IMAGE EDITING

Custom patterns and brushes

Michael J Hammel steps back just a bit to look at some basic of the basic building blocks of successful art projects: creating your own patterns and brushes.

On the CD and DVD

The articles offered in this *GIMP* tutorial series have tried to look at some real-world issues as opposed the more mundane user interface questions, but there are probably a few folks still wondering about some more basic operations. If the GIMP is the construction set for Linux graphic artists, then surely patterns and brushes are the basic building blocks. Few projects can completely evade the use of these two fundamental features. Yet as useful as they are, each can be made even more meaningful to the individual artist. All that is required is a little creativity and basic knowledge of of the GIMP user directory structure.

Pattern files are nothing more than ordinary image files saved in *The GIMP*'s native pattern format file, known as PAT files. These files tend to be rather large, larger than TIFF files and significantly larger than compressed JPEG files. If you want to distribute large numbers of pattern files you could save a little room on the CD or your Web site by distributing the TIFF versions instead and letting your users convert them individually to pattern files. TIFF and JPEG are also commonly supported by image viewers on many platforms, making the patterns easy to browse before installing. The PAT file format is supported only by *The GIMP* at this time.

Brushes come in multiple formats, all of which are native only to *The GIMP*. Brush files from *Adobe Photoshop* are not compatible at present, but creating your own versions of those brushes is easy. Just paint a single brush stroke on an image in *Photoshop*, save as an uncompressed TIFF, load it into GIMP and save it as a brush. This methodology allows you to create large collections of your own personal brushes, just as you might collect brushes of varying shapes and sizes for your oil and watercolour paintings.

This issue we'll look at creating both patterns and brushes and the simple steps required to save images in the proper format. We'll also look at Brush Pipes, a powerful yet seldom discussed type of brush that allows you to use multiple brush tips at the same time.

Making Seamless GIMP Patterns

The GIMP's set of stock patterns is a reasonable, but far from complete. Typical pattern users – such as those working on textures for 3D models – often find themselves creating and managing their own personal set of patterns. Creating a pattern is simple enough: there are no ground rules for what a pattern must be other than the file format used to save the file (*The GIMP* native PAT format).
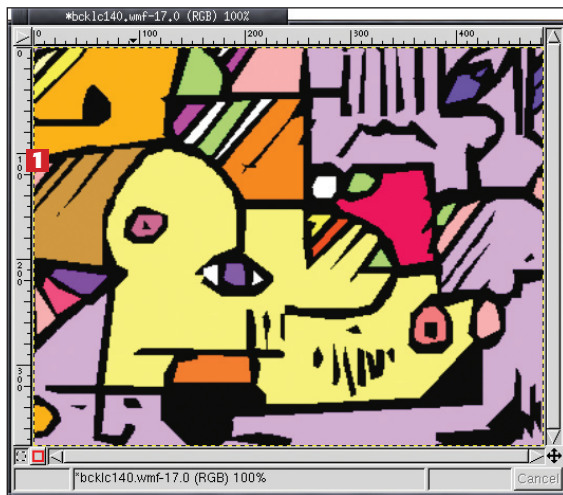

Open clipart, colorized

1 We look through our collected set of normally useless CD archives to find a set of WMF formatted clipart. We can use these as the basis for our patterns. We want the pattern to fill the Canvas window and to be seamless when applied side-by-side with a copy of itself. This image shows clipart cropped to fill the Canvas window but not yet made seamless.

Make Seamless

2 There are two methods to make the image so it tiles seamlessly. The first is to offset the image by 1/2 (Image >Transforms>Offset). This option is shown in the upper left of this image. You can use the clone tool to fix the seams manually if necessary, which this image would surely need. The other method is to use the Filters>Map>Make Seamless filter. This will produce an effect that makes the pattern look slightly ghosted, but the resulting image can now be tiled seamlessly on web pages or in print images.

