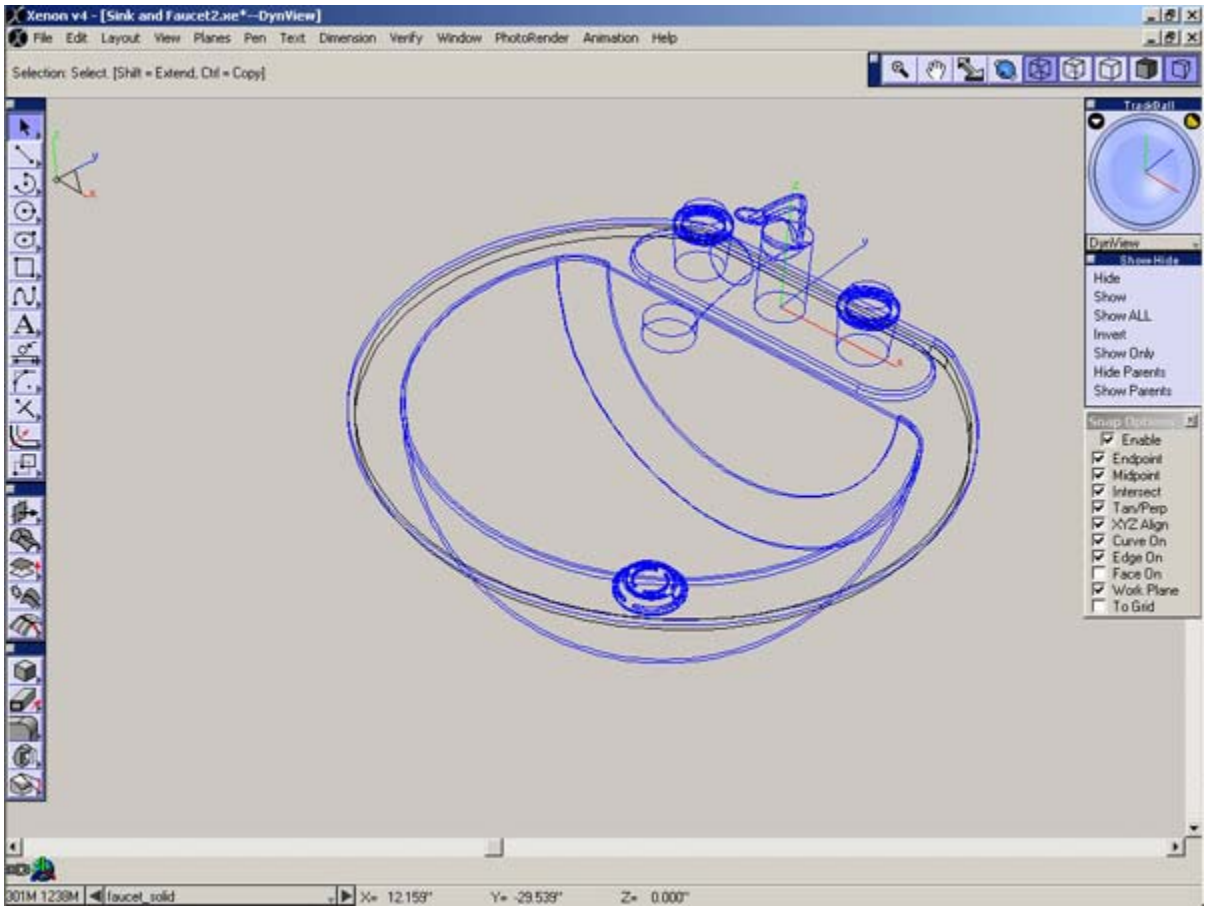
SINK AND FAUCET TUTORIAL

This tutorial is used to show the advantage of the associative features of Cobalt and Xenon. It demonstrates using the Design Explorer to edit a design without having to recreate geometry. The model has already been created using Xenon and is being edited in Xenon. The same thing can be done in Cobalt, in the same manner. It also demonstrates how to set up a scene for rendering, including setting up the lights, applying materials, and producing a photo-realistic image of the sink and faucet. You will need to download the model from the internet version of this tutorial.

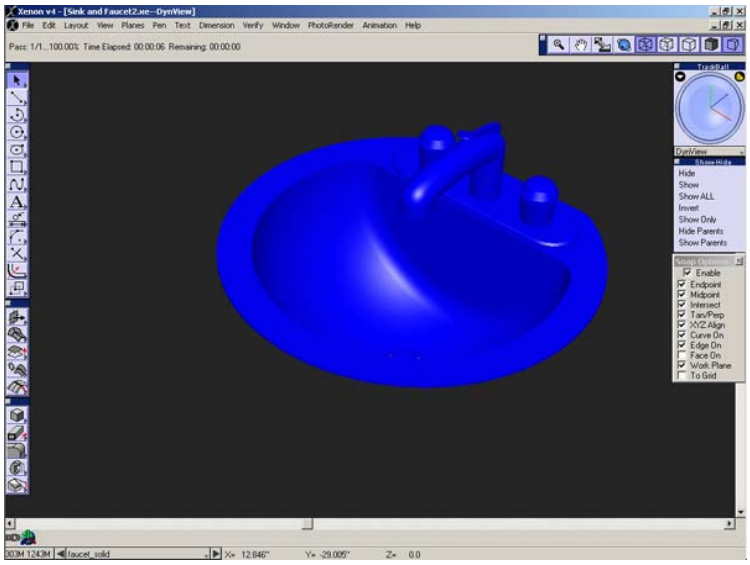
Next we will edit certain features of the model using the Design Explorer.

