

TutorialGIMP



ART AND IMAGE EDITING

GIMP texture magic

PART 2 Realistic surfaces make all the difference between your images looking merely good or being really *great*. Michael J Hammel takes us through every Noisifying detail.

An unmarked surface of metal skin wrapped around an alien ship adds little to the story behind the ship or its occupants. But add some patches of rust, a few scorch marks and impact creases in the metal and you find yourself face-to-face with battle-scarred travellers recently escaped from a nightmare on a watery planet.

Textures are one of the basic building blocks for both 2D

illustration and 3D animation. The skin of a human, the liquid feel of text, and the surface of metal are all common forms for computer generated textures. Creating realistic textures in the *GIMP* is less complex than it might seem. And the key lies where you might never have guessed: the generation of noise-filled clouds.

GIMP provides two plug-ins for generating clouds, both of which are called "Plasma". The first comes with the stock *GIMP* distribution while the other can be downloaded as source code from the *GIMP Registry* or retrieved from various online resources in ready-to-use form. Both will load themselves into the Filters->Render->Clouds submenu found in the Canvas menu (click and hold the right mouse button in a Canvas window to get the Canvas menu). The version from the *GIMP Registry* should show in the menu as "Plasma2". A "plasma" is just a type of gas, and clouds are roughly a gaseous form of water, thus the name of the filters.

In all our examples we'll be starting by rendering a desaturated cloud. A desaturated cloud is like a grayscale cloud except that a desaturated cloud is really a colour cloud with all the colours washed out. You can add colour back into a desaturated cloud. A true grayscale cloud cannot be coloured. After we create the desaturated cloud, we'll be adding different amount of desaturated noise. By "noise" we mean random dots distributed about the current layer. The noise will then be used as a bump map to generate height within the cloud, or blurred to provide streaks.

Printer resources

For your *GIMP* masterpieces

www.cups.org/

CUPS provides networked printing support and a spooling interface.

<http://gimp-print.sourceforge.net/>

GIMP-Print goes way beyond just a *GIMP* print plug-in. It's a full-featured set of drivers for many printers. Its drivers are so well done they are considered better than some of the original

manufacturers drivers and are being used by many MacOS X users now as well.

www.linuxprinting.org/foomatic2.9/

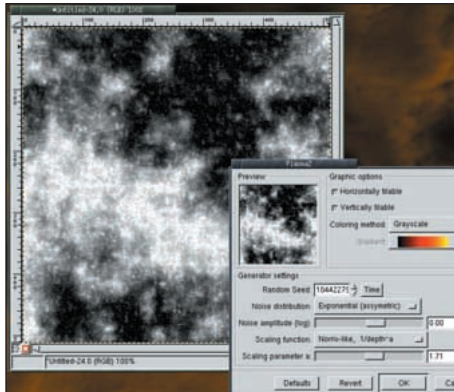
Foomatic is the glue between print spoolers and printer drivers.

www.linuxprinting.org

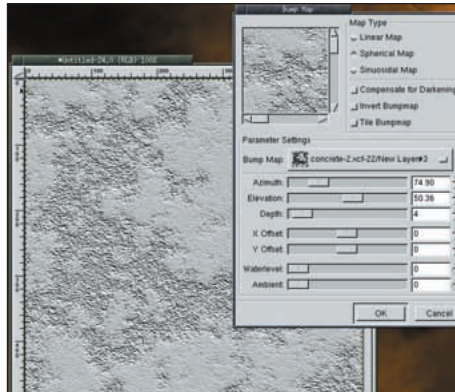
This is the place to start to find out if a driver is available for your particular printer.

CONCRETE

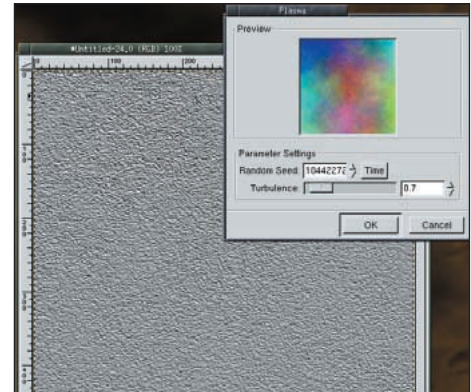
One of the easiest textures to create is a simple concrete or plaster background. Such textures can be used to turn a basic 3D box into a cement block or any flat surface into a pavement (US: sidewalk!) or road.



