Painting Clothing Textures

By Bill Fleming

As if the modeling of complex, detailed photorealistic clothing wasn't bad enough, once we are finished we now we need to tackle the textures to boot. While the most common method for texturing clothing is to use scanned textures, this really doesn't work terribly well when you need to texture a model with very specific details. In these instances the only real option we have is to paint the textures ourselves. Fortunately this doesn't have to be a complicated process. Fabric textures and details are relatively simple to create by hand. It's really a matter of tackling one detail at a time.

There are three major elements to a clothing texture; color detail, fabric texture and wrinkles. Each of these is essential for developing realistic clothing textures. While they may appear complex they are really rather simple if we break them down to the individual details. Even a seemingly complex cloth texture is really nothing more than a bit of noise and texture.

In the following tutorial we'll be painting a very realistic, somewhat worn jeans texture. The process we'll use is the same technique that should be used to paint any clothing texture. We'll start with the bump texture detail and then use it to add detail to the color texture. Every detail of the jeans texture will be hand painted.

We're going to paint the very specific textures for a jeans model located on the cover CD. The surfaces for this model have already been defined, but we will discuss the logic to their definition in the tutorial. To properly texture 3D clothing it's essential you have an Unwrap feature in your 3D program. Without it you'll have a rather difficult time determining where to paint your details.

Okay, without further ado let's get cracking on our jeans texture.

Painting a Jeans Texture

Step 1

The first step would be to define the surfaces on the jeans model. There are a number of ways the surface could be defined but the most logical is to create a cylindrical mapped material for each half of the jeans, as shown in the figure. The model, named "Jeans.dxf." can be found on the cover CD.

Step 2

Once the surfaces are defined we need to create a painting template by unwrapping the mesh. For the purpose of this tutorial we'll be using the template I created for the right leg, which can be found on the cover CD. The file is called "JeansMesh.jpg."

Step 3

We start with the bump texture by adding a new layer, filling it with 50% Gray and setting the Opacity to 95%. Then we select the Burn tool with a 9 pixel brush and a Pressure of 35%. Now we paint strokes along the

areas where we want a seam.

Step 4

Next we paint dark lines around the inside of the belt loops to complete the seams.

Step 5

To raise the edges of the seams we select the Dodge tool with the same settings and paint light lines around the dark seams we just painted, skipping the seam along the end of the pant legs, which we will edit later.

Step 6

With the larger seams created we can now add the smaller ones around the pockets. These are double-stitched seams so we need to make two dark lines along the edges of the pockets with the Burn tool.

Step 7

Before we add the raised edges we'll need to add one more seam along the inside of the pants leg by drawing 4 dark vertical lines using the Line tool set to a width of 2 pixels, a Pressure of 50% and the color RGB Black.

Step 8

Now we paint the raised edges by selecting the Dodge tool and painting along the inside of the double-stitched seams and along their top edge. We then switch to the Line tool and paint White lines between the vertical stitches we created in Step 7.

Step 9

With the stitch seams finished we are ready to add softness to the jeans by creating a lumpy texture. We do this by selecting the Dodge tool with a Brush Size of 17 pixels. Then we paint random white spots along the belt line and pockets. We also add a light spot under the left side of the front pocket.

Step 10

Next we select the Burn tool and paint strokes around the edge of the seams and randomly over the white spots to create a lumpy texture that will make the jeans appear softer in these areas. We paint dark lines in the white spot under the front pocket to create the appearance of folds in the fabric.

Step 11

Now we add puffiness to the leg seams by painting short horizontal white stripes along the outside of the seams. The puffiness gives the appearance of seam tension. On the left seam we focus the white spots on only the right side so it won't appear as if the seam is as tense as the triple seam on the right.

Step 12

Now we select the Burn tool and paint dark stripes between the light stripes to add depressions for the puffy wrinkles.

Step 13

To add seam tension lumpiness to the lower pant edge we select the Dodge tool and paint short vertical stripes covering the seams.

Step 14

Then we select the Burn tool and paint strokes between the light stripes top create depressions. We also paint a horizontal stripe along the top of the rippled edge to help raise the ripples.

Step 15

We now have a solid bump texture foundation for our seams and edges. The next step is to add wrinkles to the crotch region that are formed when the fabric folds while being seated.

Step 16

First we zoom into the crotch region, and then we select the Dodge tool and paint horizontal stripes starting at the leading edge of the pocket. Then we paint a group of light stripes around the base of the crotch that come together on the right. This is the center of the crotch where the fabric folds the most.