Editing Features with the Design Explorer

Start Xenon or Cobalt and open the file that you just downloaded. Your screen should look similar to the one below.



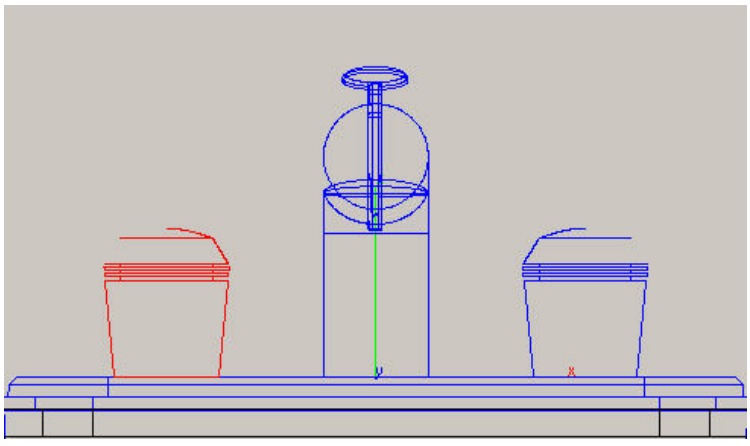
In order to get a better idea of what is going on in the model, you can make a preview rendering of it. Go to ***PhotoRender>Preview (No Shadows)*** to get a quick rendering of what is in the model.



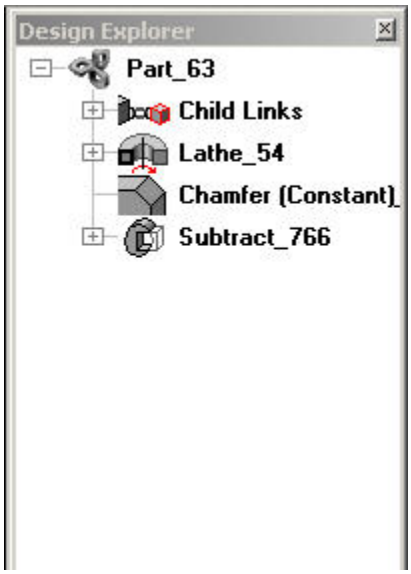
The part that we are going to be most interested in right now are the knobs. To get a better view of them you can go to the front view of the drawing by selecting ***Front View*** from the drop-down list at the bottom of the Trackball.

As you can see below, the knobs are a revolved profile with a chamfer applied to the top and some grooves subtracted out of the side.

Let's say that when the design was reviewed, the statement was made that having the grooves in the design "complicated the process of cleaning the fixture." Sure they could have just said, "Take out the grooves", or "They make it hard to do" but no, they use some sort of high average syllable vernacular in order to justify their title. That's a discussion for another day, but nonetheless the grooves no longer. Using Xenon or Cobalt, this process is simple. It can be done using the Design Explorer. If it is not already open go, to ***Window>Design Explorer*** to open it onto you screen.

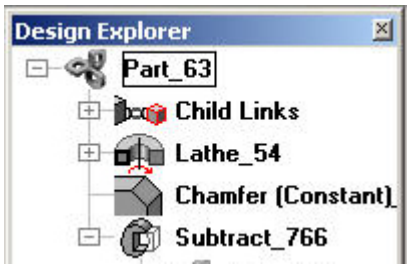


By selecting the knob on the left with the select tool, you can see the history of the object in the Design Explorer.



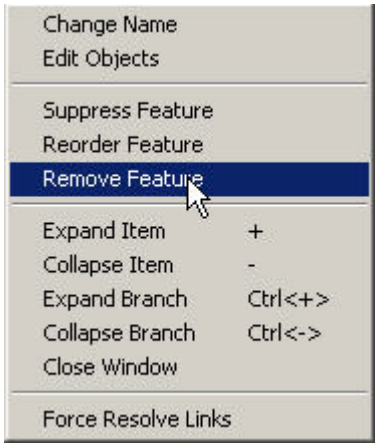
This is what the knob contains. The first thing that you see are Child Links. This item includes such information as the material that was applied to the object (which is currently just the plain blue that you saw in the preview rendering). It also includes instances of the objects that may be in the model. In this case, the other knob for the faucet is an instance of the one you have selected. With an Instance copy, when you edit the original the instance also updates. So we remove the grooves from the knob we are working on, the other knob will also lose its grooves.

Next, you can see the Lathe that was used to create the knob. Also, you see the chamfer that was put into the top. The last thing is a boolean Subtract feature that was used to create the grooves. If you click on the plus sign by the Subtract feature you will be able to see what it was that was subtract by the knob.