1 Start with white background in a new Canvas window. Add a new layer and fill it with grayscale clouds using the Plasma2 filter (Filters>Render>Clouds>Plasma2). Set the Noise distribution to Exponential and the Noise Amplitude to 0. Then set the Scaling function to Norris-like and the Scaling parameter to about 1.7. This should produce a slightly spotty cloud shape as opposed to soft wispy clouds. The amount of detail you'll get will depend on the Random Seed. You can either try clicking the Time button several times to find a reasonable preview or try using the value 1044227968 (which was used in this example) as the Random Seed.



2 Now apply some noise to this image using the Noisify filter (Filters>Noise>Noisify). Set the color channels to be uniform by deselecting the Independent button. Then move one of the channel (Red, Green, or Blue) sliders to about 0.30. Apply the plasma layer as a Bump Map (Filters>Distorts>Bump Map) to the white layer. The settings of the Bump Map filter depend on your cloud layer. Play with the Azimuth, Elevation and Depth and scan around the Preview a little to see what you will get from those settings. The Map Type options will change the image a bit, but are less important than these other three settings. Be sure to turn off the visibility of the cloud layer. After you have applied the Bump Map the white layer will hold your concrete texture.



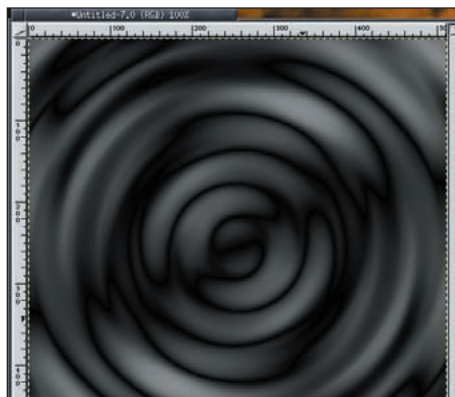
3 Variations on this technique will produce many different textures. There are two plasma filters: Plasma and Plasma2 (the latter is available from the GIMP Registry but is not included in the stock GIMP distribution). Using the Plasma (Filters>Render>Clouds>Plasma) filter instead of Plasma2 will generate a more evenly distributed pattern of concrete. This example used the same settings for Noisify and Bump Map as the other example, but started with a desaturated (Image>Colors>Desaturate) cloud pattern generated with the Plasma filter instead. While it looks like concrete, adjustments to the Contrast and Brightness can soften the appearance and provide you the initial pattern for more complex textures like skin or cloth!

WATER

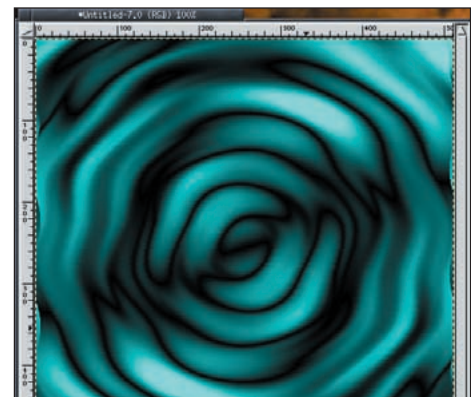
This next texture is again one of the more simple ones, due largely to the availability of two plug-ins in the stock GIMP distribution: Ripple and Waves. Another plug-in, Water Surface, is available from the GIMP Registry or its own Web site, but we'll look at making this texture from scratch, as it is a useful skill.



1 As usual, start with a cloud layer. Plasma2 is best for this. The usual Plasma will work, but generates a cloud that fills the layer more uniformly than we want. Apply a radial motion blur (Filters>Blur>Motion Blur) with a length of 3. After this completes, apply a Gaussian IIR (Filters>Blur>Gaussian IIR) blur using a radius of 35. We want this to be heavily blurred.



2 Next, add some Waves (Filters>Distorts>Waves). Make the amplitude 47, the phase 210, and the wavelength 43. Duplicate this layer. Flip the duplicate both horizontally and vertically using the Flip Tool in the Toolbox. Then set the layer Mode to Difference on the duplicate layer.



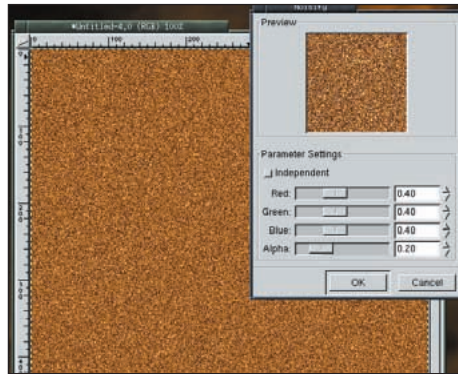
3 Merge the two layers. The result is good, but for a little variation in these too-perfect waves, we'll apply a ripple (Filters>Distorts>Ripple). Set the period to 128 and amplitude to 6. Make it a sine wave with wrapped edges. Finally, colorize the layers using the Color Mode of the Bucket Tool. A good color for an aqua appearance would be a hex triplet value of #009199.



