

The GIMP



Simon Bridge & HBCLUG 30/12/07

The *GNU Image Manipulation Program* is a GPL project from the Free Software Foundation (for Windows and Linux) which many regard to be a drop-in replacement for Adobe Photoshop and similar. While the two are very similar, their focus is quite different. The GIMP is a painting program with a general application, while most proprietary versions concentrate on photographic effects and touchups.

This lesson is designed to form an introduction to the basics of GIMP use by walking you through the creation of a logo like the one at the top of the page. You'll start with a simple bit of non-fancy writing, and discover how the GIMPs power can be used to create some quite stunning effects.

Starting Off

Locate the GIMP in the top panel, under **Applications > Graphics**



(GIMP Welcome Screen)

Close the welcome screen – it is the others that interest us right now. The long one to one side is the main control panel. It has a comprehensive array of tools and menus. I'll just be using the tool names, so you'll need to find them at first. Just point your mouse at a likely looking icon and let it sit for a bit – a tooltip will pop up telling you what it's called and what it does. Those are the names I'll be using.

Like the welcome screen says, experimentation is encouraged. While I'll be showing you some of the moderately cool things this program can do, there are millions of possibilities. As soon as you like, explore the menus and the settings and see what they do.

If the GIMP has not already provided you with one, make a new session from the **File** menu. Accept the defaults. This will give you a blank white sheet about the right size for our purposes.

You're going to need some writing – so select the text tool (see right) by left-clicking on it once. Then click on the blank workspace to start working.

A box will open up where you can type, and the result is displayed in the workspace. Don't worry if some of the letters go off the edge of the page, you can move them later.

When you have the writing you want, change the text Size using the main panel (right). The panel also allows you to change Font, colour, and use a variety of special effects. But for this tutorial, we'll keep things simple. The default font, black, is fine. Make the writing occupy about half-to-two-thirds the workspace.

Tip: in general, it is bet to work on images that are much bigger than you plan to use. Scaling down always produces better effects than scaling up.

The GIMP logo in the title started out as the simple black and white image below..

One of the windows that opened up was called Layers (if you don't see it, you can summon it from **File > Dialogs > Layers** in the main panel or the workspace window.)

You'll see a layer called Background - click on this, then click on the trash can. Now the background goes into grey squares that indicate transparency.

Rt-click on the workspace to get a context menu, select save, and call the image base.png . The GIMP will ask if you want to export the image, say yes.

The logo consists of the word "The" in a smaller, regular sans-serif font, followed by "GIMP" in a much larger, bold, all-caps sans-serif font. Both are in black.

(Base Image for the Logo)

The base image used as an example here needed two text layers, created by using the text tool twice. The layers were moved to the right position with the move tool, then they were merged together by selecting the top text layer in the Layers dialog, rt-clicking on it, and selecting merge down .

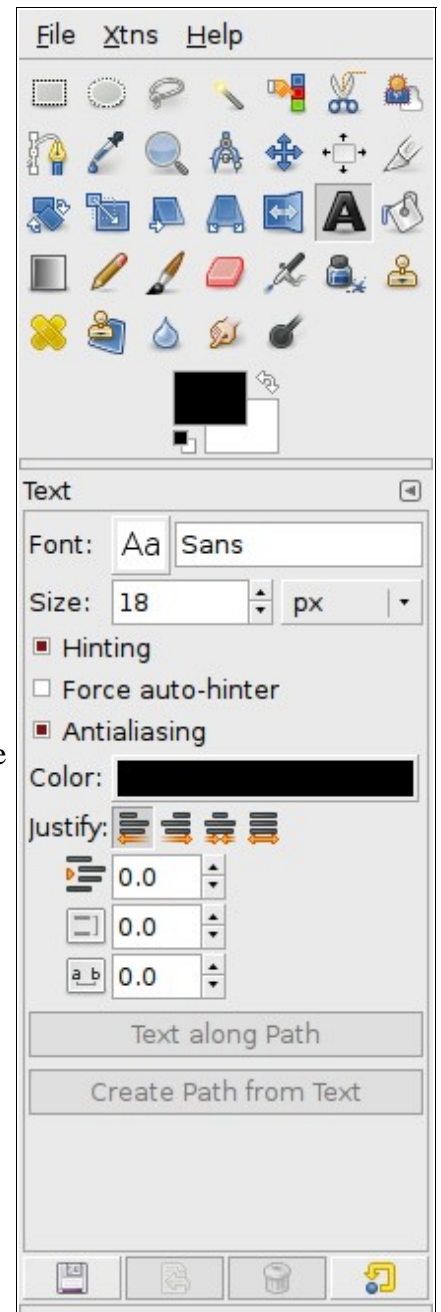
I renamed the text layer by double-clicking it's name in the Layers dialog, writing the new name in, and pressing enter.