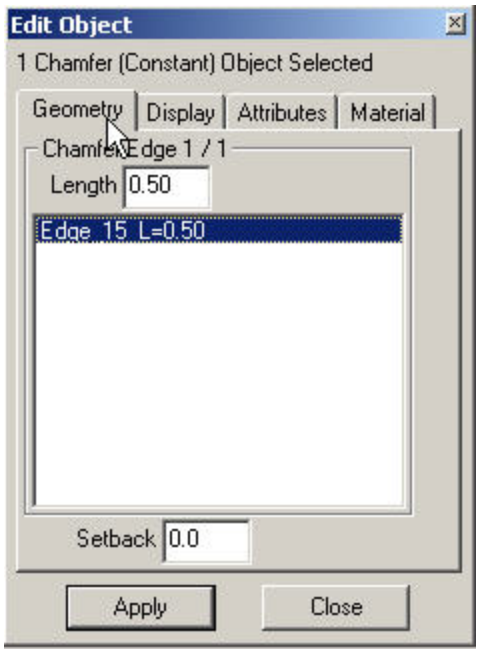


If you remove the Subtract Feature from the list, you will in turn remove the grooves. To do this, right click on Subtract in the Design

Explorer and a menu will pop up. In this menu, select ***Remove Feature*** from the list.



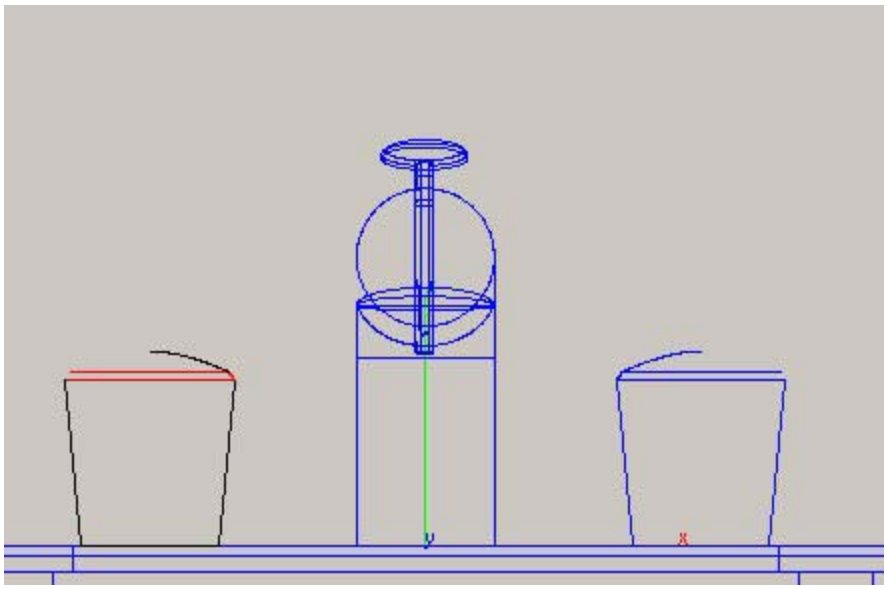
The grooves have disappeared. The pipes that were used to create the grooves are now there on the screen. Since you will know longer need them, you can delete them from the model. Looking at the model a little further, you may feel the need to change the size of that chamfer. Making it smaller may create a better design. When working with a program that doesn't offer a history of the design, exploring this idea would require creating another knob and applying a smaller chamfer to it just to see how it would look. With Cobalt and Xenon, you can edit the chamfer you already have. To do this, double click on the ***Chamfer*** feature in the Design Explorer. This will open the Edit Object dialog. Select the Geometry tab and you will see that the chamfer is a half inch chamfer.



We can change this amount by selecting the edge and changing the value in the ***Length*** field. Change the number to .125. This will make the chamfer 1/8 inch all the way around.

You can make smaller or bigger. There is a limit however, You can't put a 10 inch chamfer on a 2 inch knob. When you get to a value that you like, select ***Apply*** and ***Close***. That's it, the knob is edited and the other knob updated with it.

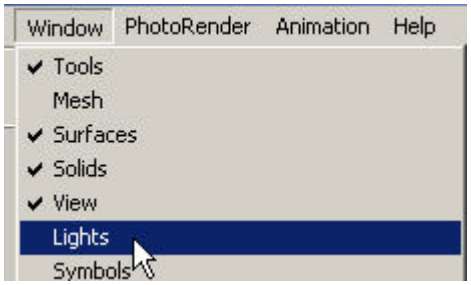
Was design ever this easy?



Next we will begin setting up the scene for a rendering by placing lights in the scene.

SETTING UP THE LIGHTING

In order to begin setting up the lights in the model, we should look at the kinds of lights available to us. To open the Lights window go to ***Window>Lights***.