Step 17

We create depressions in the wrinkles by selecting the Burn tool and painting strokes between the light stripes.

Step 18

To put the finishing touches on the crotch we paint smaller raised wrinkles along the right edge of the larger wrinkles we just created. These smaller wrinkles are on the edge of the zipper fold that’s on the right half of the jeans.

Step 19

The last bump detail is the stitches. These are created by adding a new layer, selecting the Airbrush tool and selecting a 2 pixel brush with a Pressure of 80%. Then we paint short strokes along the dark centerline of the seams.

Step 20

Once the stitches are completed we’re ready to tackle the color texture. The bump isn’t exactly finished yet but we need to develop the color texture before we can complete the bump.

Step 21

To create the color texture we’ll be making the fabric detail. We start with a new 256x256 pixel image, and then we fill it with 50% Gray. Next we render Texture/Texturizer with the following settings: Burlap, 85% Scaling, Relief 4 and Top Right Light Direction.

Step 22

Now we select the Clone tool and remove the horizontal blotchy lines by sampling the cubic texture and painting over them. These blotchy lines will repeat too much when we apply this texture.

Step 23

Next we Select All, then Define Pattern. Now we create a new 1024x1024 file and Fill Pattern. This will be the repeating clothing texture we

paint. The smaller texture file would be far too small for a repeating texture.

Step 24

To add color we create a new layer filled with RGB 149, 145, 113 and set the Layer Blend to Hard Light with a Layer Opacity of 100%. This is the color foundation. Next we add color chaos details.

Step 25

First we add a new layer and Render Clouds with the default colors.

Step 26

Then we set the Layer Blend to Soft Light to apply the color chaos to the layers below. We now have great major color shifting but we need to add some smaller color chaos.

Step 27

To add color we create a new layer filled with RGB 88, 85, 54 and set the Layer Blend to Dissolve with an Opacity of 19%. Then we add a new blank layer, hide all but these two layers and Merge Visible. Then we Gaussian Blur with a Radius of .8, set the Layer Blend to Multiply and activate the other layers.

Step 28

The last step is to add light vertical stripes where the texture detail shows errors. We start by adding a new layer and drawing a 2 pixel vertical line with the Line Tool. It should be 1/3 the height of the image. Then we use the Selection tool to block out small sections of the line, which we delete.

Step 29

Then we Gaussian Blur the line with a Radius of .4. Next we clone the line many times over the image, making sure to vary the length of the cloned copies.

Step 30

Now we set the Layer Blend to Screen and the Layer Opacity to 60%, which applies the lines to the texture below. The cloth texture is now complete. Next we add it to the jeans texture.

Step 31

First we Select All and Define Pattern, then we switch to the Jean file and add a new layer above the Background layer. Now we Fill Pattern to add the jeans texture.

Step 32

To add the bump detail to the color layer we set the bump Layer Blend to Overlay with an Opacity of 35%. We can now see the subtle bump texture on the color layer below.

Step 33

To add wear to the jeans texture we select the Dodge tool, set the Pressure to 20% and paint strokes around the crotch area, top edge of the waistline and pockets, and the lower edge of the pant on the color layer.

Step 34

To dirty the jeans we add a new layer and set the Layer Blend to Soft Light with an Opacity of 78%. Then we select the Airbrush tool with a Brush Size of 30 pixels, a Pressure of 15% and the color set to RGB 157, 137, 109. Now we paint strokes over the worn spots we created in Step 34.

Step 35

The last step of the color texture is to add the stitches. We do this by adding a new layer, Selecting All on the stitch bump layer and filling the new layer with the foreground color. Then we set the Layer Opacity to 50% to lighten the stitches. We can now Save a Copy for our color texture.

Step 36

The bump texture is completed by Duplicating the color texture layer, Desaturating it and changing the layer Blend to Soft Light. We then deactivate all but the bump layers and Save a Copy as the bump texture.

Bill Fleming is the President of Komodo Studio, a leading studio specializing in photorealistic 3D creatures and characters for broadcast and film. Bill is the author of a dozen best-selling 3D books, including "The 3D Creature Workshop" published by Charles River Media, Inc. and "The 3D Photorealism Toolkit" published by John Wiley & Sons. Besides being a 3D artist Bill is a psychologist and herpetologist, which has given him a solid background for photorealistic creature design. You can contact Bill directly via email - bill@komodostudio.com