Polishing Off:

The workspace is called a canvass. You'll notice that the text layer sits in the middle of the canvass, looking untidy. The saved image will be a single layer the same size as the canvass, which is mostly empty space. The following steps will fix that.

Rt-click the workspace and select: **layers > layer boundary size**.

A dialog will appear, use this to add about 40 pixels to the existing layer, and make sure it is centered. Click OK. Now the layer isn't too tight on the text.



Rt-click the workspace and select **image > canvas to layer size**

Now the canvas is the same size as the text layer. Now it's tidy, you can save it.

Close the workspace window. Stage one is finished.

File Formats

In this example, you saved the image as a **PNG** (portable network graphic) file. This is a Free format which supports color correction and variable transparency while providing a reasonable file size. Which is why it was chosen. There are others, the main ones you'll meet are:

JPG: J-peg is a gratis format used mostly for photographs. Does not support any of the fancy effects that png boasts. However, large, complicated, image can be saved to smaller files using this format. Jpegs are infamous for corrupting the fine detail of images leading many people to believe they have a blurry picture of something that isn't there, like pyramids on Mars.

GIF: is a non-free format (that's right: not gratis either) which supports transparency and animation. The main patents for this legacy format have recently expired. Replaced by PNG.

BMP: MS Bitmap format is a very old method of storing image data as Raster Images . The idea is that each pixel in the image gets described seperately in the file. This makes for very large files, so some form of compression is used to reduce the file size.

Resolutions and Image Quality

The display resolution determines the quality of the resulting picture. It is usually measured in dpi (dots per inch). For eg. My monitor has a 14 inch screen with a display size of 1024x768 pixels. This means my monitor is capable of displaying about 91dpi. (Pythagoras) maximum.

At this resolution, a 400x300px image is 4.4x3.3 inches in size. A full colour raster image of this size would be a 480kB file. A png at 80% compression would be 96kB (less for simple images).

Modern desktop printers typically use 300dpi for sharp images (some go to 1200dpi and higher for professional printing) so the above image would end up tiny indeed without some sort of scaling.

The GIMP saves images at your screen resolution by default. It is possible to save at a different resolution by first going to **Image > Scale Image**. If you double the dpi, you have to double the pixel settings to get the same physical size. If you wanted that 400x300 image to still show 4.4x3.3 inches but at 300dpi, then you'd need to change the pixel dimentions to 2000x1500.

Your screen will still only display 91dpi, (or whatever it is for *your* screen) but you'll be able to zoom in to see much finer detail.

There is always a balance between *compression* and *scaling* on one hand and *image quality* on the other. This is why it is best to work on images that are much larger than you need.

Now you have a base image, you can start messing with it. The next section walks through the creation of a simple logo. Much more complicated effects are also possible.

A Simple Logo

Use nautilus to browse to the place you saved the base image you had before. Find the icon for this image, and drag it over the GIMP control panel, and drop it. Wasn't that cool?

The effect we're going for is at the bottom-right of this page. Bottom-left shows what the layers dialog is like close to the finish. Right at the beginning it will have only one layer, probably called `Background`. I've renamed it to `The GIMP` for this example.

In the layers dialog, duplicate the layer. (The tool is on the bottom line between the arrow and the anchor. As with all tools, point your mouse at it to get a hint.)

Rename the bottom copy `blur` because that's what we are going to do with it.