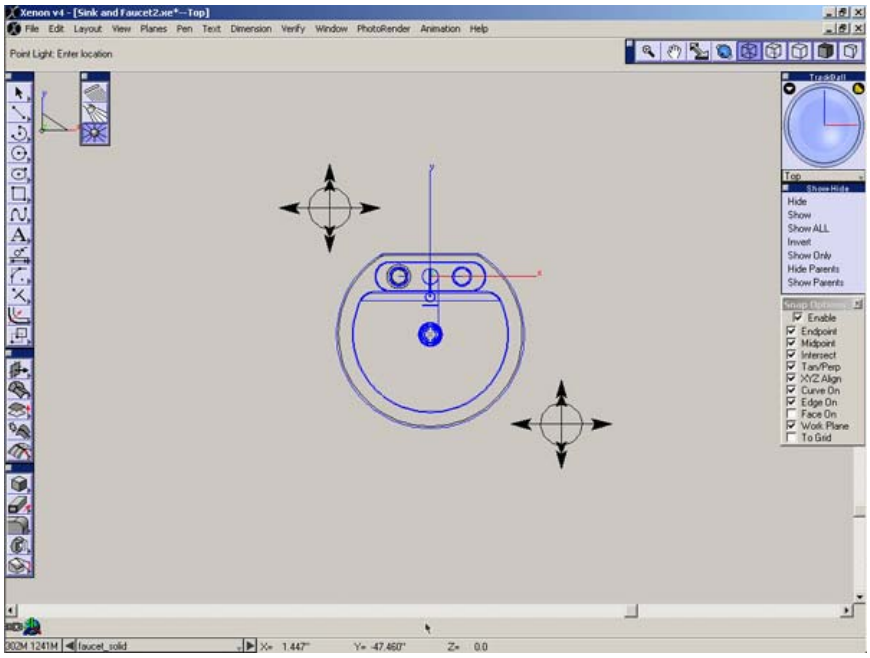


The first one in the window is the ***Distant Light Source***. The best way to describe this type of light would be the sun. It doesn't fade over a distance like the other two, and it illuminates parallel surface equally.

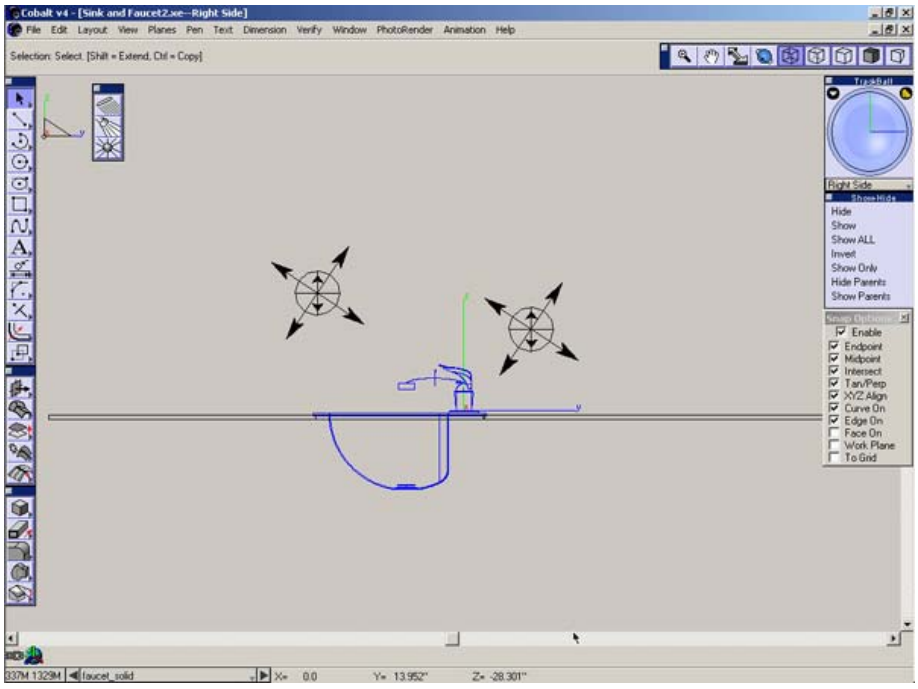
The next is the ***Spot Light Source***. Like the name implies, it is like a spot light or a flashlight. It projects a cone of light. This can be used for highlighting a specific area of a model or for dramatic effects.

The last is the ***Point Light Source***. It would be similar to a table lamp or a light bulb. It emits light in all directions. In my opinion, this it the easiest light to use. You don't have to worry about the direction of the light. It is a good general lighting tool for displaying a model. For this reason, will use it for this example.

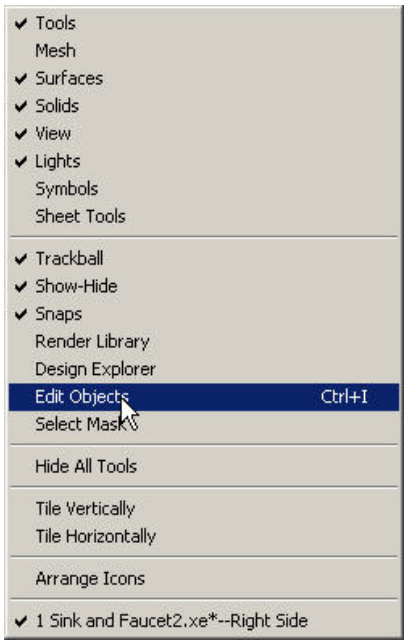
You definitely want to use more than one light in your model. For this one we will place one in front and the one behind the sink for back lighting. Go to the top view by selecting ***Top*** from the drop down list at the bottom of the Trackball. Make sure that the ***Work Plane*** snap is on in the ***Snap Options*** window. (This will place the lights at the 0 in the Z direction while we are in this view.) In the image below you can see where I placed mine. Place yours somewhere close to that.



