

Maya Complete 4.5

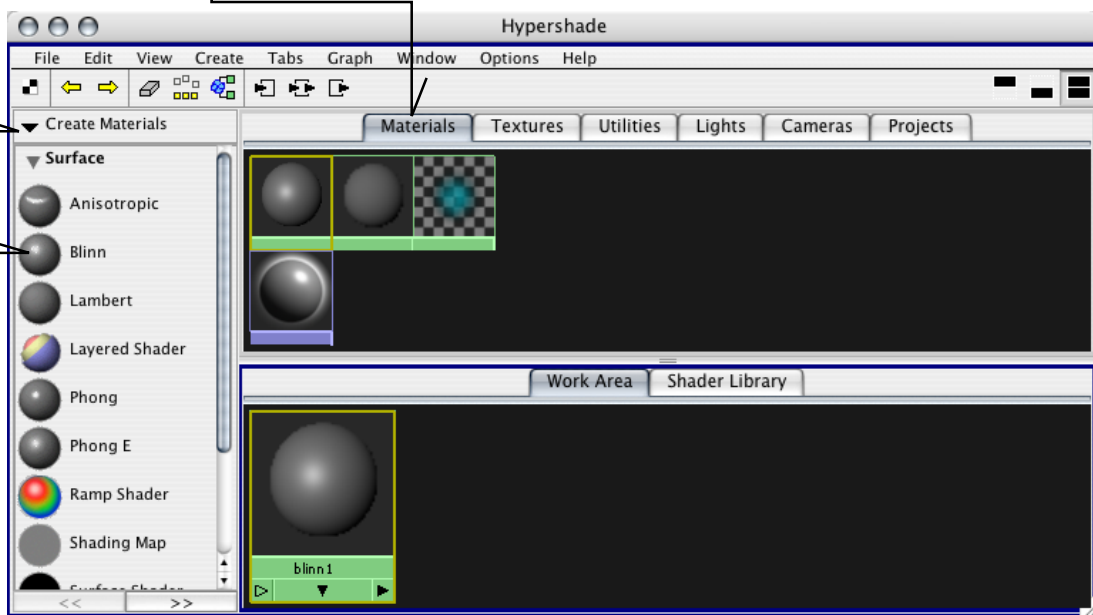
Hypershade Texture Editor - Create an Eye.

Texturing models in 3D can be a complicated process in any programme but unlike modelling where NURBS and Polygon modelling principles are consistent and can be translated from one application programme to another, the method of mapping Textures to models is, more often than not, unique to each 3D programme.

Maya's standard Texturing tool is the Hypershade and we've already used it to place the Chess Set reference image on a Polygon Plane to create our models. A particular feature to the Hypershade is that it contains literally all the information in a Scene making it phenomenally powerful to the degree that when you're editing in Hypershade (i.e. deleting unused texture files) if you aren't sure what you're selecting it's possible that models, lights or more could be deleted accidentally, therefore it's good practice to name models and textures so they can be clearly identified.

We'll start by creating a NURBS Sphere. Go to the Menu Bar>Create>NURBS Primitives>Sphere, then press 6 on the keyboard to turn on Hardware Texturing then press "F" key to frame the Sphere and move the Sphere up in the "Y" axis so it's above the Grid.

Open Hypershade, Menu Bar>Windows>Rendering Editors>Hypershade. Make sure Create Materials are displayed (if it isn't click the arrow and select it from the drop down menu) and Materials Tab is selected.



