

» **Gimp** Open source image-editing software you can get your teeth into

Gimp: Travel to

Revel in the majesty of creation as **Michael J Hammel** fires up the Gimp and leads you through the process of making some stunning stellar art.



» This looks like *The Big Bang Theory's* opening credits, but it's really the result of this month's project.



Our expert

Michael J Hammel is a contributor to the *Gimp* project and the author of three books on the subject, including his latest, *The Artist's Guide to Gimp Effects*.

Last month I promised to show you how everyday objects could be used with a scanner to create fun projects. Unfortunately, while I was working towards that goal, my scanner died, but Marco had more luck, as you'll see on page 86. With my trusty scanner heading for the tip, it was time to fall back on those creative skills we've been developing recently. And what better way to get creative than to spawn our own star field? Even better, this process requires no stock images and very few *Gimp* tools. For something so stunning, it's pretty straightforward. The method I'll walk you through here is based on *Gimp 2.6*, but the same process can be applied to *Gimp 2.4* with a few menu changes.

A simple process

Creating a star field that goes beyond realism and enters the realm of fantasy is fairly simple. All you need to do is:

- » Create a background star field.
- » Create a collection of larger stars.
- » Cluster the stars.
- » Add larger, brighter foreground stars.
- » Colour the star field.
- » Add some coloured dust.
- » Throw in a planet or ship.

The last step is the hardest, although *Gimp's* Sphere Designer makes creating planets pretty easy. Other than that,

you'll probably spend most of your time in this project getting the star clusters just right.

The core of this process is using noise filters to produce random dots on a black background. However, these dots are too small for a typical project, especially one bound for print. To get around this, we start with a small scale version of the stars and scale the image up. I wouldn't normally recommend scaling up raster images like this, but it's an ideal way to produce the effect we need for this project.

Getting started

The first layer will contain the distant, background set of stars. Start by creating a new image that's 640x480 pixels in size with a white background. Type D in the image window to reset the foreground and background colours to their default settings of black and white respectively. Drag the foreground colour from the toolbox into the image window to fill the background layer with black.

Add a new layer (Layer > New Layer) and name it Small Stars. Set the layer colour to the foreground colour, open the HSV Noise filter (Filters > Noise > HSV Noise) and set the Holdness to 3, the Hue to 20, the Saturation to 90 and the Value to 100. Apply this to the Small Stars layer by clicking the OK button. HSV Noise renders coloured noise, so we need to desaturate it. Go to Colours > Desaturate and use the Luminosity setting. Click OK to apply this to the layer.

The very small points of light we've just created are really hard to see on a monitor, so zoom into the image window by 300%. We'll zoom back out when the contrast in the image will be easier to see in print.

The rendered noise is randomly distributed, but it's a bit too densely populated. Open the Brightness/Contrast dialog (Colours > Brightness/Contrast). Set the Brightness to 45

» **Last month** We created a warp speed effect that Kirk would be proud of.

the stars



and the Contrast to 65. The result will be fewer stars, although the remaining stars will be a bit brighter.

These settings are variable, meaning that changing them can have an important effect on the final appearance of the image. Increase both values to reduce the number of small stars even further, but be careful not to make the stars too bright. Remember that these are background stars – the more visible clusters are yet to come.

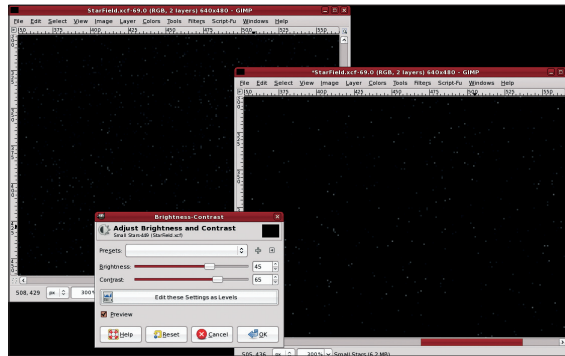
Grow bigger stars

Next up are some larger, closer stars. Duplicate the Small Stars layer (Layer > Duplicate) and then name the new layer Large Stars. Thin out the stars a bit more with the Brightness/Contrast dialog, setting the Brightness to 50 and the Contrast to 110 this time. Now scale the layer up to 200% (Layer > Scale). Using a percentage value will make it easier to scale this layer back down again later.