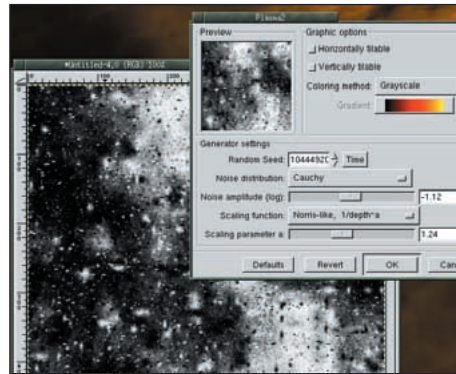
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RUST

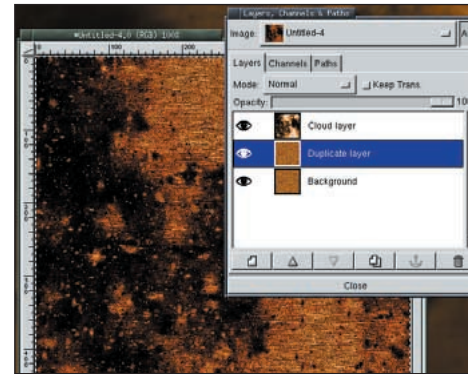
A more complex pattern to produce is that of metallic rust. The key ingredients for rust are both color and pattern. Be sure to experiment with your color choices to find one that meets your minimum standard.



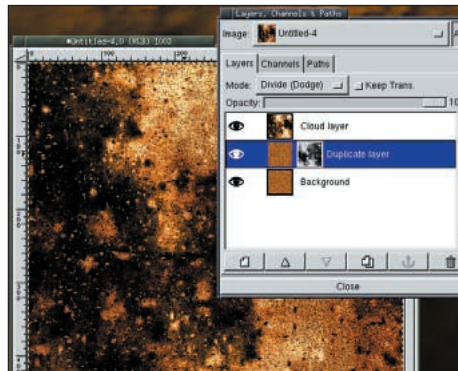
1 Once again we start with a single white layer. Fill this layer with a dark, reddish-brown color. Try a hex triplet value of #a46711 in the Color Selection window. Your tastes will vary here. Next, add noise using the Noisify filter (Filters>Noise>Noisify). Set the color channels to be uniform (not independent, just as in the concrete examples) and the channel settings between 30 and 45. Then duplicate this layer.



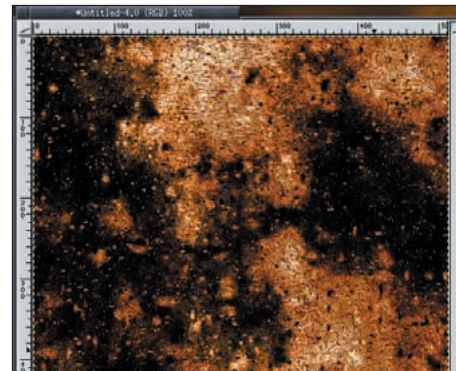
2 Make sure the duplicate layer is the active layer. Distort the layer with some wind (Filters>Distorts>Wind). Set the Threshold between 7 and 20 and the Strength between 2 and 5. Make the wind blow from the left across both edges using a blast-style effect. Add a transparent layer above the duplicate layer. This will make the transparent layer the top layer. Render some grayscale clouds into this layer. Like the earlier concrete example, the clouds here should be splotchy. If you have the Plasma2 filter, use it with a Uniform noise distribution set to an amplitude of about 1.08 or a Cauchy distribution with an amplitude of about -1.12. Norris scaling for both should be between 1.15 to 1.25. Use Brightness/Contrast to reduce the amount of white so that there is about a 50/50 ratio, and preferably a little more black in the clouds layer than white.