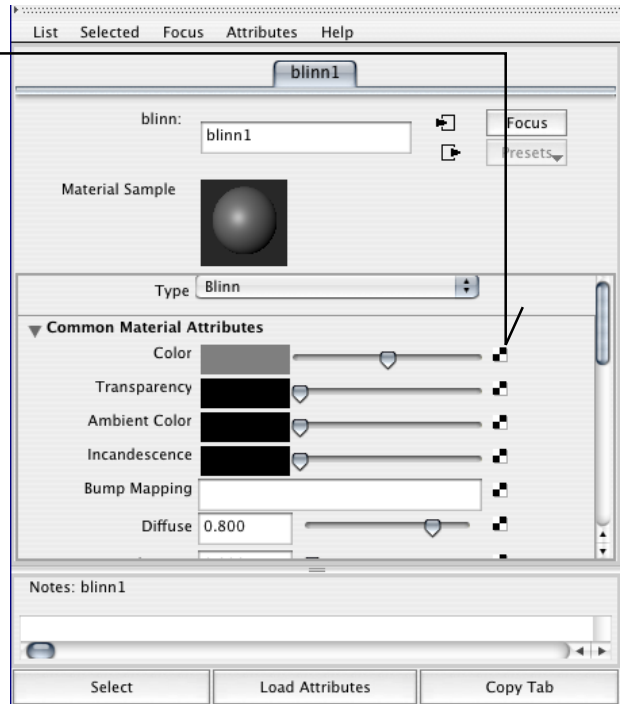
In Create Materials Click on Blinn to create a material then double click on Blinn in the Work Area.

The Hypershade is divided into two areas; The top area contains Mayas default Material / Shader set that is used for all objects in the Scene. The bottom area; The "Work Area" is where Materials and associated files are displayed that you create and are then displayed in the top area as a single Icon which is referred to as a Node. The term Node in Maya means any component part of a whole, in the case of materials it's image files, 2 / 3D placement and what ever else has been plugged into it which will become part of the overall model which is part of the Scene. Select the Sphere, right click on the Blinn Node and slide down to "Assign Material to Selection".

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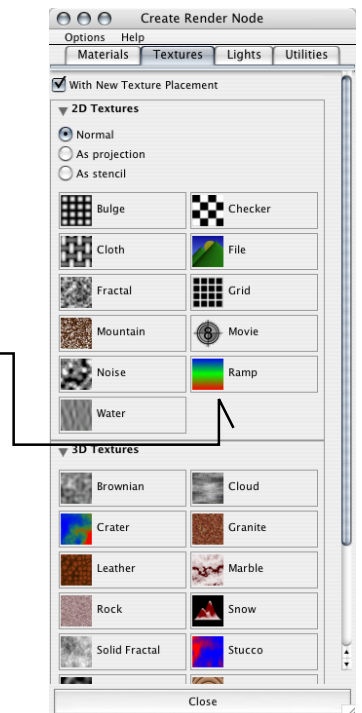
In the Attribute Editor click the cheque button at the end of the Colour Slider



These steps should be familiar as this is exactly the same process you followed to load the Chess Set image onto the PolyPlane.

This opens Create Render Node window where previously we clicked "File" to navigate to the Chess Set image, however this time we' re going to load a shader that can be used to texture the Eyeballs three main features: The Pupil, Iris and Sclera (the white region of the eye).

Click on Ramp.



By its very name this Shader is self explanatory. It contains, by default three levels or Ramps in this case, but as many as needed can be loaded or removed. The Ramps can be shifted above or below each other, assigned different colours or Textures. We' re going to use Procedural Textures for this exercise. The two common forms of Texturing in 3D are Bitmap (a created image or photograph) and Procedural Textures which are images generated by the computer within an application programme (in this case Maya).

Because Procedural Textures are generated by computer they' re processor intensive therefore it requires more memory than a Bitmap; If you find your computer at home is becoming slow then it' s struggling with the demand for more RAM and / or the CPU is faltering trying to generate the information. Newer machines shouldn' t have this problem.

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With the Ramp 1 Attribute Editor open make the following changes:-

Change V Ramp to U Ramp.