Scaling the layer up without scaling up the image will make the layer larger than the image size, but don't panic. The next few steps will still work on the entire layer and resizing later will fit the layer back into the image again.

Now open the Levels dialog (Colours > Levels). Set the Black Point to 230, the Mid Point to 1 and the White Point to 250. The Levels adjustment will sharpen the large stars, making them darker and more distinct. You might find that Inverting the colours makes it easier to choose the right settings for the Levels adjustment. You could also experiment with higher values for the Black and White Points.

Once you're happy, the layer can be made smaller again, but not all the way back to its original size. That would mean scaling it to 50% (or half its current size), but we want to Scale the layer down by 40% instead. The stars will be just a bit larger. If this isn't large enough, scale down by smaller



› The original (far-left) is filled with stars while the updated version (left) has fewer stars. Remember: this is a zoomed-in view. The left image might look all right, but it's far too cluttered at actual size.

amounts. But don't make these stars too large, because the clustering process we'll use later will bring out brighter, larger groups of stars. After you're done scaling, fit the layer to the image, using the Layer > Layer To Image Size option, essentially trimming the excess off the layer.

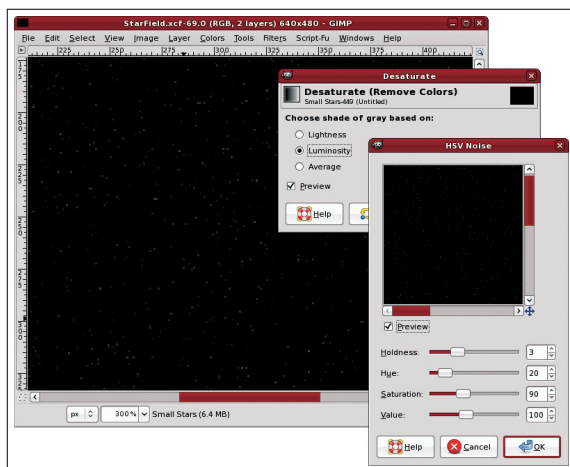
Working at a larger scale

Now it's time to scale up the entire project. Scaling up will produce a much better star field for print or the web. It also makes the rest of these steps easier to see. I recommend you Scale the image up (Image > Scale Image) by 250%. Using a percentage value will keep the aspect ratio, so the stars remain round. Set the Large Stars layer mode to Screen. Now the entire set of small stars and larger stars should be visible. The new image size should be 1600x1200 pixels in size.

At this point you'll get a better feel for how well your Levels adjustment worked in the previous step. If the large stars are too bright, apply another Levels adjustment or change the Brightness/Contrast to darken them a bit.

Space voids

So far we've created a nice enough field of stars, but there are plenty of improvements that can be made. The first is to create some voids in space. To do this, add white layer masks (Layer > Mask > Add Layer Mask) to both the Large Stars and Small Stars layers. Choose the Paintbrush from the toolbox and select a fairly large brush. In Tool Options, set the initial Opacity for the Paintbrush to 50%. Type D in the image window to make sure the foreground colour is reset to black.



› Using the Luminosity setting when desaturating the stars helped to make them brighter and more visible. Currently the whole star field is too uniform, though.

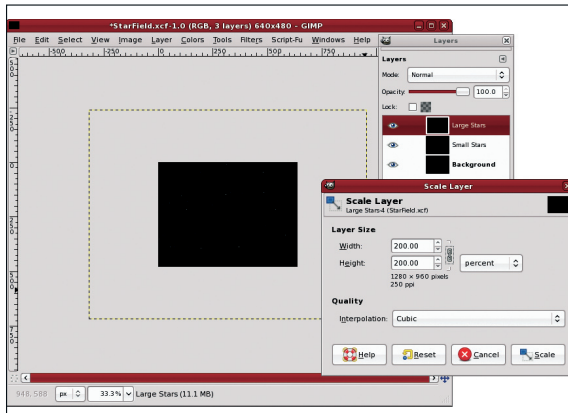
Credit where it's due

This tutorial is based on the process for making realistic star fields described by Greg Martin on his website. I've translated his ideas into a *Gimp*-specific method, but the basic process is his. The tutorial isn't linked from his website, though, and I found it listed in a

collection of *Photoshop* tutorial links. However, the direct link still works: http://gallery.artofgregmartin.com/tuts_arts/making_a_star_field.html. Also, check out Greg's wonderful galleries of inspiring designs at <http://gallery.artofgregmartin.com>.

