

TutorialGIMP



NON-DESTRUCTIVE EDITING

Blend modes

PART 4 Blend modes can modify colour content with simple brush strokes. **Michael J Hammel** shows us how...



Modifying an image by changing the pixels might seem the only way to create effects with *The GIMP*, but such changes are destructive in nature, making it hard – if not impossible – to recover the original image info should you change your mind. A better solution is to create effects without changing the pixels – what is called non-destructive editing – through the use of Blend Modes.

When painting with a paintbrush, the pixel data provided by the brush stroke normally replaces the pixel data over which the stroke

is applied. Blend modes allow brush strokes and other image data to be combined in ways beyond the standard replace option. Blend modes are available in all the painting tools (Paintbrush, Gradient Tool, Bucket Fill, etc) as well as in the Layer and Channels window. In the case of the Layer blend modes, changes can be applied in a non-destructive manner.

A blend mode is a method describing how a pixel will change when composited with another pixel. In the case of layers, blend modes define how pixels in a higher level layer will be combined with pixels in the next layer down. One use of Layer blend Modes is to produce a colour negative from an image by placing a white layer on top of the image and setting the white layer's blend mode to Difference. The colour negative can then be desaturated and used to create a complex selection or layer mask. The tutorials here show all the different blend modes available in *The GIMP* and how they can affect image data. While reading these tutorials, keep in mind that not every image works well with every blend mode. Experimentation is key to understanding our topic this month.

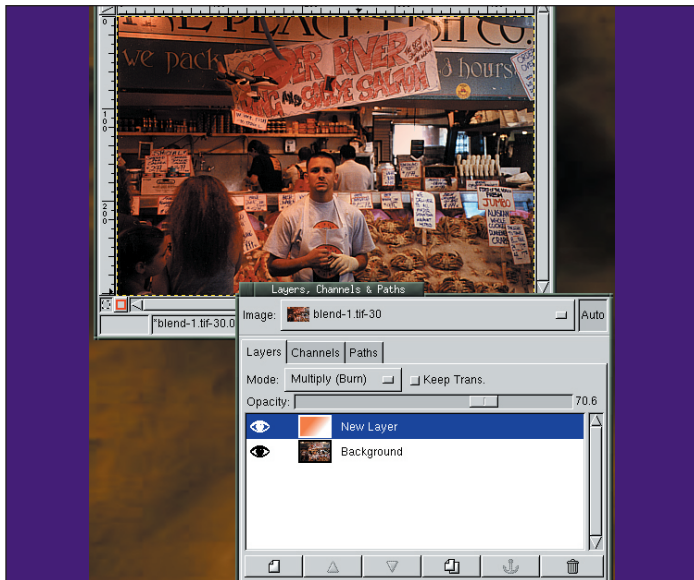
MULTIPLY, DIVIDE, DISSOLVE

Blend modes can be used to lighten dark areas of an image, add colour to lifeless images, and produce unusual affects, all without actually modifying the

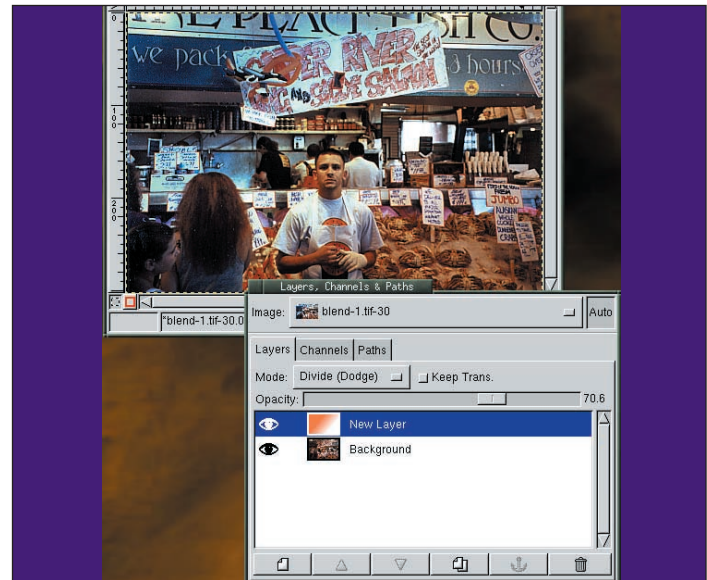
image. In the following set of images we'll see three blend modes change the mood of an image with very little effort on our part.