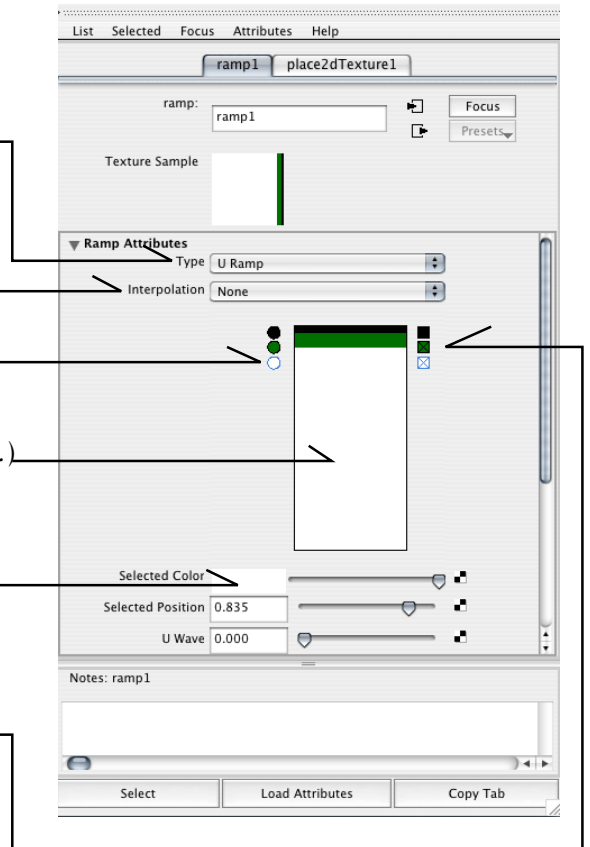
Interpolation to None.

Click these circles to highlight a Ramp.

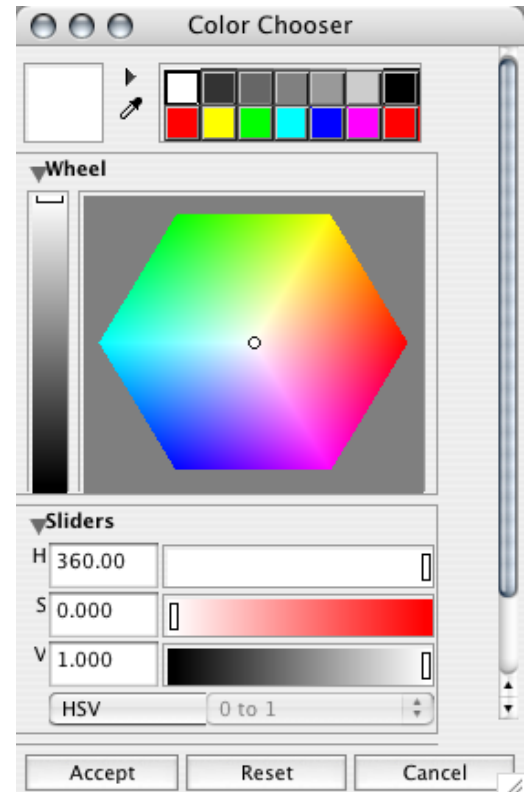
(Note: Clicking in an empty area creates a new Ramp.)

Click in the Ramp Swatch to change colours in Color Chooser.

(Note: Clicking on Xbox will delete a Ramp)



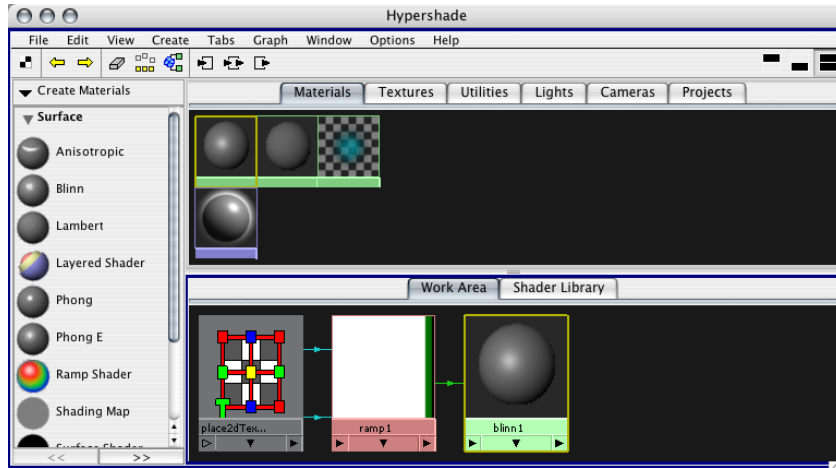
The Color Chooser is Maya's basic colour Palette. If you've used other graphics programmes the display and functionality will be familiar as it works in the standard way. Pick a colour and change its tonality by adjusting HSV settings and / or moving the "picker" in the hexagonal colour wheel and its associated slider. Choose a colour for each Ramp, then by moving the circles up and down, adjust the area to be covered by that colour. When your preferred colour has been chosen hit Accept, Reset will go back to the original setting when the Color Chooser was opened and Cancel will obviously close the Color Chooser without making any changes,