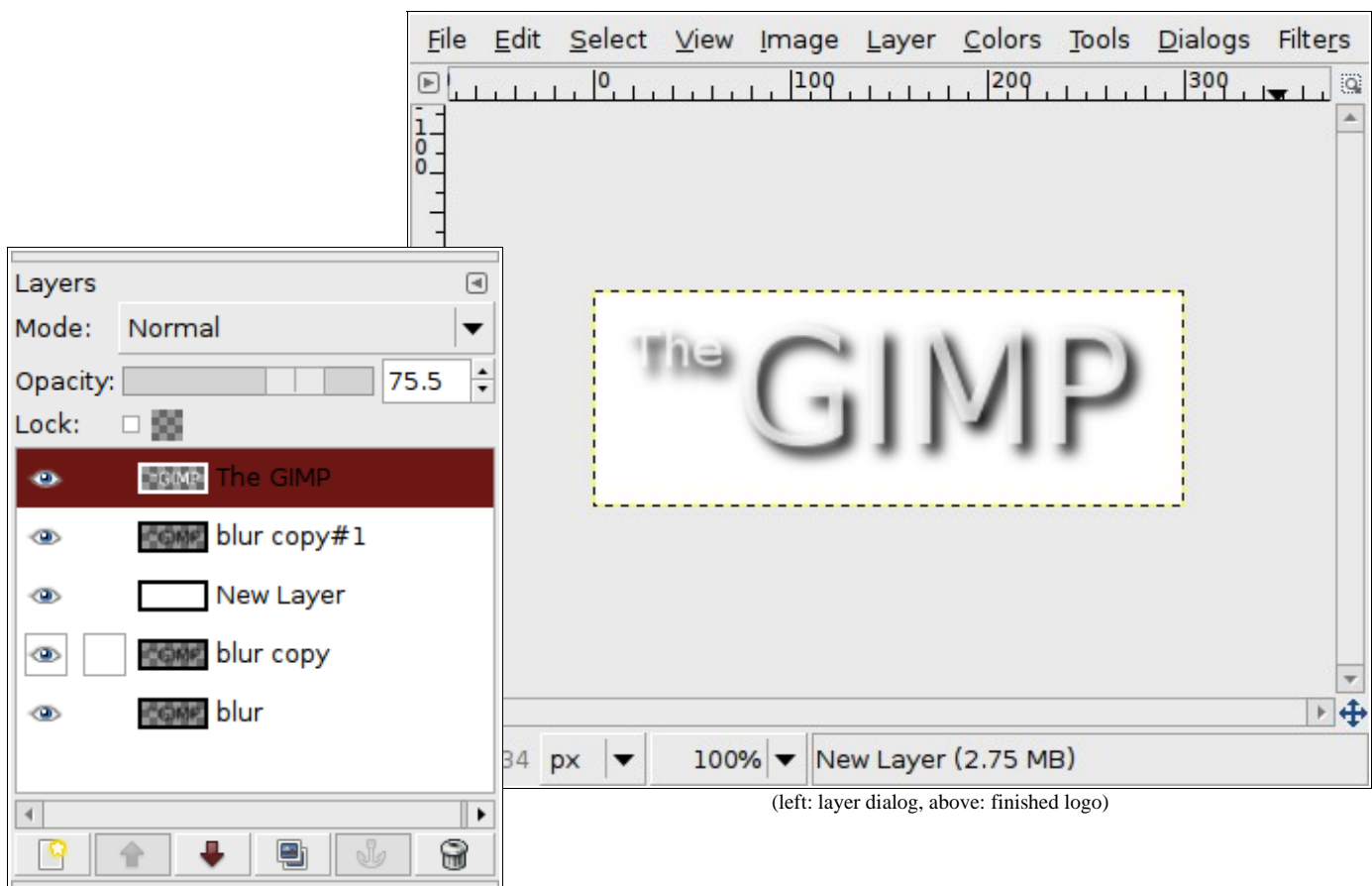
Rt-click the workspace and select: **filters > blur > gaussian blur**. Set the blur radius to 10-12 pixels to get the same effect I did. This will make one of the layers very fuzzy.

Back to layers select the top layer, then rt-click the workspace again. Select: **colors > invert**. This will make the top layer white now we can see it.

Back to layers duplicate the blur layer a few times to strengthen the effect.
Still in layers adjust the `Opacity` of the top layer to give it a murky look (use the slider).

It is best to look at the image against the background you would normally use with it. In this case, I added a white layer the add layer tool is on the bottom row, far left.

The white layer can be moved up and down between the other layers using the arrows at the bottom of the layers dialog. Adjust the location of the white layer and see what happens.



At this stage, the effect is that of a diffuse light right behind you, so there is a fuzzy shadow directly behind the white letters. The opacity setting gives the letters a milky-translucent look.