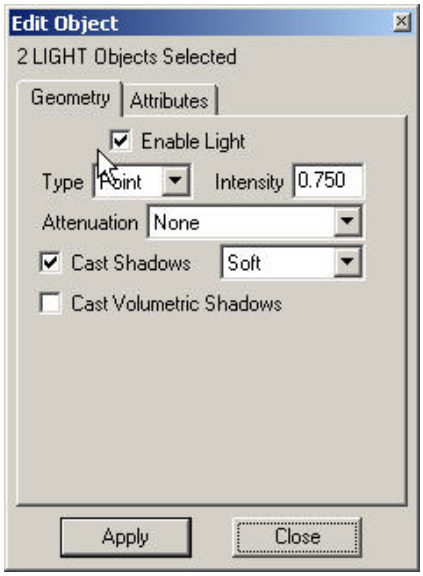
Since we had the Work Place snap on when we placed the lights and they are at 0 in the Z-Axis, we will move them up in the right view. Select ***Right Side*** from the drop down list at the bottom of the Trackball. With the ***Select Tool*** active click and drag the lights up so that they are above the model. By leaving the Work Plane snap on, the lights will not jump around the model area. They will stay in the place we put them in the top view, except for the upward direction we are moving them.



After you have moved the lights, select them both by using the ***Select Tool*** while holding the Shift key. We need to adjust the settings a little on the lights to give us the results we want for the rendering. To do this, open the Edit Objects window by going to ***Window>Edit Objects***.



The only thing that we need to change is the type of shadow cast from ***Hard*** to ***Soft***.

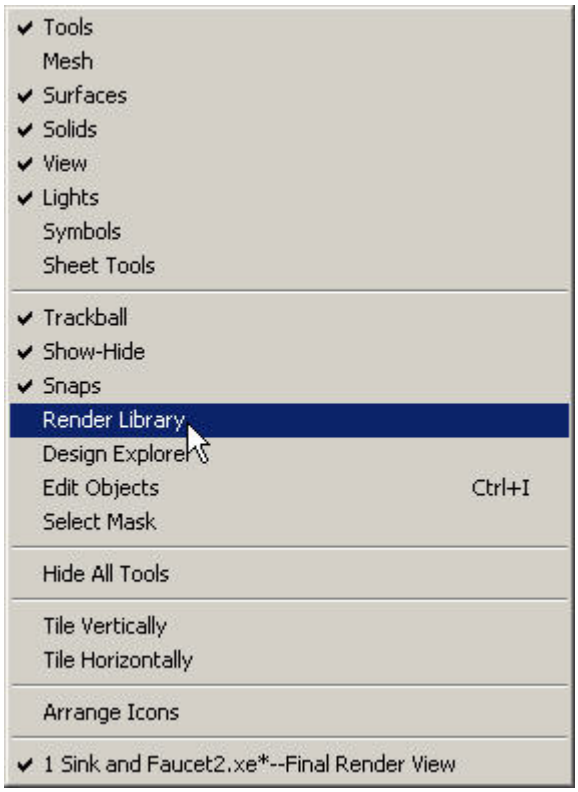


Now that the lights are finished, we can apply materials to the model.

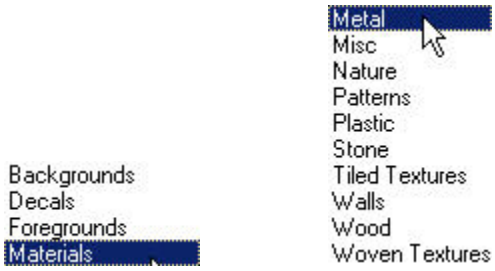
APPLYING MATERIALS

Applying materials is simple with the Render Library. All you have to do is drag and drop the material you want to apply onto the object.

First, open the Render Library by going to ***Window>Render Library***.