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Now that a Material (Blinn 1) has been loaded, A Shader (Ramp 1) has been plugged in, in the Hypershade Work Area you'll see all the Nodes displayed and an additional Node called "place 2d Texture 1"...

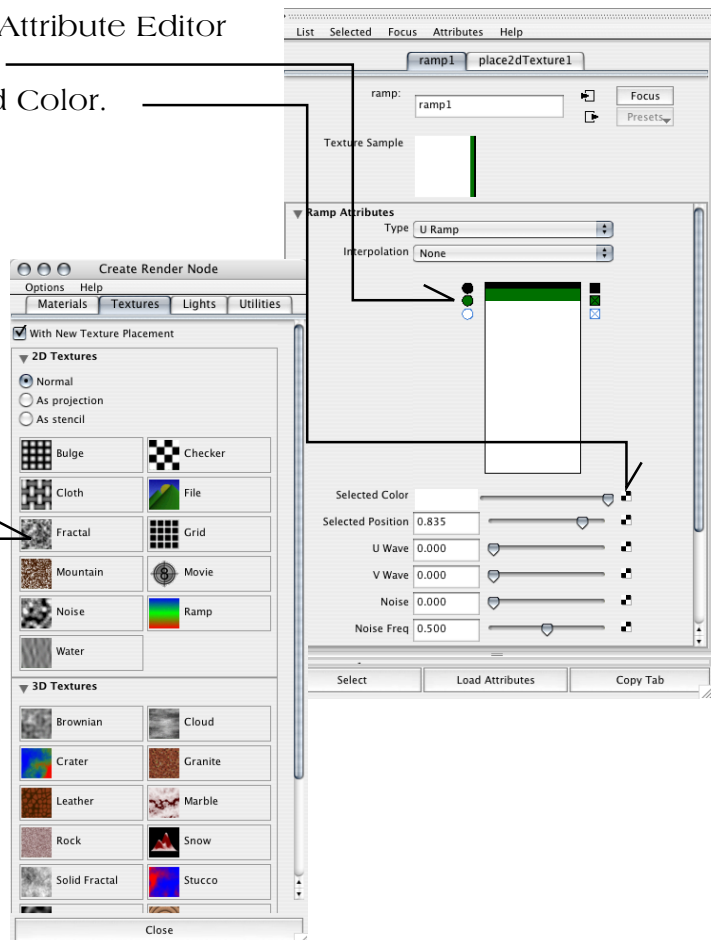


...this Nodes function is to place the Material and Shader onto the Sphere and contains the co-ordinates i.e. Position (Move X,Y,Z), Scale (X,Y,Z), Rotation (X,Y,Z), therefore allowing us to make these changes visually in the Viewport by using the Manipulator (press T on the keyboard).

Select Ramp 1 in Hypershade, then in the Attribute Editor select the Ramp circle that will be the Iris, click the check box on the end of Selected Color.

As before this will open "Create Render Node" window. Select "Fractal".

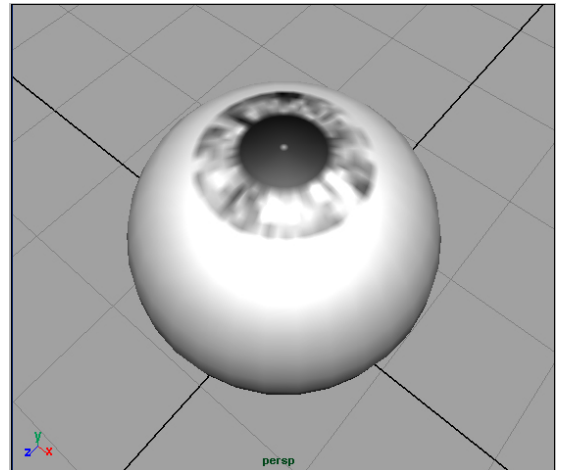
This will load Maya's Procedural Fractal Texture Node into the Iris Ramp Node, into Ramp 1 Node, into Blinn 1 Node. Also, if you look in Hypershade, it's been given "place 2d Texture" Node to configure it's placement on the Sphere which means it can be selected and visually adjusted independently via its Manipulator or by using the Virtual Slider in Channels.