You can change the light angle by changing the position of the top layer. Use the move tool in the control panel (looks like four arrows). Select the top layer in the layers dialog. Go to the workspace and drag the layer up and to the left just a tad.

And that's it – remove all the layers you don't want to use. If you want to be able to use the logo on non-white backgrounds, then remove the white layer too. Merge all the visible layers, and save as a png file (to preserve the transparency).

Close the workspace.

The main lesson is in the use of layers. You should put different parts of whatever you're working on, on different layers. Switch between layers to work on the different parts. Merge the layers only at the end.

The menu most often used is where you rt-click the workspace. This is a quick way to reach all the special effects. You've seen blurring, you can see what the others do. Have fun.

Something to try – make your base image white, with a white layer below it. Make sure the lower layer is selected and use the brush or airbrush tool to paint on it. Experiment with the different brush sizes and shapes.



If you make a mistake, you can use **edit > undo** to remove it. Use **edit > undo history** to remove lots of mistakes. If it's hopeless, remove the offending layer.

Special Effects and Colours

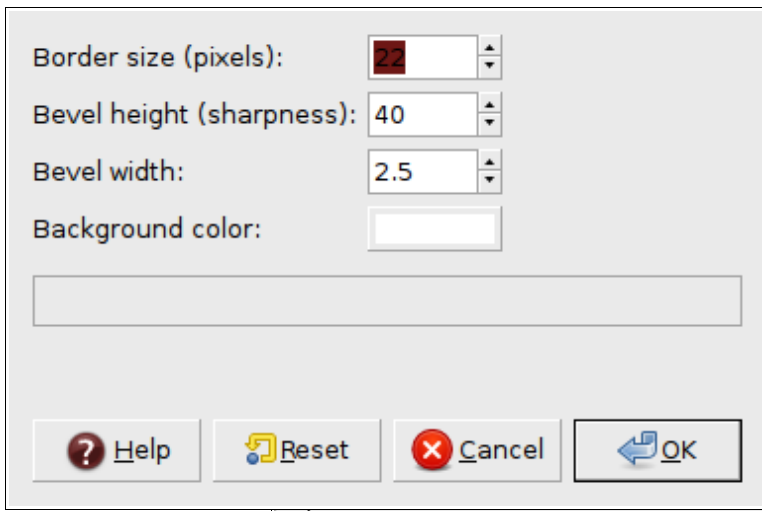
There were a lot of steps involved in making that logo, and that was a simple one. The GIMP also provides a collection of preconfigured *scripts* that enable very common effects with just a few steps. You'll find them in the context menu under **Filters > Alpha to Logo**.

All these images use four bytes to describe the colour each pixel. Each byte is also called a channel. Three for primary colors (Red, Blue and *Green*) and one called the *Alpha* channel for transparency.

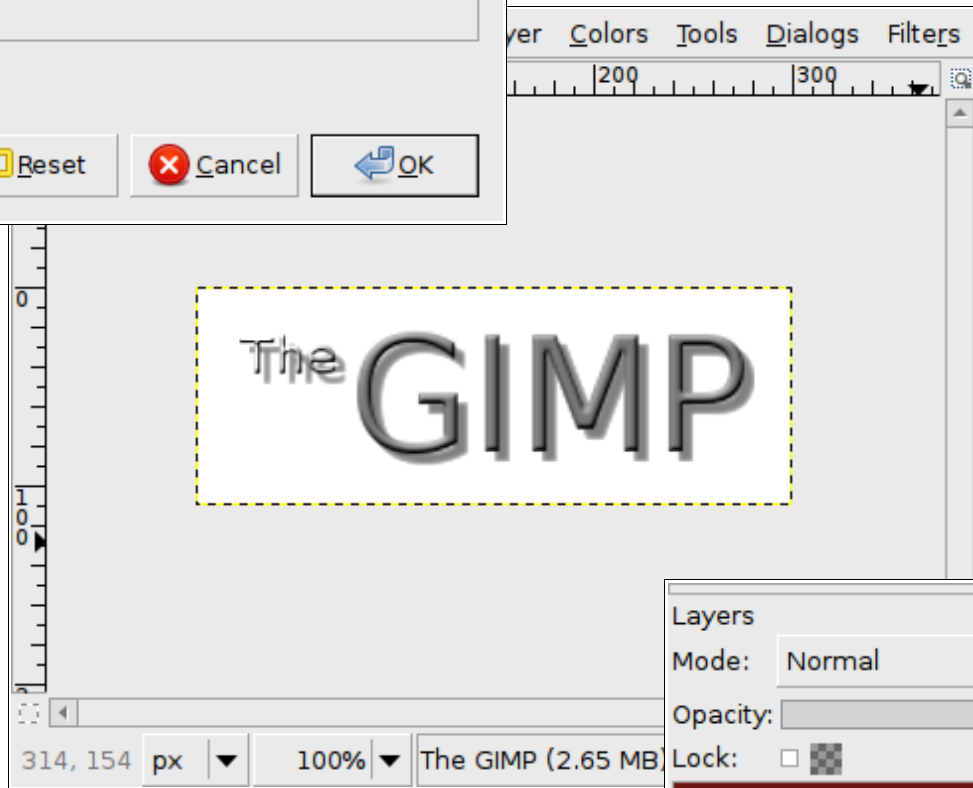
These scripts take images with a lot of transparency and do cool things with them. Like -