› If you missed last issue Call 0870 837 4773 or +44 1858 438795.

› Part of the process involves dealing with an oversized layer that extends beyond our canvas. Don't worry, though, the changes you make will be applied to the invisible parts of the layer as well.



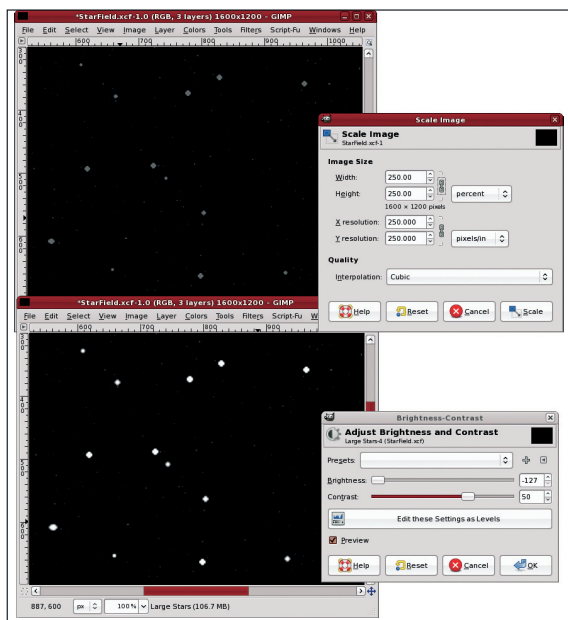
Now paint liberally throughout the Small Stars layer, wiping out large swathes of stars and leaving a few clusters behind. Increase the size of the brush and repeat the process on the Large Stars layer. Try out different brushes and adjust the Opacity of the brushes as you go.

You should try to avoid any obvious patterns and remove any regularity created when the Brightness/Contrast and Levels adjustments were applied to the original HSV noise. Use short brush strokes, alternating vertical and horizontal stroke directions. This step seems awkward at first and there are no rules for which parts of the fields to wipe out. It's up to you, but keep in mind that the goal is to create some blank regions of space. Don't be shy on the Large Stars layer either – we won't need many big stars left for the next step.

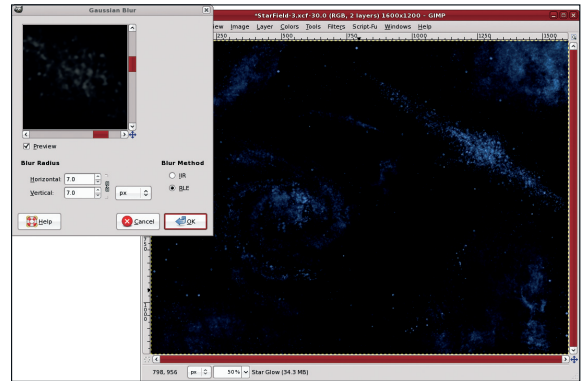
When the voids are plentiful and obvious, save the project in XCF format so that if the remaining steps don't work out, you can try again without having to start from scratch. Finally, flatten the image (Image > Flatten) into a single layer.

Clustering

The real artistic aspect of this project is in the clustering of stars. To create clusters, use the Clone tool from the toolbox. Again, a variety of brushes may be required here, but it all depends on your tastes. Hard-edged brushes seem to produce the best effects, but don't be afraid to experiment.



› You can change the intensity of your stars with the Brightness/Contrast dialog – don't make them too bright.