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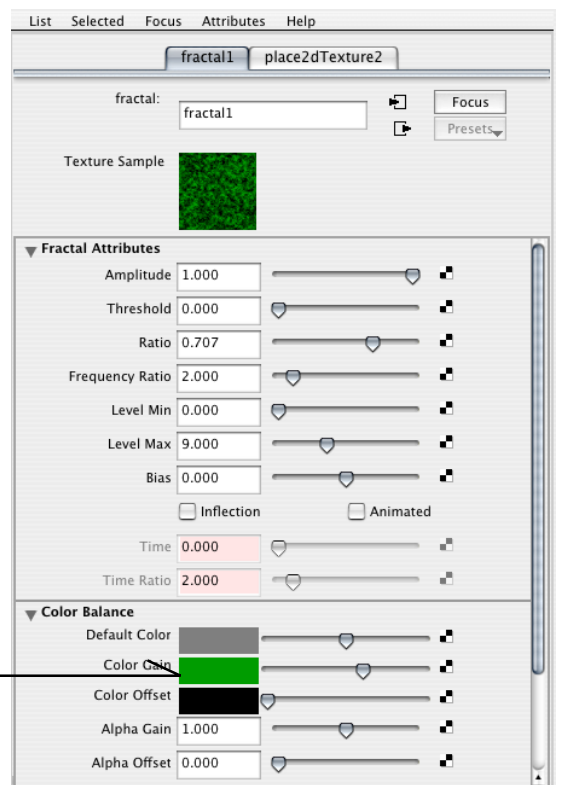
The Sphere should now have the Fractal Texture Node in place, creating the Iris, and starting to look like an eyeball, all done by applying textures to specified regions.



Select Fractal 1 in Hypershade, in Attribute Editor scroll down to Color Balance, click

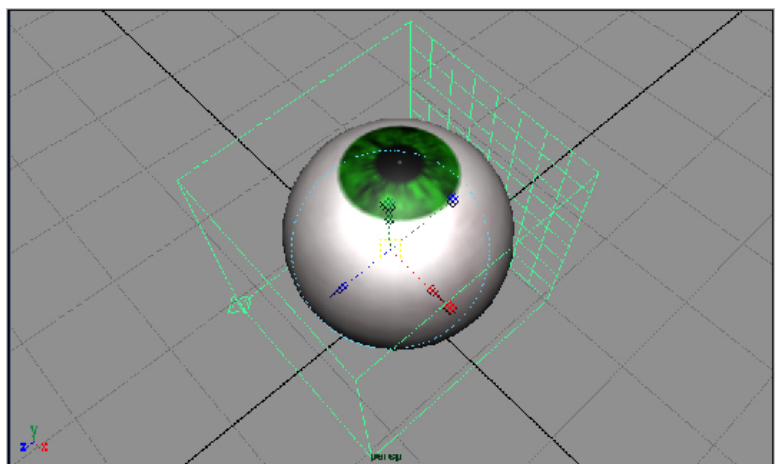
In the Color Chooser, pick a colour you'd like the Iris to be. I chose a shade of green but you can make the Iris any colour, it will not effect the stages in this tutorial.

Follow the same steps you've just done to load the Fractal Node but this time click the White circle in the Ramp 1 tab, in Create Texture Node window click Marble to load as the Texture for the White of the eye.



Your eyeball should look like this, the Marble Texture Node may not be very visible in the viewport but it is there. To start tuning the Textures we need to see them clearly and to do this it's necessary to Render the model which we'll do next.