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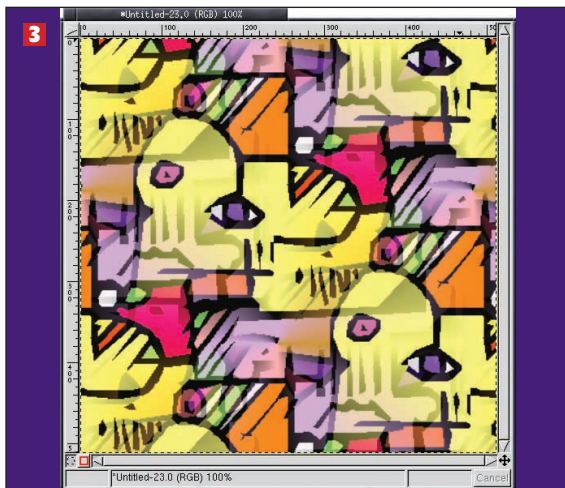
Save as pattern

3 Once you have your image made seamless, you are only left with saving it as a pattern. Choose the **PAT** format and give your pattern an easy-to-remember name. This name will be used in the **Pattern Selection** dialog. Patterns must be saved to your **.gimp-1.2/patterns** directory and the **Pattern Selection** dialog must be manually refreshed to see any newly installed patterns. Note that patterns can be any size. Larger patterns with high detail are better suited to **3D** textures so that the repeating pattern isn't as noticeable.

Pattern Tips

There are many uses for patterns. Background images for webpages are common, to the point of sometimes being annoying (though widespread use of CSS may change that a bit). An interesting alternative is to use patterns for displacement images. This allows patterns to act as 3D textures applied to another image. Examples of this include grayscale patterns that simulate water, skin and metal effects.

In the following steps, we'll create a lizard skin and show how cloning with freehand selections can be used to make the pattern seamless.
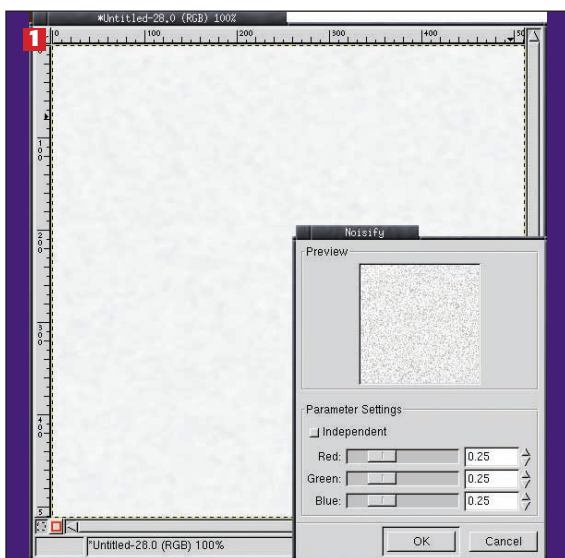
Noisified and blurred canvas window

1 We start with a white canvas. Using **Filters>Noise >Noisify**, we add **25%** noise for each channel to the image. The noise is then blurred using **Filters >Blur >Gaussian Blur (RLE)** with a horizontal setting of **9** and a vertical setting of **7**. The screenshot shows the noise filter dialog and the Canvas window after this noise has been applied and blurred (though with such low contrast that may be hard to see in print).
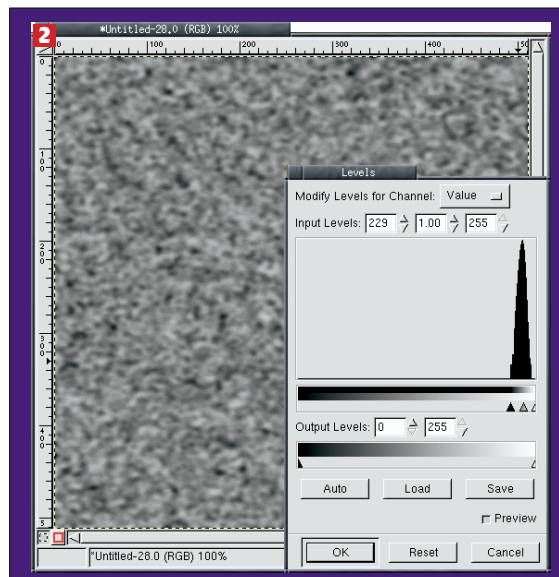
Level adjustments