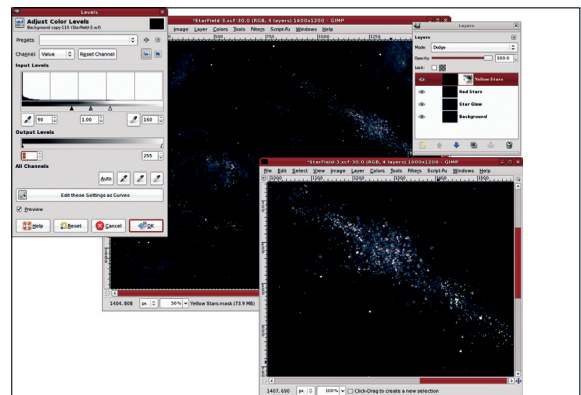
› This is more like it. The Star Glow layer is used to bring out detail in the clusters of stars while leaving the background pinpoints of light essentially untouched.

To use the Clone tool, hold down the Ctrl key and click anywhere in the image window. This becomes the source location. Release the Ctrl key and begin painting anywhere in the image window to duplicate what's in the source location. Note that the source location moves relative to the brush, always staying exactly the same distance and direction away from the current location.

Cloning with the Normal mode in the Tool Options will simply replace the current pixels under the cursor with the pixels from the source location. To get really good clusters, alternate between Normal, Screen and Overlay modes in the Tool Options for the Clone Tool. Use areas with stars as the source location when creating clusters.

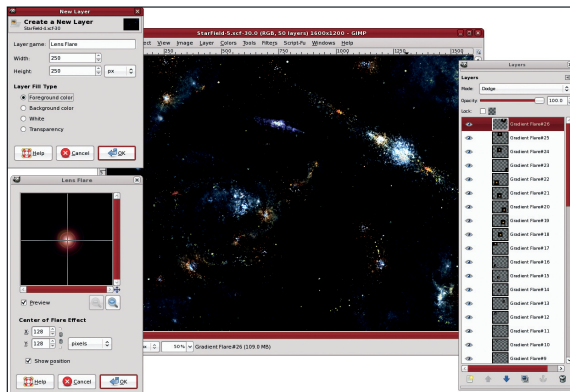
This step takes practice to get just right. Try to create some swirling clusters or a spiral galaxy as seen from above. Attempt a few operations to see what you get, then use Ctrl+Z to undo those changes and try again. Once you begin to see how the clusters form, you won't need to reverse your changes. Save your work frequently and in different files as you experiment. This will enable you to return to a particular variation later if your experiments get out of hand.

The project is really taking shape at this point. The next step is to add a soft glow from the star clusters. Duplicate the background layer and name the new layer Star Glow. Open the Gaussian Blur filter (Filters > Blur > Gaussian Blur) and set both the Horizontal and Vertical Blur Radius to somewhere between 5 and 40, depending on the density of your clusters. Choose a cluster with the most visibly distinct



› Reduce the Opacity of various layers, including the Star Glow layer, to bring out some of the subtle colouring.

›› Never miss another issue Subscribe to the #1 source for Linux on p102.



› Experimentation is key to this project. Try out different Gradient Flare presets and find the effects you like.

white dots in the Preview window of the Gaussian Blur dialog and adjust the Blur Radius based on that preview. The result should be a cloud-like appearance around the stars. Set the Star Glow layer mode to Dodge if you want a subtle enhancement or Screen for a more vivid change.

Now it's time to improve the glow with a tinge of colour. Open the Colourise dialog (Layers > Colourise) and set the Hue, Saturation and Levels to 215, 90 and 0 respectively.

Colouring

Duplicate the background layer and name the duplicate layer Red Stars. Move this layer to the top of the layer stack.

Reduce the number of visible stars using the Levels dialog and then set the Black Point to 90, the Mid Point to 1 and the White Point to 160, although these values can be adjusted as necessary. Open the Colourise dialog (Layers > Colourise) and set the Hue, Saturation and Lightness sliders to 0, 80 and -10 respectively. Now set the Layer Mode for the Red Stars layer to Dodge.

Repeat this process as many times as you like, using variations on the Levels and Colourise settings to add various different tints to the star field. You can also use a Layer Mask to selectively colour sets of stars in these colouring layers.