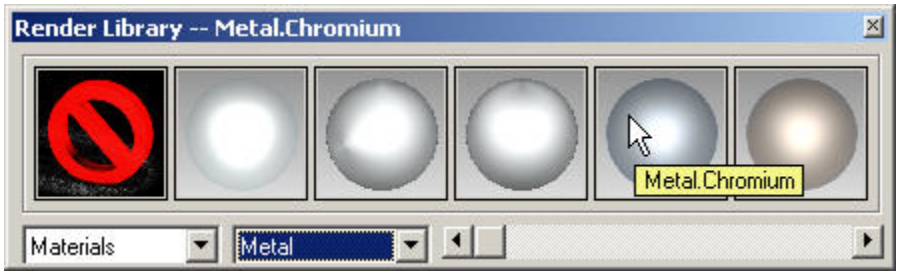


Set the first drop down list to ***Materials*** and the second to ***Metal***

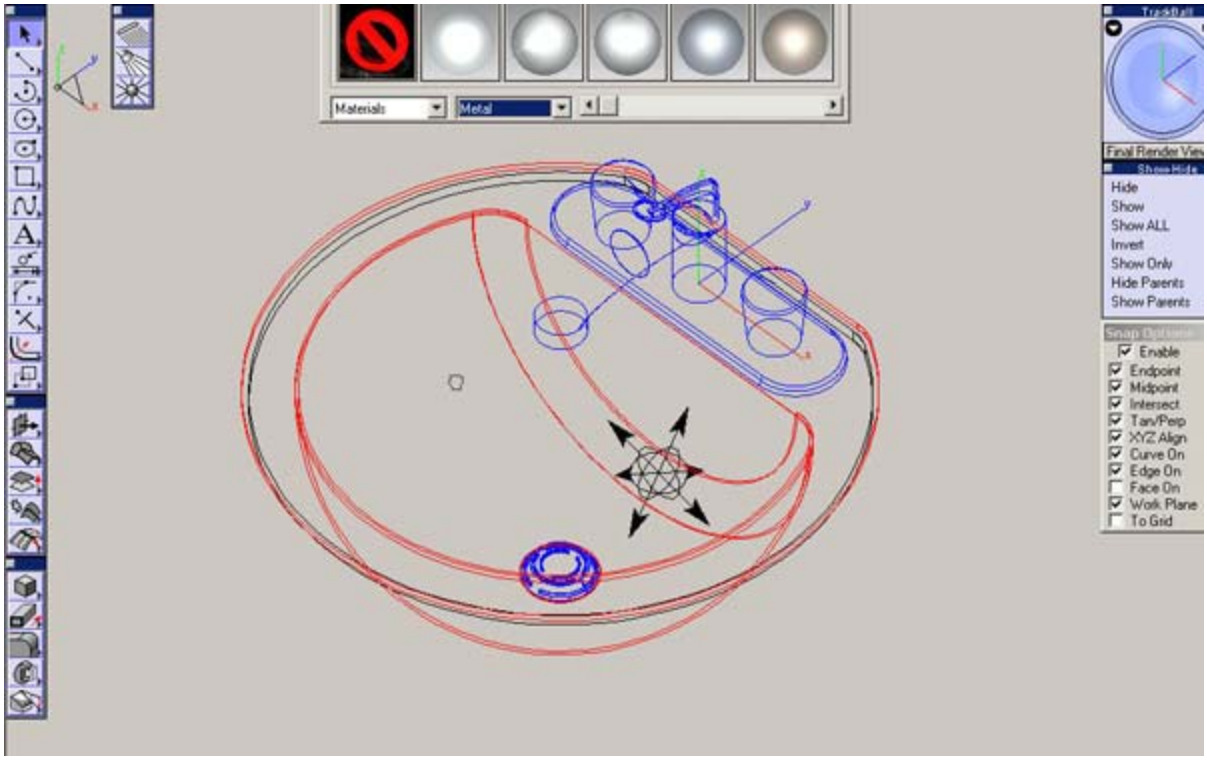


You will see a large variety of metals from which to choose. A design principle that is used sometimes is the "When in doubt make it chrome" idea. This has evolved into the, "When is doubt nickel plate it" or the "When in doubt use brushed aluminum." I still enjoy the original so we will make our sink and faucet chrome. The fourth

sphere in the library is a material called Chromium. For all intents and purposes this is the best one to use for chrome.



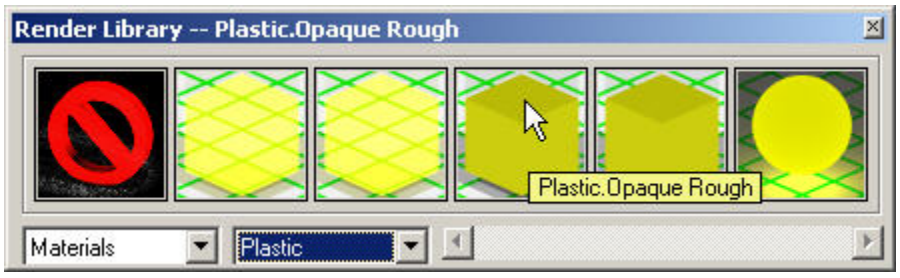
Click on the material and drag it to the sink. The icon will change to a small hand and the item that the material will be applied to will turn red. When the correct object is highlighted let go of the mouse button. That's all there is to it. Apply the Chromium material to all of the sink and faucet parts. All the stuff that is blue. You can check if you have gotten them all by doing a Preview Render from the PhotoRender menu.