2 The blurred image has a very short range of colour, as the **Levels** dialog shows. Adjust the black point to fit the left edge of the histogram or just use the **Auto Levels** option. This will bring out the details as shown here. Apply a **Bump Map** (**Filters>Map>Bump Map**) to this image using itself as the bump map image. Use **220** degrees of Azimuth, **62** degrees of elevation, and a depth of **16** for your bump map. This is what gives you the rough, 3D appearance of the skin.
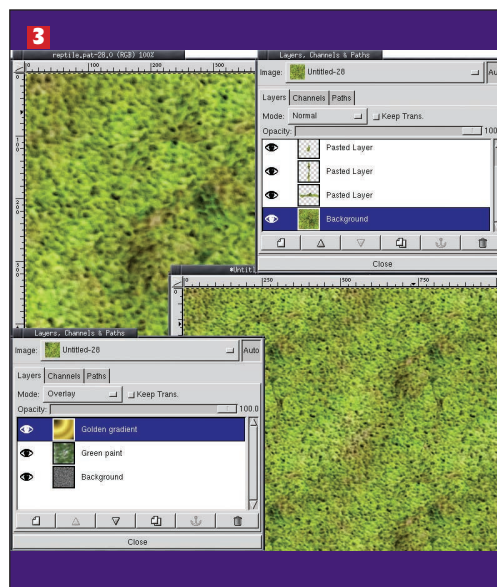
Colorized with multiple layers

3 We add some green paint on a separate layer along with a golden gradient layer (the **Layers** dialog in the lower left of the screenshot) to add colour to the texture. Flatten this and then offset the image by **1/2** (**Image>Transforms>Offset**) and make freehand selections to cover seams (the upper right and upper left of the screenshot shown here). After we flatten the image and save it as a **PAT** file to our **.gimp-1.2/patterns** directory and refresh the **Pattern Selection** dialog, we're finally ready to apply the pattern to a larger canvas to check for seams and obviously repeating patterns (lower right of screenshot). »

« GIMP brushes

The GIMP is, above all, a sophisticated digital painting application that provides the artist multiple brush options, including soft and hard-edged paint and air brushes, pencils, and cloning and ink tools. Each of these tools, in turn, can be used with multiple types of brush tips. These brush tips (referred to generically as brushes by both official documentation and most users) provide variations on the pattern that is laid out while painting a single brush stroke.

Many users might not consider the value in the variety of brushes that can be used with each of these tools. Brushes can be configured for variations of spacing, opacity, blend modes, fade out and colour.
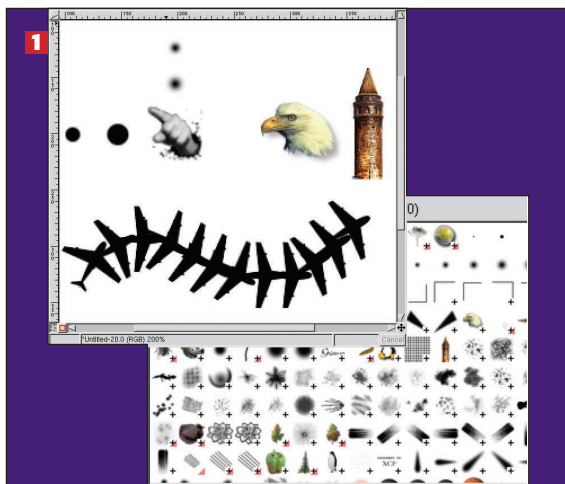
Multiple brush types in single canvas