Lens and gradient flares

The bright points of light in the star field need to be softened and broadened, so we'll employ the Lens Flare and Gradient Flares filters. First, create a new layer (Layer > New) that's 250x250 pixels in size. Set the Fill Type to Foreground Colour

(this should be black) and name the new layer Lens Flare. Move this layer to the top of the layer stack.

Open the Lens Flare filter (Filters > Light and Shadow > Lens Flare) and click on OK to render the flare in the Lens Flare layer. The flare is coloured, so desaturate it with Colours > Desaturate, although you could also experiment with coloured flares. Set the Layer Mode to Dodge and use the Move tool to drag the flare over a cluster of stars.

Duplicate the flare a few times, scaling each copy up or down a bit, and position the duplicates near various star clusters. Placing the centre of a flare over space voids will use just the outer edges of the flare to highlight an area. Placing a flare directly over a star will make it shine even brighter.

Now create another black layer that's 250x250 pixels in size. Set the Layer Mode to Dodge and name the new layer Gradient Flare. Open the Gradient Flare filter (Filters > Light and Shadow > Gradient Flares). In the Selector tab, choose the Hidden Planet, Bright Star or Distant Sun preset. Render this into the new layer. Desaturate and position it as you did with the lens flares, repeating the process several times.

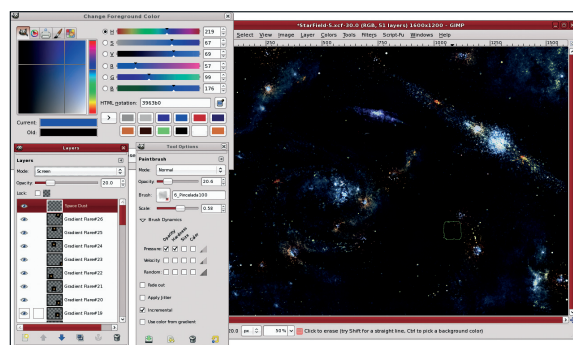
Space dust

Add a transparent layer (Layer > New), name it Space Dust and move it to the top of the layer stack. Set the Layer Mode to Screen and the Opacity to 20%.

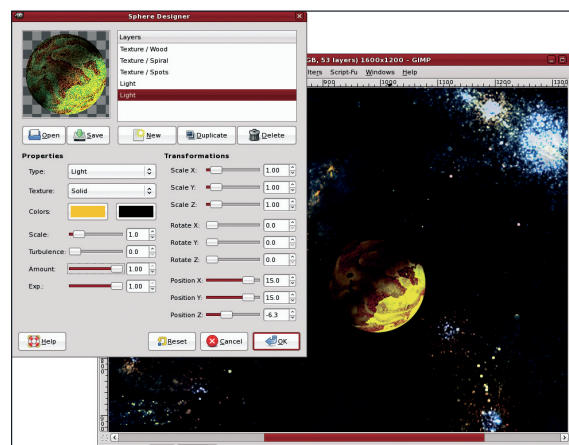
Pick a new foreground colour – try a soft blue with the RGB values set to 57, 99 and 176 – and choose the Paintbrush from the toolbox. Choose a variety of soft brushes and change these often as you paint. If you're using the *Gimp Paint Studio* package, start with the 6_Pincelada100 brush. Otherwise, choose any soft-edged brush. In the Tool Options dialog, set the Opacity to 20%. Now paint space dust in long strokes horizontally, vertically and diagonally. Fill the layer with more dust than you need, then use the Eraser to remove the excess.

Adding a planet

The star field is complete, but you could add a foreground planet to spice it up a little. The Sphere Designer filter makes creating planets simple. Create a transparent 600x600 layer named Planet. Open the filter (Filters > Render > Sphere Designer). Notice that there are three default layers. Each can be edited and you can add more, although new layers are added at the bottom of the stack and you can't change their order. The complete list of settings used to create a planet can be found in the magazine section of your **LXF**DVD. **LXF**



› Space dust serves essentially the same purpose as the Star Glow layer – softening up the bright clusters. However, it also adds some colour to the space voids.



› The planet's size and colours were adjusted after rendering to make it blend in well with the rest of the image.

› **Next month** We'll use Gimp Paint Studio to create a retro sunburst design.