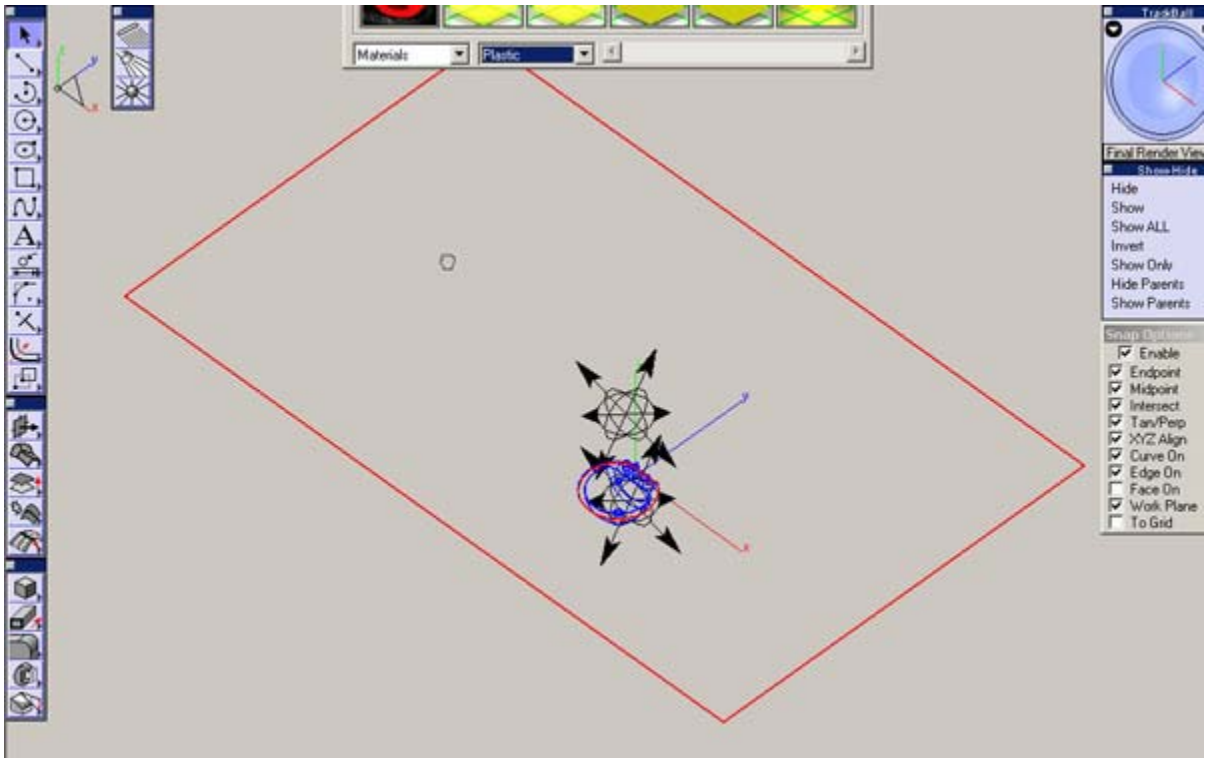


You may have noticed that there is also a large flat piece in the model. For our picture, this piece represents the counter surrounding the sink. It is a block that has a cutout in it that in which the the sink lies. We will give it a somewhat flat, hardly noticeably texture so that is creates a soft look to the image. The best material that I've found

for this is the ***opaque, rough plastic***. To look at the plastic options Change the second drop down list to ***Plastic***.

In the fourth window you will see the ***Plastic. Opaque Rough***. Drag and Drop this material onto the large block in the model. To see it better you may want to zoom out.



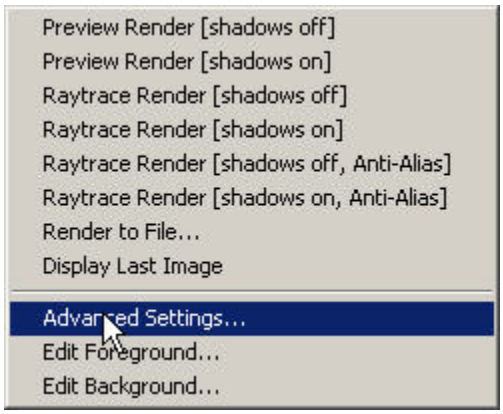


To get a quick glimpse of the rendering, go to ***PhotoRender>Preview No Shadows***. This will show you if you have all of the materials placed correctly.

The last step of making our image is to adjust the rendering settings and render the image to a file.

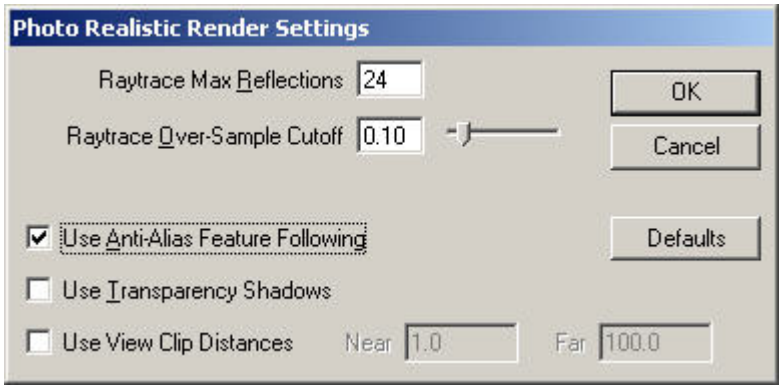
RENDERING THE IMAGE

In order to create the highest quality image possible, we will adjust the advanced settings of the rendering. To access this, go to ***PhotoRender>Advanced Settings***. This will open the Photo Realistic Render Settings dialog.

