Bryce Tutorial - Making Reptile Skin

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Gronk Discovers A Village

For this month's foray into the digital domain, we are going to use the Deep Texture Editor in Bryce 5 to create a reptile skin procedural texture. Procedural textures are responsible for much of the realism you see in Bryce imagery, especially the landscapes. Because they are based on mathematical procedures, you don't have to provide image maps to make your textures. In the cases where procedural textures can be used, they can save a lot of time and produce very detailed and striking results.

When to Use Procedural Textures

If your plans are to animate your model or to produce renders from many different viewpoints, the best way to create a detailed skin texture is to UV map the model, then produce texture maps which can be applied to it. However, if you only want to produce renders from a few viewpoints and you don't want to spend a lot of extra time on UV mapping and texture maps, then procedural textures may be a worthwhile option.

Another factor to consider is the complexity of the model's shape. In general, procedurals work best when applied to basic shapes. Since you are not tying your texture to a UV map, the twists and turns of a complex model will produce distortion when the texture is applied. A complex model can be split into basic groups, each of which can be textured independently with procedurals. The problem then is to keep the seams from showing at the junctions of the groups.

If your model is very complex and you are planning on using a 3D painting program like Deep Paint 3D for UV mapping and texturing, you can still use procedurals from Bryce. Simply generate the texture on a flat surface in Bryce, save the image, then load that image into the painting program for use as a brush. Just remember to tile the image or make it large enough so that you don't get the hard edge of the image in the middle of a brush stroke.

Ultimately, there are no hard and fast rules on when procedurals will work. Every model is different, and sometimes you just will not know until you try.

Texturing Strategy

(1) Import the model into Bryce, or create a simple primitive to be textured.

(2) Apply a default texture resembling the desired final texture.

(3) Modify the default texture in the Deep Texture Editor.

(4) Fit the texture to the model by adjusting the Mapping Mode as well as the position, scale, and orientation of the texture.

Start With the Model

If you already have a model that you want to texture, then import it into to Bryce. If the different parts of the model are already split into groups, it will be much easier to work with. The model of Gronk was built in Organica and grouped in Poser with separate groups for the Head, Jaw, Neck, Eyes, Teeth, and Horns. The UVMapper utility can also be used for grouping.

If you only want to generate the texture at this time and apply it to a model later, then create a sphere or cube and use that as a base object for the texture.

Apply the Default Texture

Let's get started on the texture. Make sure your model or base object is selected.
Apply the Jewel Rock material by clicking the arrow next to Edit in the top toolbar and
go to Miscellaneous, row 6 column 3. Press CTRL+M to enter the Materials Lab and you
should see something like the image below. Labels have been added which point to
buttons that we will use to access the Deep Texture Editor, the Transformation Tools,
and the different Mapping Modes.

Modify the Default Texture

Click the button to enter the Deep Texture Editor. Along the bottom of the screen, click the Filter button and the Filter control window will open. Also click the Noise button at the bottom of the screen. On the little pop-up that opens, click the green tab and a Noise control window will open. You should see something like the image below.
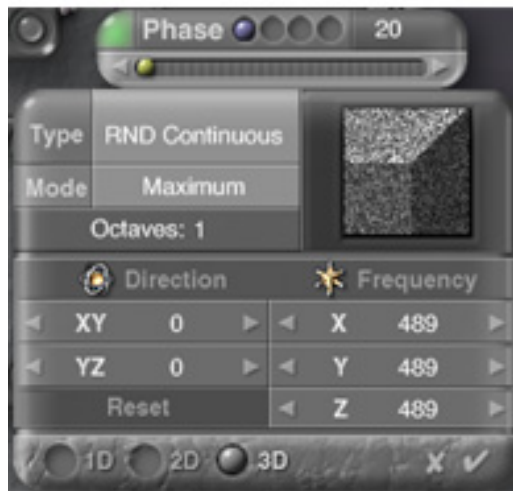

Now, start changing the settings from the defaults shown in the image above to the new values shown in the image below. When you're finished changing the Noise settings, click the little check mark on the Noise control window to accept the changes and close it. The images in the boxes labeled Component 1 and Combination won't match up until you've adjusted the Phase, and that's the next step.

Click the Phase button at the bottom of the screen and a little pop-up box labeled "Phase" will open. Click the green tab on the pop-up and a Phase control window will open as shown below left. Change the settings to match those shown at below right. When you're done, click the little check mark on the Phase control window to accept the changes and close it. Next click the check mark at the lower right corner of the Deep Texture Editor screen. You should now be in back in the Materials Lab window.

Old Phase Setting

Phase ○●○○○ 20	
Type	RND Continuous
Mode	Maximum
Octaves: 1	

Direction		Frequency	
XY	0	X	489
YZ	0	Y	489
Reset		Z	489

1D 2D ●3D

New Phase Setting

Phase ●○○○○ 600	
Type	RND Continuous
Mode	Auto-phased
Octaves: 1	

Direction		Frequency	
XY	0	X	6
YZ	0	Y	6
Reset		Z	6

1D 2D ●3D

Fit the Texture to the Model

Click the button for the Transformation Tools and the pop-up window shown below should appear. Depending on your particular model, the settings shown are probably a good starting point. You can also select the Mapping Mode to get the one which best suits the geometry of your model. These are the tools you will use to fit the texture to your model, and here is a brief description of each.

Mapping Mode - this determines whether the texture is applied to the model with a spherical, cylindrical, cubic, or flat projection. It also lets you lock the texture to the Object or to the World reference.

Size controls - these adjust the scaling of the texture on the model. You can adjust the overall size or you can independently adjust the size in the X, Y, or Z direction.