1 We start with our original image. The picture shows a popular market in Seattle lit by low-power bulbs and plenty of reflected outdoor sunshine. There is a definite warm feeling from the red and orange colours in the centre and bottom half of the image, but we can change this to be much more dramatic using blend modes.



2 Adding to the warmth is easy using the Multiply blend mode. We add a new layer above the original image. Change the foreground color to a reddish-orange and the background to white. Apply a linear gradient (using the Gradient Tool from the Toolbox) starting in the upper left corner of the new layer that flows to the bottom right. Now change this new layers blend mode to Multiply (Burn). The result is that the hanging light in the upper left corner appears to be orange and casts an orange light on that side of the market. We've reduced the opacity of the new layer a bit to reduce the harshness of this effect. Multiply mode always makes the result darker or leaves it unchanged. Multiply a black layer and you get black. Multiplying a white layer will not change the visible image.



3 Alternatively, we can change the mood to be brighter by removing some of the warm colours. To do this we simply change the new layers blend mode from Multiply (Burn) to Divide (Dodge). Now the light in the upper right is brighter and casts a stronger blue coloured light on the market. A Dodge blend with white has no effect.



4 A less dramatic effect can be generated by selecting all of the background layer (CTRL-A) and doing a Bucket Fill using the Dissolve blend mode. Double click on the Bucket Fill tool in the Toolbox to open it's Tool Options window. Set the opacity to about 50% for this image and the Mode to Dissolve (we're using the Tool blend mode here, not the Layer blend mode). This is one method of adding grain to the image. A Burn blend with black has no effect.



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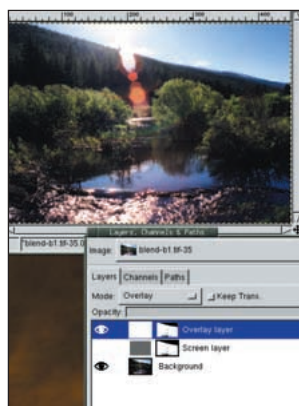
« SCREEN, OVERLAY, BEHIND

The mode you use on any given image to bring out detail will depend on the image itself. Each mode works well with different colours. In the previous tutorial you saw how a relatively well lit image could be enhanced with Multiply and

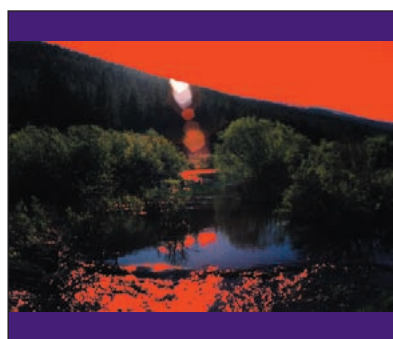
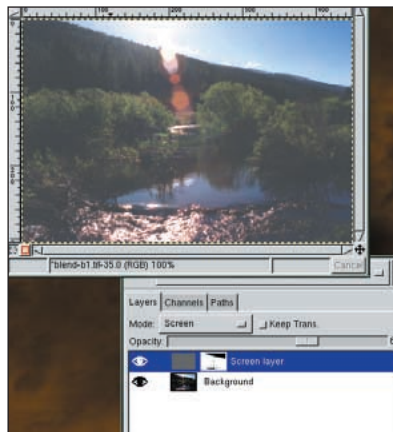
Divide. Underexposed images are common with lower-end digital cameras that don't have many manually user-definable functions. In a poorly lit or underexposed image you might try Screen or Overlay, as we see below.



1 Our original image, taken outside and facing the sun. While not a bad shot, dark areas are underexposed. We need to bring out detail in the foreground trees.



3 Add another layer, filled with white. Add a layer mask. Click on the gray layer's mask to make it active and copy it. Click on white layer's mask and paste. Anchor floating layer into the new layer's mask. Now change the white layer's blend mode to Overlay. This time we get a better result.



2 Add a layer and fill it with a dark gray. Add a layer mask to this layer. Make the original layer the active layer, copy it (CTRL-C) and then make the layer mask in the new layer active by clicking on it. Now paste the copy (CTRL-V) and anchor it to the layer mask. Using the Brightness/Contrast filter (Image>Colors>Brightness-Contrast...), increase the contrast in the mask so it becomes a black and white (no gray) image. Invert the mask. We've just isolated the dark areas. Now change the layer blend mode for the new layer to Screen. The effect is that the dark areas are all lightened, but in this case it appears washed out, even with the opacity reduced to lessen the effect. Screen normally has an effect of projecting two photographic images over each other so that a little of each shows through. A fully white screen will produce a white image, while a fully black screen produces all black.