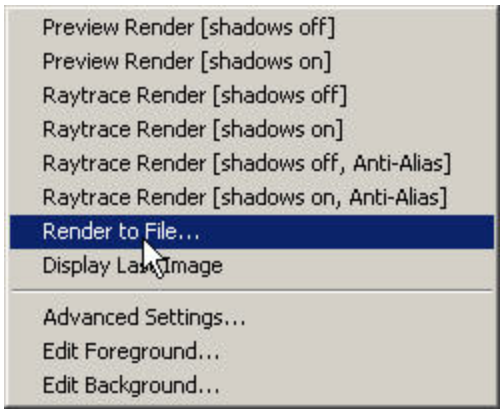


I changed the Raytrace Max Reflections to 24. I like to increase this setting when working with a model that has highly reflective metal surfaces. It increase how many times the lights bounces off of objects. For models that don't use highly reflective material it is probably not necessary to increase this number.

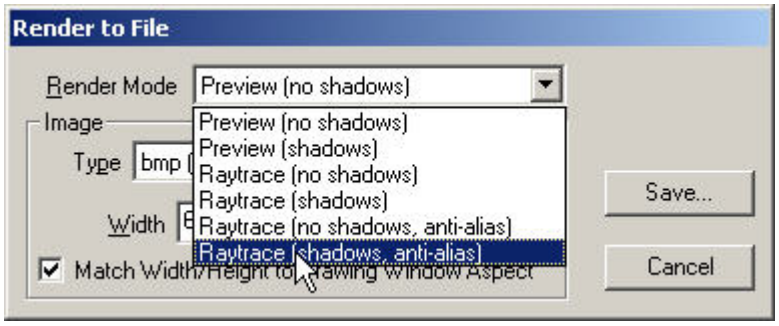
I also checked the ***Use Anti-Alias Feature Following*** box. This is a powerful feature that will help in making a rendering that involves very detailed designs or producing high quality studio work. It will drastically increase rendering times. So make sure you turn it back off when you are done.



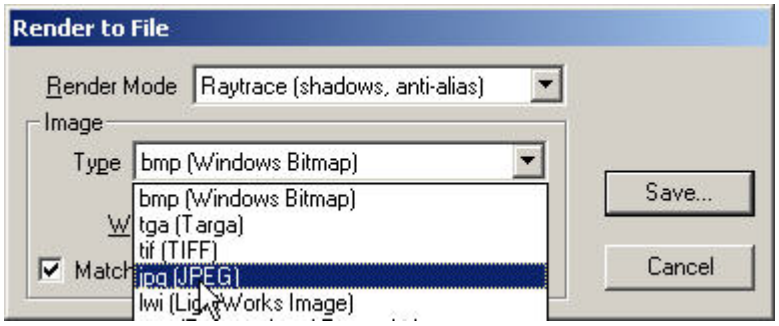
The next step is to select ***Render to File*** from the PhotoRender menu.



The Render to File dialog opens. The first thing to set is the ***Render Mode***. Of course we want to use the highest setting available, which is Raytrace (shadows, anti-alias).

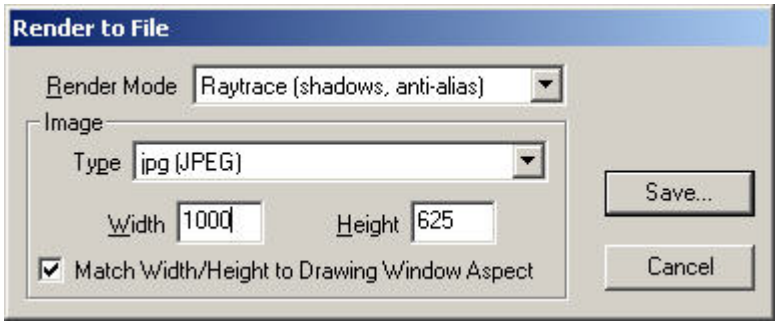


The next setting is for the Type. The image I am making is for the web, for this tutorial actually. Therefore, I am using the jpg type. If you are wanting to use the for print you may want to use tif.



Next we have to set the size of the image. The image will be made the size shown below at 72 dpi. This works well for displaying the image on a computer. If your resolution on your computer is 1024x768, you can make the image that size. For print, a little more thinking is involved. To make an 8x10 at 300 dpi you would need to make an image that is 2400x3000 pixels. At 72 dpi this image would

be close to 33x42 inches, but by using an image editor you can change the dpi to 300 and this will shrink the image to what you need. The larger the size the longer if will take to render.



Once this is done, select ***Save*** and name the file and the place that the file will be saved. Select ***Save***, and the computer begins rendering. You will see the timer appear in the message line that tells you its progress. After it has finished, open their image and check to see how it looks. Hopefully, your image looks similar to the one below.

If it does not look this way, you may want to check you light settings and placement. In the file you downloaded, I have included the lights that I placed on a Layer named Lights. Turn that layer on and you can see where mine are.

Good luck or Congratulations, which ever seems fit.