

Playing With Light Rays

**A tutorial in three parts on how to use the
GMIC 'Light Rays' filter in GIMP**



By OldManGrumpy



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Introduction

I created this tutorial following a number of requests from members of the Gimp Chat forum in a thread I originated with the same name – Playing With Light Rays. Essentially this tutorial reflects my own journey and the experience I gained along the way, when learning to use the GMIC Light Rays filter.

Whilst created specifically for **less experienced** GIMP users, it seeks to help both new and more experienced GIMP users create images something like those shown on the title page and also those to be found in the Gimp Chat thread at

<http://gimpchat.com/viewtopic.php?f=11&t=14263>

This tutorial comes in three parts as follows:

1. **Part 1** itself is in three sections, the first of which addresses the basics of the filter, its behaviour and the parameters available to manipulate it. Two short, 'step by step' simple tutorials are then provided, one using a single image/shape and default parameters in the filter to start the 'light rays' ball rolling, the second with a single image, offset from centre and two sets of rays. Colouring options for the light rays are also identified.
2. **Part 2** addresses more complex images with more objects/shapes in a pattern on the canvas each with multiple light rays in varying directions.
3. **Part 3** addresses the creation of shaped objects/images using 'paths' and a 'layer mask' equivalent to produce, direct and focus the light rays as desired. Further manipulation of these rays and colouring options are also identified.

Assumptions

Given that we are using a GMIC filter in this tutorial, then you must have already installed GMIC in your GIMP plug-ins folder. For more information if required please visit:

<http://gmic.eu/gimp.shtml>

Conventions used in this tutorial

Instructions on accessing and using various GIMP functions and filters are expressed in the following format:

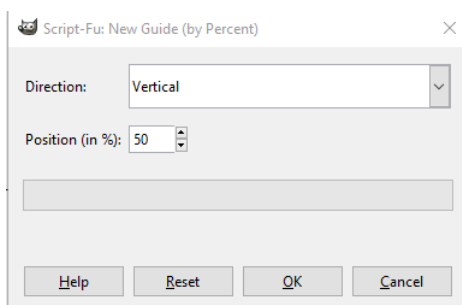
Image>Guides>New Guide (by Percent)...

This means that the user with a mouse, firstly left clicks on **Image** from the main GIMP menu, which then shows a drop down list of Image options available.

From this list the user with a mouse then left clicks on **Guides** to show the Guides options available. From this list the user then left clicks on **New Guide (by Percent)...** to display the following form for completion:

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For ease of reference in this tutorial, I will use both **layer and path names** and instructions to name each such layer/path are included in the step by step dialogue.

References to the path names that we use will be identified like this – **Path name 1**

References to the layer names that we use will be identified like this – **Layer Name 1**

References to any guides we use when positioning objects on the canvas or as we create any required paths, will be in the following format:

Horizontal 1 for horizontal guides, top to bottom.

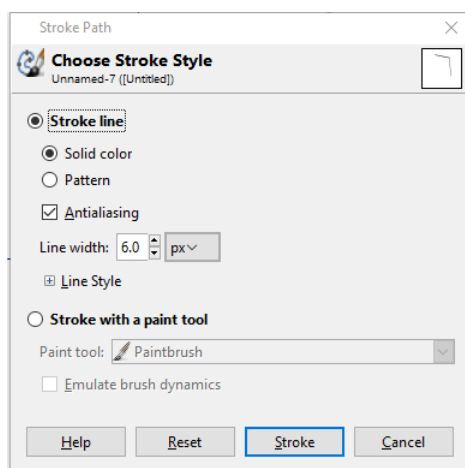
Vertical 1 for vertical guides, left to right.