Drag the base image into the GIMP like before – rt-click and select **filters > alpha to logo > gradient-bevel**. (The gradient-bevel dialog sometimes hides behind the workspace, just click the workspace title-bar to bring it forward.)

Keep the defaults for now – click OK. (see next page.)



(left: gradient-bevel dialog)

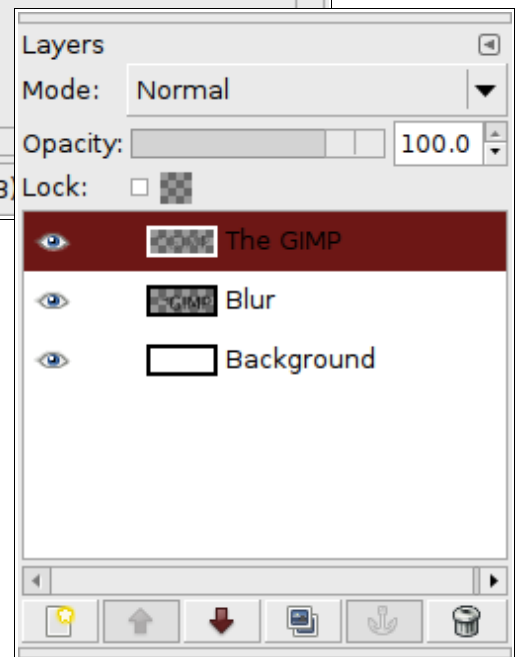


(above: gradient-bevel effect;
right: gradient-bevel layers)

The effect is to make the logo look 3D, provide a drop-shadow, and a background.

The drop-shadow makes the logo float above the page. If you move the Background layer up one, the logo will sit flush.

Duplicate the Background, and move the Background Copy to the top then click the triangle next to normal on the Mode . You'll get a menu select grain merge .



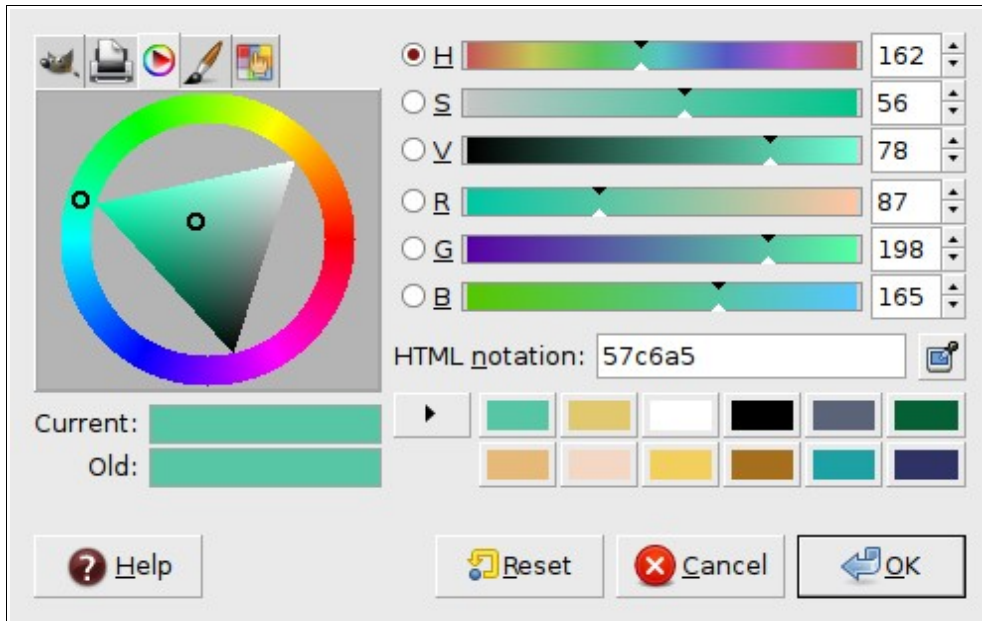
Now you have the logo used in the title.