Notice the cage that's now visible, this is the Marble Textures Manipulator which can be visibly adjusted by clicking on it. This will give you Move, Scale, Rotate options, exactly the same as the Extrude Tool Manipulator that you used in the previous tutorial.



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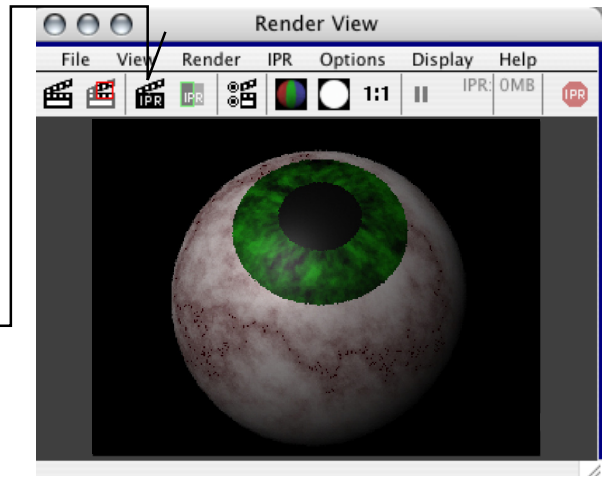
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Position the Perspective view so that you can see the eyeball Iris and White area, hit "F" on the keyboard. You need to get a good angle and distance to render the model so as to make adjustments to the Texture in the Renderer.

To Render the view go to the Status Bar and click the Render icon.

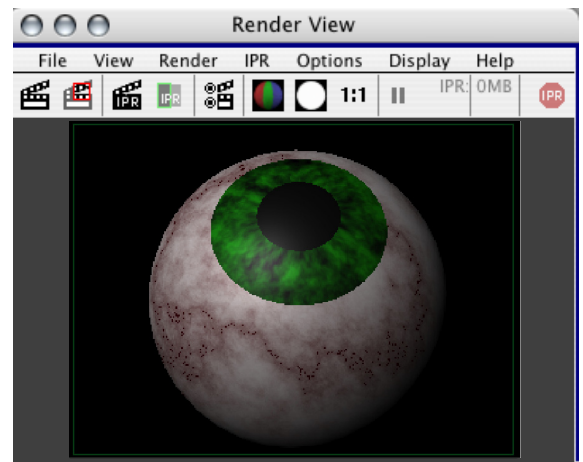


After you've click the Render icon the Render View window pops up. As you can see the Textures are more vividly displayed but to see changes that you're going to make you'd have to activate the IPR (Interactive Photo Renderer). In the Render View window. Click IPR button as shown,



When you activate the IPR a prompt appears at the bottom of the window saying "Select a region to begin tuning". Maya is asking you to marquee select an area that it will monitor and update every time a Texture setting change is made, this also applies to Lights in a scene, so it's a very usefull way of setting Textures and Lights accurately for true final Rendering results.

When you've marquee selected an area a green box appears defining the area selection and every change that's made Maya runs a scan line over the region to update it. If you want to move around the model though, this has to be done in the Perspective Viewport, Rendered, the IPR activated and a region marqueeed. The Texture has to be seen from different perspectives to check that changes made are what you want so you'll be using this procedure quite extensively.