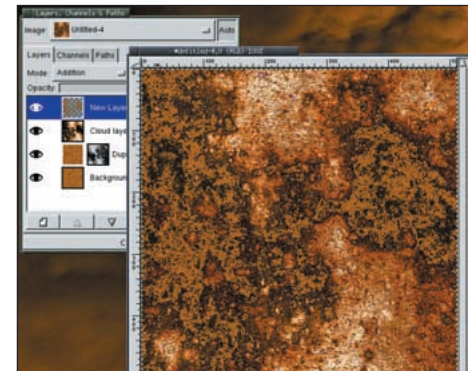
3 Colorize the cloud layer using the same reddish-brown color you used on the original white background layer. To do this, make sure the cloud layer is active and type Ctrl-A to select the entire layer. Then double click on the paint bucket in the Toolbox – this is the Bucket Fill tool. In the Tool Options window that opens, change the Mode to Color. Then click in the Canvas window. The image should take on a reddish brown tint. Now set the layer Mode for the Cloud layer to Multiply. You'll see some of the texture show through the white parts of the cloud layer now.



4 Add a layer mask to the duplicate layer (right click on the layer name, then select Add Layer Mask). Select the cloud layer by clicking on its layer to make it active and typing Ctrl-A to select the entire layer. Copy this selection into the layer mask. Use Ctrl-C to copy the selection. Then click on the duplicate layer's mask in the Layers, Channels, and Paths window and type Ctrl-V in the Canvas window. With the layer mask still selected, double click on the Flip tool (the left/right arrow in the Toolbox). With the Tool Options window open, click once on the Canvas window, then switch directions in the Tool Options window and click again in the Canvas window. This has the effect of flipping the layer mask both horizontally and vertically. Change the layer mode for the duplicate layer to Divide (aka Dodge).



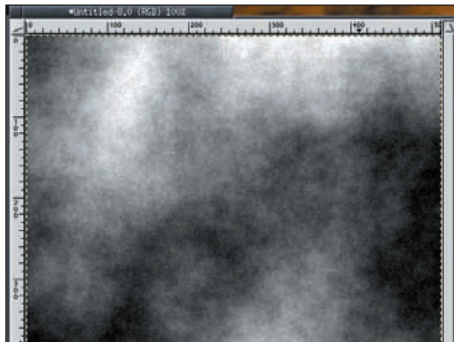
5 Turn off the visibility of the Cloud and duplicate layers for a moment. Click on the Background layer to make it active. Now apply some more wind to this layer using the same settings as you used on the duplicate layer. At this point you can add some waves to the layer, although it may or may not add any real distortion to the overall effect, depending on the amount of white in the cloud layers. Set the Waves (Filters>Distorts>Waves) Mode to Smear, disable Reflective, and set the Amplitude to about 7, the Phase to about 100 and the Wavelength to about 16.



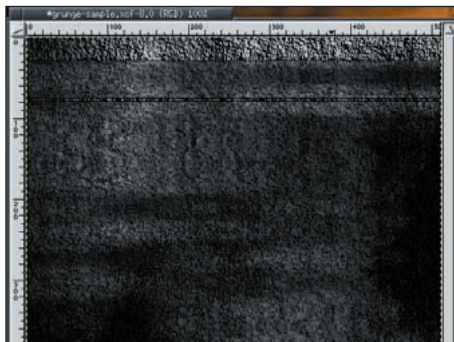
6 Select by color the black regions in the top layer (the cloud layer). Increase the Fuzziness threshold to grab more of the black area. Add a transparent layer to the top of the layer stack and fill it with the original rust color (you should still have this set as your Foreground color). You can use the Bucket Tool to fill the selection in this transparent layer but be sure you reset the Mode in the Bucket Tool Options window to Normal. Finally, change the Layer mode to Addition for the transparent layer. Turn off the Selection by typing Ctrl-Shift-A in the Canvas window. Viola! Rust.

GRUNGE

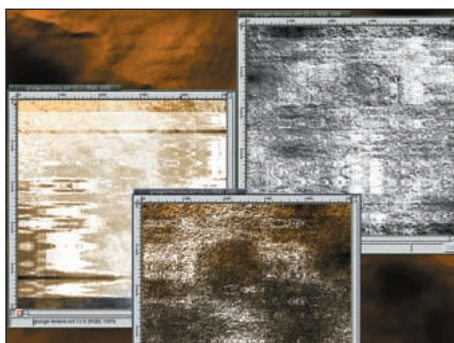
Grunge is a popular style these days for print work. Generating grunge is a very personal thing – much like the music form – so this texture example may or may not produce what you might call grunge. But it does for us.