1 There are three main types of brushes in *GIMP* – grayscale (the dots and pointing hand), colored (the eagle and castle) and Brush Pipes (the airplane images, which are actually just one brush pipe). The Brush Selection dialog (shown partially hidden behind the canvas window) shows all the available brushes. Brushes that are larger than they appear have plus (+) signs. Brush Pipes have small red triangles as well.
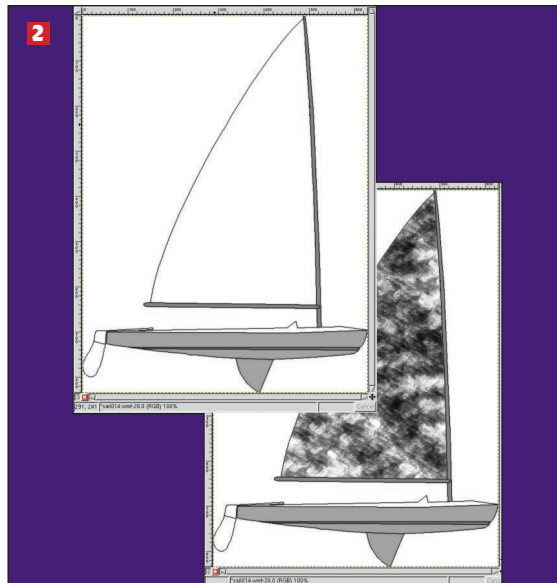
Loaded clipart and inverted grunge layer

2 Brushes allow us to easily add life to lifeless clipart. We've opened a clipart image of a sailboat, made a selection using the Fuzzy Select inside the Sail area, created a new layer and painted with a Grunge Brush. Grunge brushes are not in the stock GIMP distro, but you can use any brush you have that adds distinction to the sail. We inverted the grunge layer so that the painted area will be white. This makes it easy to apply a color blend mode layer above this to colorize the image.
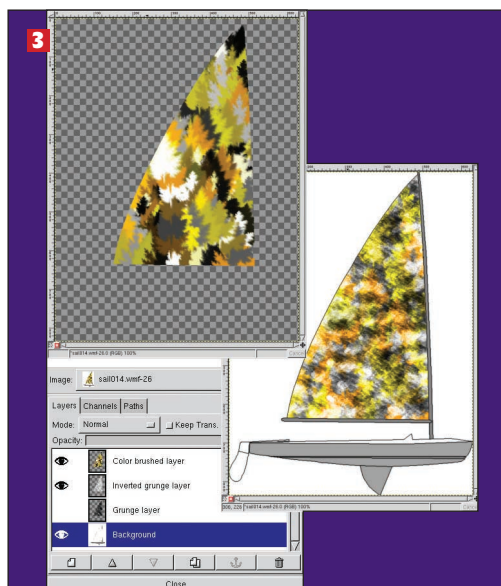
Final version

3 Leaving the selection intact makes it easier to paint only the sail area. In a new layer we've selected a Brush Pipe brush (made up of leaves) and set the Paintbrush 'Gradient' option. This allows us to paint in the new layer, and only inside the selection, with leaves that are coloured by the gradient. The sample image shows the layer we painted where the leaves are clearly visible. When this layer's blend mode is set to Color, the shape of the leaves is lost, leaving only the original grunge shape. Painting using content layers (the grunge layer in this example) and colour layers (the leaf layer) allows us to easily change the color OR the content without affecting the other.
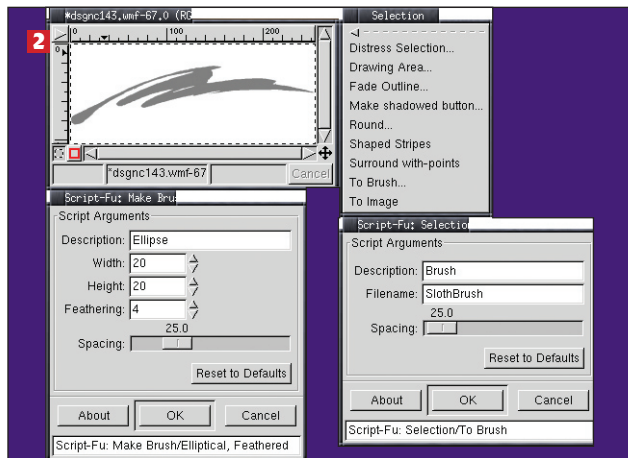
Creating and saving brushes