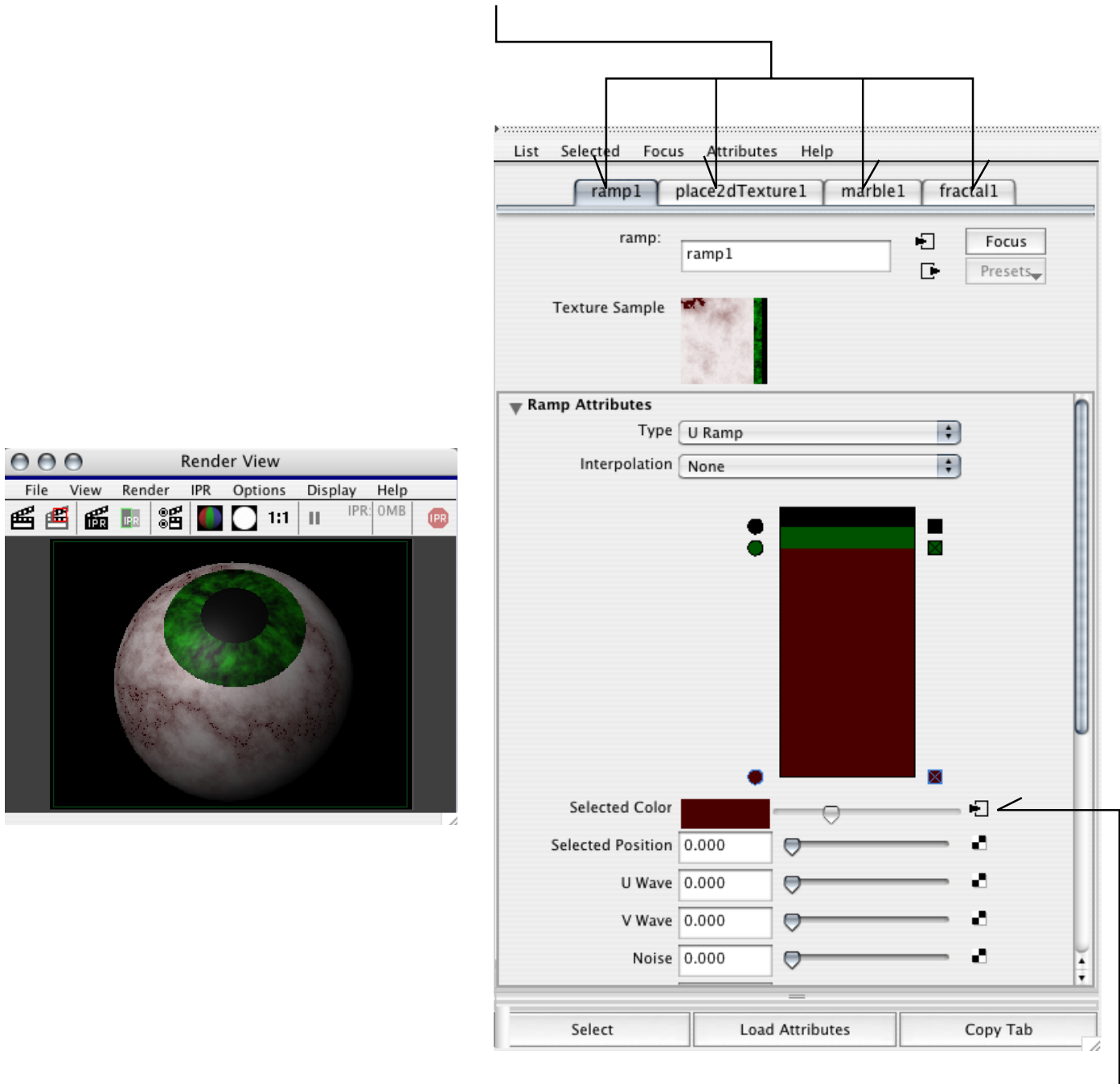


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With Render window open and IPR activated position it so as it's clear of Attribute Editor. You'll need to see both of these items to start tuning the Texture parameters and see if they're producing the desired effect.

Switch between Tabs in Attribute Editor to make parameter changes.



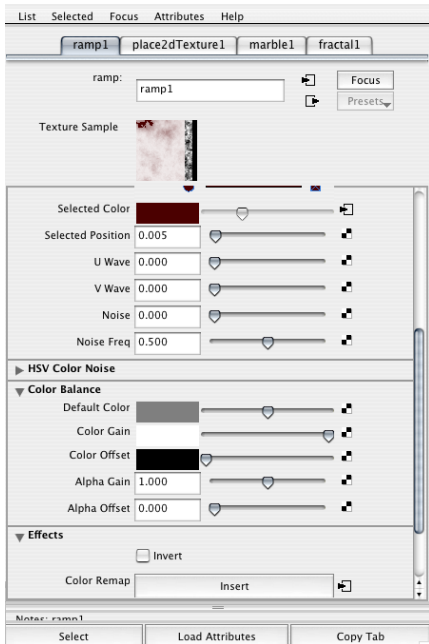
Whenever you see the this small arrow that means you can go directly to the features Tab.