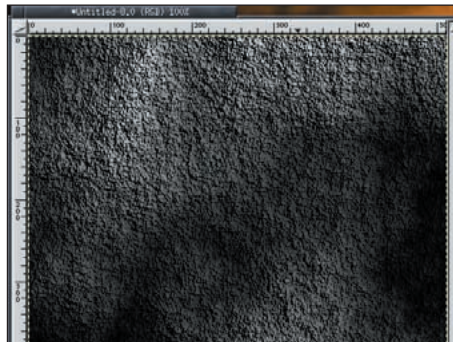
1 Start with clouds. The clouds should be relatively soft, little to no harsh edges if possible. Less cloud fill is probably better for a grunge look that doesn't overpower the rest of the image. If you can't get one yourself, try a Random Seed of 1044492096, a Uniform Noise distribution with an amplitude of -1.12 and Norris-like scaling with a Scaling parameter of 1.24. Add noise to this with Noisify using non-independent color channels set to between 0.05-0.10.



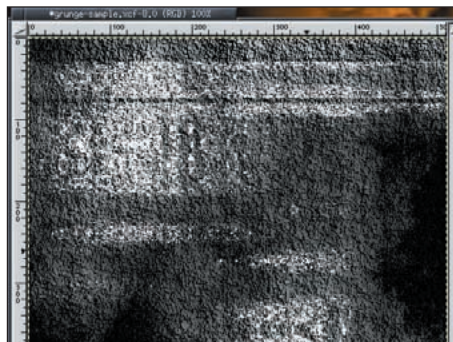
4 Use Color Select (Select>Select by Color) to select a region of the Bump Map layer. Create a transparent layer above this layer and fill the selection with black. Move the transparent layer to the top of the layer stack. Apply the Twist filter (Filters>Distorts>Twist) to the GIMPpressionist layer. In the Twist filter window, select the Cosines function and Effect 4 in this filter. You shouldn't need to change any of the other parameters.



7 A selection of grunge end results – it all depends on what values that you choose.



2 Use the bump map option of the Emboss filter (Filters>Distorts>Emboss) on this layer. Use a low azimuth and elevation (25-35), and a moderately high depth (60-70). We'll call this is our "bump map" layer over which everything else will be blended. Duplicate this layer.



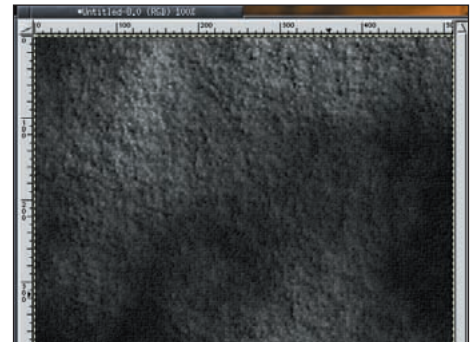
5 Use Select by Color on the GIMPpressionist layer. Again, create a transparent layer above this and fill the selection with black in this new layer. Be sure the new transparent layer is moved to the top of the layer stack. The order of layers and blend modes should be:

1 Black filled selection from GIMPpressionist layer with layer Mode set to Divide.

2 Black filled selection from Bump Map layer with layer Mode set to Multiply.

3 GIMPpressionist layer with layer Mode set to Screen.

4 Bump Map layer with layer Mode set to Normal.



3 Now comes the trick. We need to set up the GIMPpressionist plug-in (Filters>Artistic>GIMPpressionist) – it's complex but can produce fantastic textures. We're going to apply this to the duplicate layer. Select the Cubism preset and apply it. This sets the initial parameters to something useful, but we're going to modify them a bit. First, change the Paper to canvas2.pgm. Change the brush to sponge02.pgm, you can scale it up using the Aspect Ratio if you like. Next change Orientation span angle to 360 with a start angle > 20 and using Random orientation. In the Size tab, leave the Sizes value at 1, with a minimum of 4 and a maximum of 13 using the Value size setting. Finally, set the Placement Stroke density to 15 and make them Evenly distributed. This might be a little slow to calculate. Give it time. When you click on OK the filter will begin processing. Don't be surprised if it takes a while to finish. You can Update the preview before you do so, but that will add to the time it takes to finish this step.



6 Variations of blend modes and possibly the order of layers may help produce the effect you want. Also, flipping the direction of the original or duplicate layer may help. Color can be added to any layer or a top layer of colour can be added with the layer Mode set to Color or perhaps some other blend mode.

NEXT MONTH

Two issues digital artists face in their daily work are the need to undo changes made to previously saved work and the desire to modify colour content with simple brush strokes. For the former, they turn to

GIMP's layer masks to generate non-destructive changes. For the latter, they look to GIMP's blend modes. Next month, we'll aim our tutorials at both of these highly desirable yet easy-to-use features. **LXF**