Rotation controls - these adjust the angles from which the texture is projected onto the model. You have independent control of the rotation along the X, Y, or Z axes.

Position controls - these adjust the position of the texture independently along the X, Y, or Z axes.

Experiment to See What Works Best

If you are unfamiliar with these controls, the best thing you can do is to try making a test render of your model or object and save the image. Try varying just one of the controls and do another render to see the effect. Save the image from this new render with a name that describes what was changed. Repeat this process for several values in each of the controls and do it for the different Mapping Modes. When you are done, you will have a matrix of reference images to help find the best combination of settings to get the look you want. The example below shows Gronk with two different Mapping Modes and rotations on the X axis. The head, neck, and body were all one group.

Mapping = Object Cubic
Rotation in X = -30

Mapping = World
Rotation in X = 60
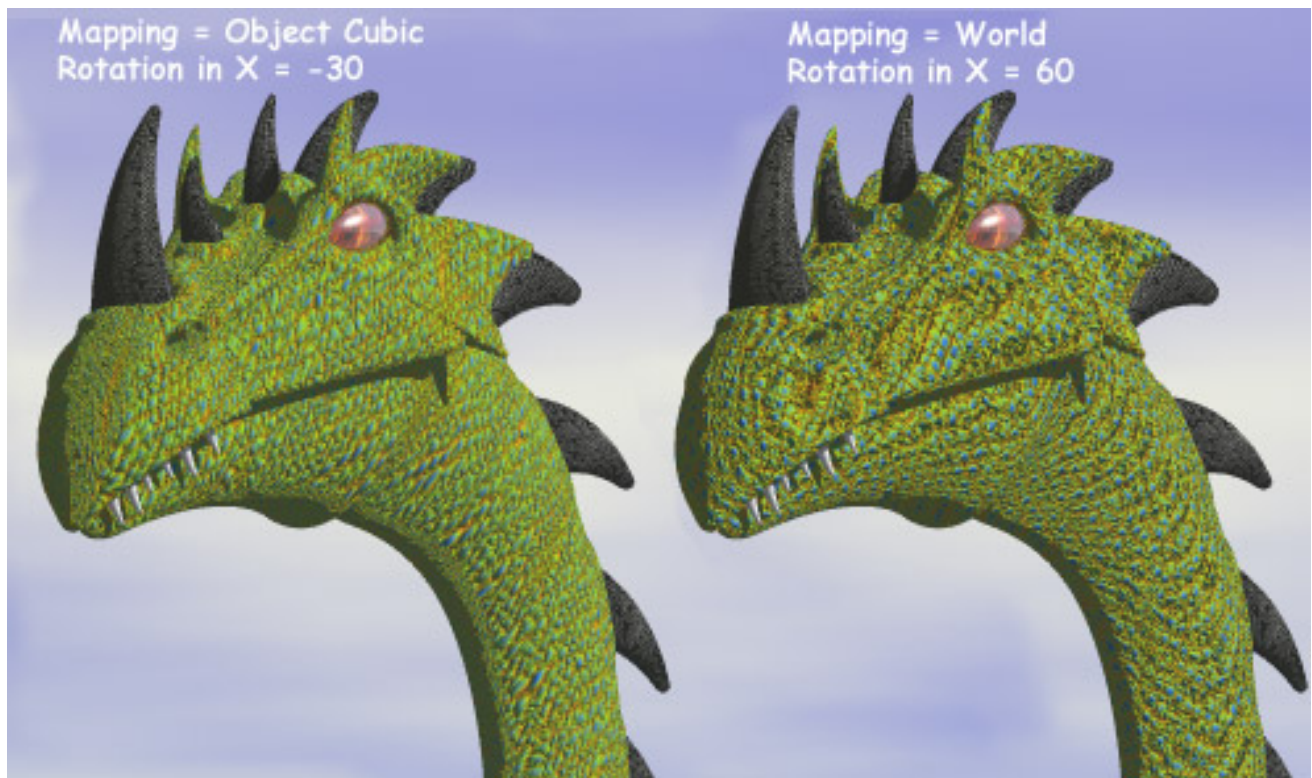
The Rest of the Picture

For the picture "Gronk Discovers a Village", the model was split into separate groups for the Head, Jaw, Neck, Eyes, Teeth, and Horns. The texture described in this tutorial was applied to the Head, Jaw, and Neck. The values listed below probably won't apply directly to your model, but it gives an idea of the number of combinations possible in Bryce.

For the Head group, Object Cubic mapping was used with a size of 256% in X, Y, and Z. Rotation was set to -60 on the Y axis.

For the Jaw group, Object Cubic mapping was used with a size of 161% in X, Y, and Z. Rotation was set to -15 on the X axis. Position was shifted -20 on the Y axis.

For the Neck group, World mapping was used with a size of 366% in X, Y, and Z. Rotation was set to 45 on the X axis, 60 on the Y axis, and -45 on the Z axis.

The eyes textures were produced by tweaking the Crystal Flames Material in the Complex FX section.

Further Explorations

This tutorial only used some of the basic operations available in the Materials Lab and Deep Texture Editor. In the Materials Lab, you can have multiple channels controlling the different components in a texture. You can also mix Procedural textures with image files and use the results to generate materials.

In the Deep Texture Editor, up to three components can be used. This reptile skin texture only needed one component which made it a good texture to demonstrate the effects of each of the controls. Adding additional components produces hybrid textures with a huge number of possible combinations.

Until next time, happy rendering and please don't feed the dragon.

Related Links

Corel, home of Bryce

UVMapper

Procedural Texture Sites

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