The standard set of brushes provided by *The GIMP* is good, but limited. Extended sets can be found on the Internet, such as the collection of over 150 brushes found in the *Graphics Muse Tools CD* (this is also where you'll find the Grunge Brushes mentioned in the previous tutorial). Creating your own grayscale or coloured brushes is practically a no-brainer. All that is required is a little creative thought and a few simple steps.
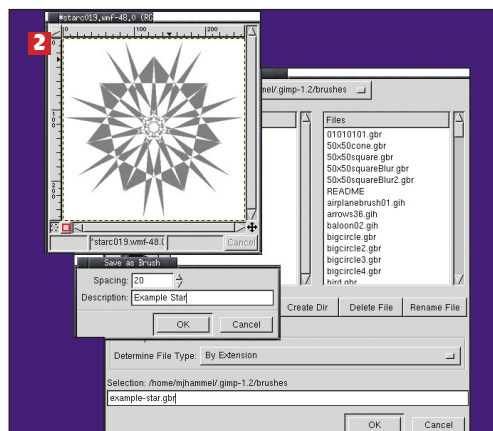
Clipart and save options for GBR

1 Any good clipart, properly sized, can be used as a new brush. Here a clipart in WMF format was opened, scaled to 35x35 and saved in the GBR format to the .gimp-1.2/brushes directory. The clipart can be coloured prior to saving as well, making it a coloured brush. The larger the image, the larger the brush. If you need a brush that is only a few pixels in width and height, try zooming in on it and edit the pixels manually. The image needs to be flattened and an alpha channel added before saving it in GBR format. The white background should be removed if possible otherwise you'll get a white square painted with each brush tip that is applied during a brush stroke.

Alternate menu items for saving brushes

2 Brushes can also be created quickly using a selection and the Script-FU>Selection>To Brush... option on the Canvas menu. Just make a rectangular selection around the shape you want to convert into a brush, choose the "To Brush..." menu option and fill in the dialog. The selection is saved to your .gimp-1.2/brushes directory and the Brush Selection dialog refreshed automatically. If you need a simple square or elliptical brush, try using the Xtns>Script FU >Make Brush menu option from the Toolbox.
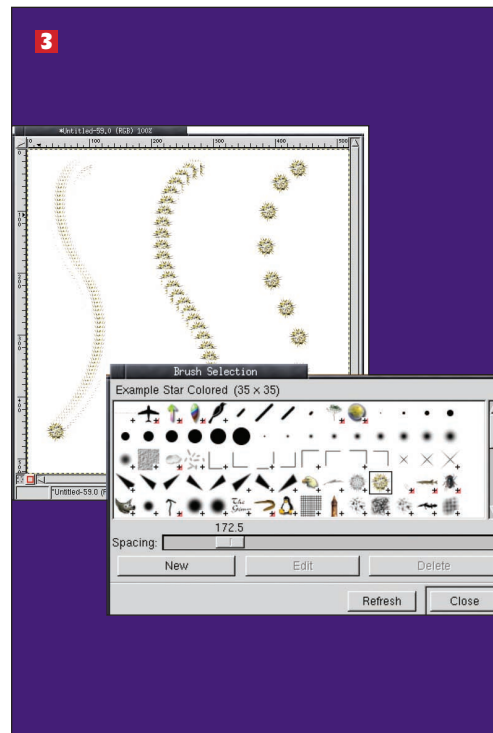
## Canvas with painted lines and updated brush dialog

3 Changing the spacing for the brush will change the number of times the brush is applied during a brush stroke. In this image there are three paths to which have been stroked with the new coloured brush, each using a different spacing. The barely visible one on the left uses the default spacing for the brush (which was 20 in this case). The next uses a higher value of 55 and the last an even higher value of 170.