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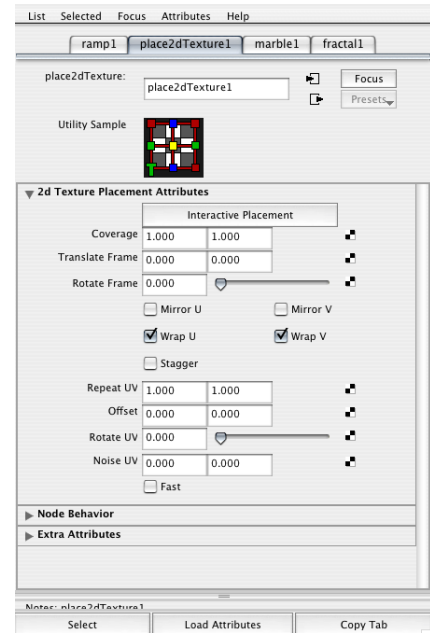
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Explore the different Texture Tabs and their parameters in Attribute Editor and view the changes in the renderer. You can also effect changes by making transformations to the green cage (place 3d Texture1) which is more intuitive, but for effecting parameter value changes, this needs to be done in the relevant Tab in Attribute Editor and / or Channels.

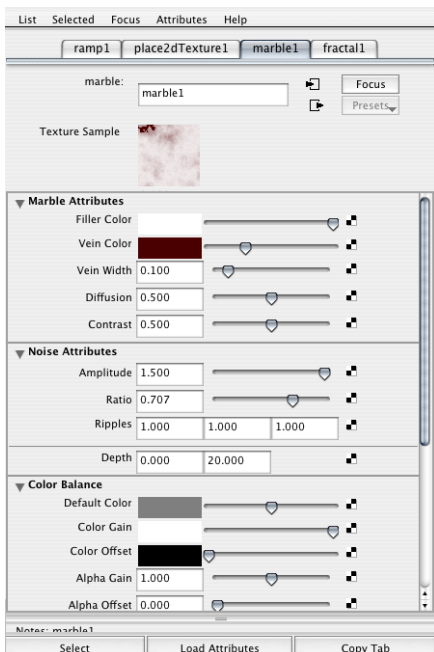
Ramp 1 Tab will effect over all colour: Hue, Saturation, Value.



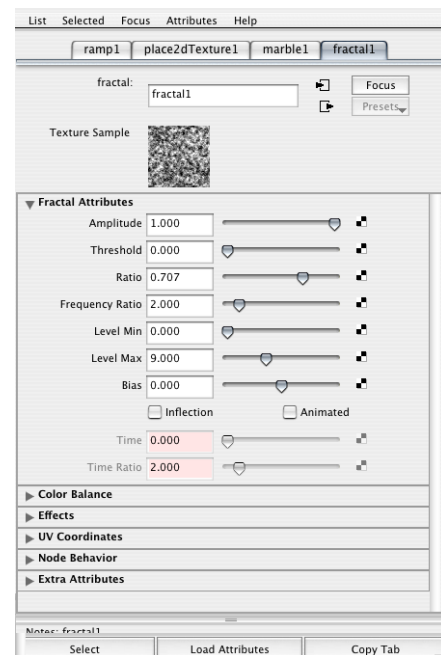
place 2/3d Texture 1 refers to mapping Move, Sale, Rotate on the model.



marble 1 will have a big influence as it's the largest Texture: This can effect Vein Width, Diffusion to make the texture less obvious and more adapted to suite the white of the eye.



fractal 1 will adjust the Iris Texture properties. It's interactive controls are limited. Experiment with different slider settings to achieve a more realistic Iris.



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This exercise is meant to further your understanding of Hypershade and some readily available textures, in addition to practical use of Attribute Editor and Channels Box to make adjustments, in this case Textures, but the process of working in this way applies to Modelling, Animation, Rendering (Paint Effects, Lighting etc.), Dynamics, therefore fundamental to being productive in Maya.

When you're done you should end up with a convincingly realistic looking eye.