4 In step 3, white overlay makes light areas lighter. Black overlay makes dark areas darker. A 50% gray overlay has no effect. To see what parts of the layer mask are not affected, duplicate the original layer, add a layer mask and copy the mask from one of the other layers into it. Then we apply the layer mask (press and hold the right mouse button on the layer name, then select Apply Layer Mask). Select the entire layer (CTRL-A). Now select a red foreground color (any color will do but choose one that will stand out) and do a Bucket Fill in this layer. Set the Bucket Fill blend mode (in its Tool Options window) to Behind. This fills in only the transparent pixels in the layer with the fill color.

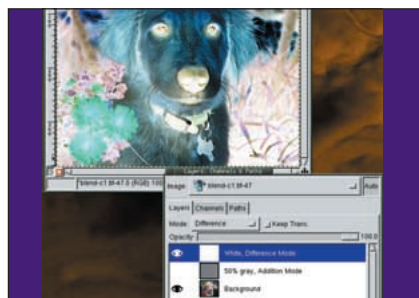
ADDITION, DIFFERENCE, SUBTRACTION

There are multiple blend modes that do very similar things, such as the Screen and Addition modes. Brighter areas in a Screen layer will brighten an image more than the darker areas. With Addition, each pixel is added directly to the

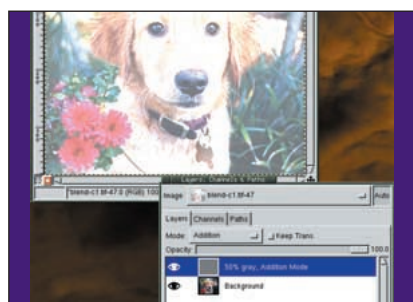
lower layers without regard for how bright or dark that pixel might be. Here we look at Addition, Difference and Subtraction. These tools can be used to create colour negatives of images.



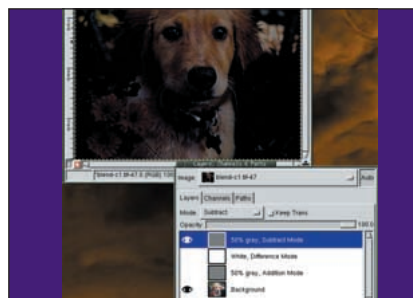
1 The original image is colourful and fairly well balanced with respect to brightness. While we don't really need to modify this, we can easily show how Addition, Difference and Subtraction will affect it.



3 Adding a layer of white and setting the layer blend mode to Difference we get a colour negative of our image. The Difference mode subtracts the current layers pixels from the composited pixels of the layers below. The absolute value of the result becomes the new composited pixel.



2 Adding a layer of 50% gray and setting the layer blend mode to Addition we again see a washed out appearance of the original image. Addition adds each pixel of the current layer to the composited pixels of the layers below it, with the maximum result being white.



4 Duplicating the 50% gray layer and changing the mode to Subtract we get a darkened image. If we set the white layer to subtract, our image is completely turned to black. Subtract works like Difference except if the resulting composited pixel is negative, the pixel is made black (a zero value).

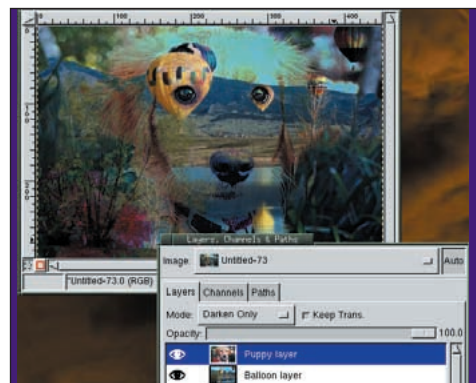
DARKEN, LIGHTEN, VALUE

The Darken and Lighten blend modes work opposite of each other to merge a layer with the layers below it. A ghosting effect will occur with the Value blend

mode, especially if the layer being blended is desaturated (Image>Colors>Desaturate).