Brush (or Image) Pipes

A relatively new alternative to the static grayscale and coloured brushes are the Brush Pipes. Brush Pipes appear as normal brushes until you click and hold the left mouse button on them in the Brush Selection dialog. They are then expanded and present an animated appearance. However, these are not animated brushes. Instead, these are brushes with special characteristics that allow a different brush tip to be used based on a variety of options, such as the direction of the brush stroke or the pressure or tilt of a drawing tablet pen. Brush Pipes are created by building a multi-layered image, with each layer holding one or more brush tips. The actual tip painted during a brush stroke depends on the options you set when you save your layers in the GIH format. In this tutorial we'll take a series of related brushes (the Quill brushes from the Graphics Muse Tools CD) and convert them into a single Brush Pipe.
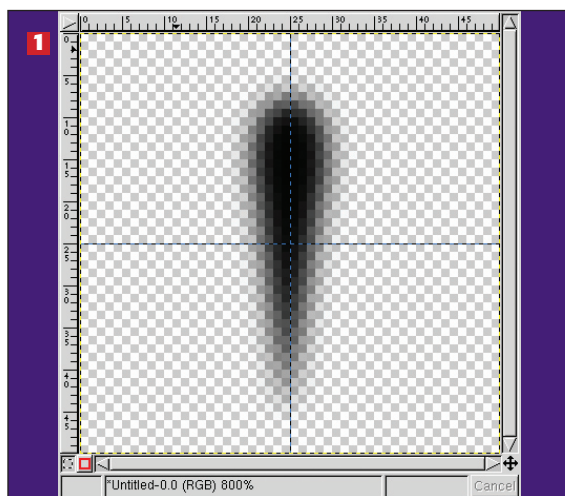

Canvas with grids and single brush stoke

1 The set of brushes we'll be using to create the Brush Pipe are all small enough to fit inside a 50x50 canvas. We start by creating a canvas of 50x50 pixels with eight transparent layers. Zooming in and using **Ctrl-E** to resize the window to fit allows us to better see what we're doing on such a small Canvas. The Guides>Center Guides menu option was used to create a crosshair on the image. On the bottom layer we use the Paintbrush to paint a single brush tip.
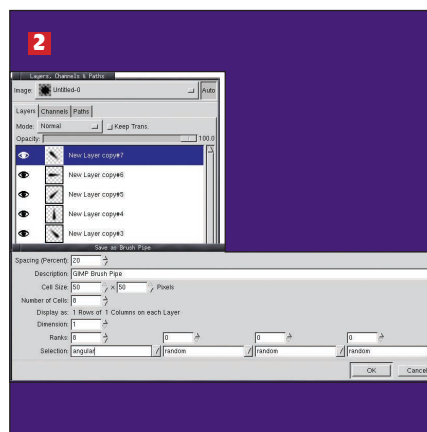
Layers dialog −all layers

2 Repeat applying a single brush tip per layer, with each layer getting a different version of the 8 available Quill brushes. The order of the layers (*ie* the direction of each quill brush) matters only for certain options when saving the Brush Pipe. Then save the image with layers intact to .gimp-1.2/brushes directory using the '.gih' filename extension. In the 'Save as Brush Pipe' dialog, set the Ranks to 8 and Selection to Angular in the first column and leave other values at default. This produces a Brush Pipe that selects one of the Quill images based on the direction the mouse moves while painting.
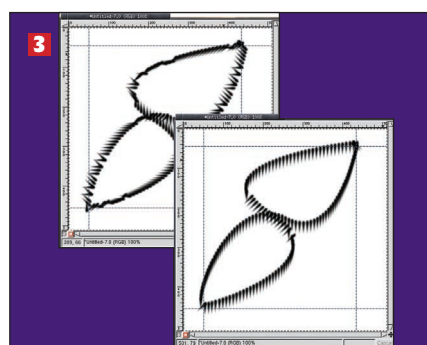
Canvas with two curves, each w/ different brush pipe

3 If we create another Brush Pipe that sets the second Rank to 2 and second Selection field to Velocity we get different results when we paint. Here we see what two paths look like when stroked with the first Brush Pipe (Angular only) and the second Brush Pipe (Angular and Velocity). **LXF**