Of course, the color doesn't have to be white. In the main panel there is a color selector that looks like two boxes overlapping (below-left). The top box is for foreground and the bottom for background and they default to black on white.



The double-headed arrow top-left switches the colors over. The miniature copy bottom-left restores the black on white default when you're tired of messing with it.

Single-click the black box, and you get a dialog with lots of ways to change this (next page). There are 16777216 possible colours, and lots of ways to represent them. My favorite is the color-triangle shown next page.



This dialog alters the three colour channels, here called R, G, B. The main part of the selector is the wheel and triangle on the left. You select the color you want by clicking on the wheel. Then click on the triangle to select the exact shade of that color you want. The numerical representations show up to the right.

HSV is Hue, Saturation, and Value and they are related to the RGB values. Try dragging your mouse around the wheel and see what happens to the sliders.

HTML Notation is used to set colors in web-pages. It uses a base-16 counting system called hexadecimal. The little TV with an eye-dropper on it is a tool which allows you to match an exact color from another picture.

Below that, there is a palette consisting of commonly used colours, and colours you've used before. The currently selected and previous colours are displayed next to each other so you can fine-tune your selection. Here, I wanted a slightly different shade of teal.

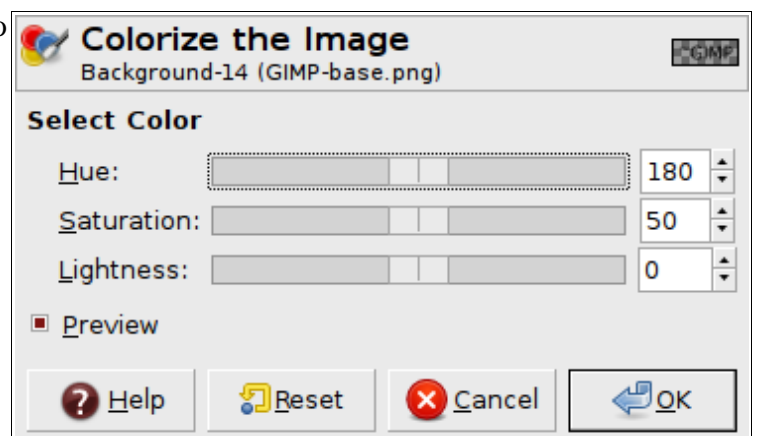
Select a colour that appeals to you and click OK.

Back in the main panel, select the bucket-fill tool. Then, making sure the top layer is selected, apply the tool to the image. Now you have changed the colour.

Tools for manipulating color live under the color menu. You've already seen how to invert a color from this menu. There is lots more, like

Delete the top layer to get the original grey logo back. Select the top layer. Rt-click the workspace, select **color > colorize**. Now you get a dialog that lets you set the HSV numbers.

Experiment moving the sliders around. This is similar to how old movies get colorized.



Here's a Challenge.



When using the bucket-fill tool, you are not restricted to colours, you can opt to fill with a pattern instead. The above logo uses a marble-tile pattern.

If you start with your base image, and merge it onto a white background, you'll be back to the black-on-white image you started with. Invert the colours so it's white on black, rt-click, select **layers > transparency > color to alpha**. Now you have a hole in a black background.

Invert the colors again, and apply the gradient bevel. Now you have a plaque ready to receive a pattern.

Another way of making impressions is with **Filters > Map > Bump Map**

Things to do: try out all the other filters. Have a look under **Filters > Decorate** to get an old-photo look, complete with coffee stains. Try different blurring and distorts. Have a look at the HBCLUG wallpapers and see if you can figure out how they were done. Have a play, have fun, with ...



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