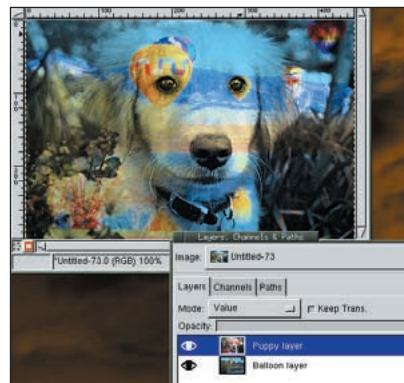
1 We start with two images, both of which are very colourful. We've placed the puppy's image in a layer on top of the balloon image for this example.



2 Setting the puppy layer to Darken mode produces a soft ghosting effect. In this mode, if a pixel in the balloon layer is darker than the corresponding pixel in the puppy layer then the composited image uses the balloon pixel. If the puppy pixel is darker then the puppy pixel is used.

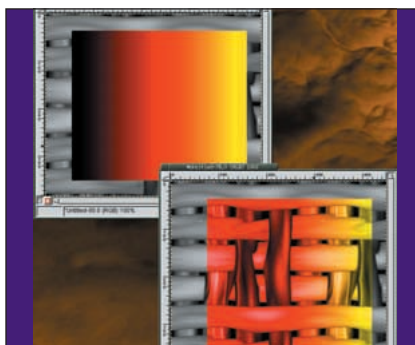


3 The opposite of Darken mode is Lighten mode. In this case, if the pixel in the puppy layer is lighter than the corresponding pixel in the balloon layer then the puppy layer is used in the composite. The result is another ghosted image, though this time a bit lighter overall.

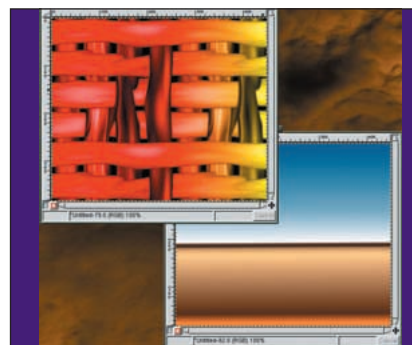


4 Value works in a similar manner but works in a different color space (HSV) than darken and lighten (RGB). The result looks a bit like a color negative blended with the balloon image. There are many color spaces images can be processed in though most GIMP users will work directly in RGB and leave color space conversions to filters to handle automatically.

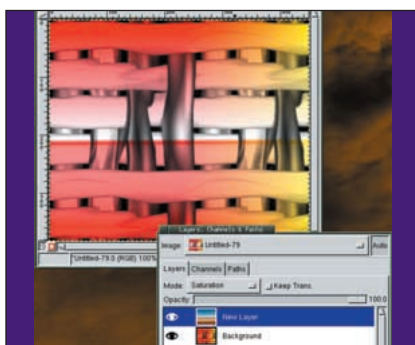
COLOR, HUE, SATURATION



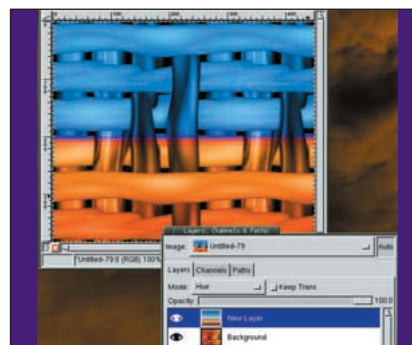
1 Blending with the Color mode is the fastest way to colourise a desaturated image without actually modifying the image itself. The lightness of the lower layer defines the structure of the composite image while the color (a combination of the Hue and Saturation) in the blend layer defines the color.



2 Working with Saturation and Hue modes is a little more difficult to explain. Both work in the HSV color space instead of RGB (though this is done invisibly, without the user knowing it). We'll use two coloured patterns to demonstrate these last two modes.



3 In Saturation mode we can see the image structure (the weaving) of the original layer is kept intact, along with some of the colouring. What changes is the intensity of the colours. Where the Saturation layer is dark, the weaving is dark. Where the Saturation layer is light, the weaving is light.



4 In Hue mode the color intensities (and Hues) follow the blend layer while the image structure remains mostly with the weaving layer. This is a simplification of how Hue and Saturation work and it will take lots of experimentation before you find the true usefulness of these two blend modes. [LXF](http://www.linuxformat.co.uk)