I should state here that the correct name and location of the 'light rays' filter, the subject of this tutorial, is found under:

Filters>GMIC>Lights & shadows>Light rays

Other Scripts Used In/Required By This Tutorial

When it is necessary to stroke a **single path** I use the standard GIMP tool, **Edit>Stroke Path**, as shown below:



I also use one of **Ofnuts** terrific python scripts called *stroke-visible-paths-0.6.py*, which can be used against **multiple paths**. It can be downloaded from

<http://sourceforge.net/projects/gimp-path-tools/files/scripts/>

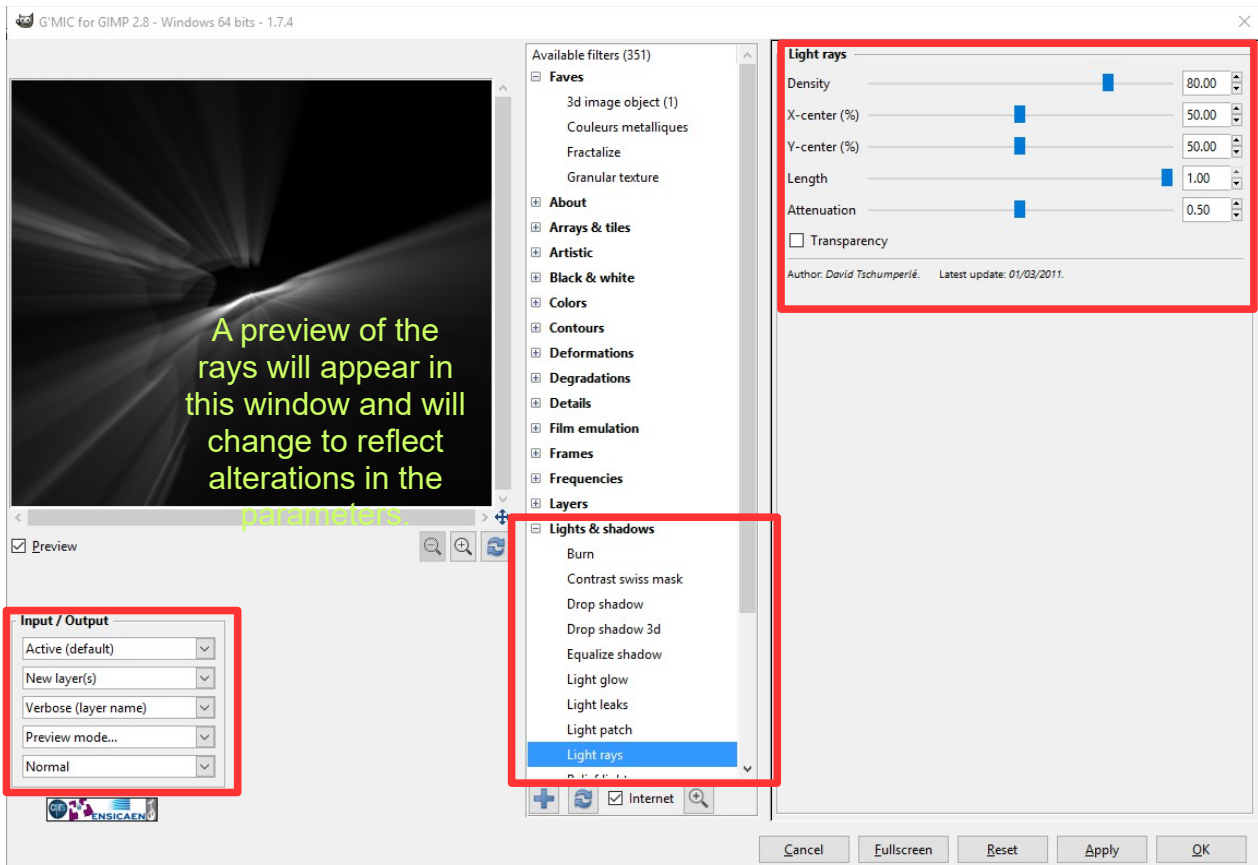
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TUTORIAL PART ONE

Section 1 – the basics of the light rays filter

The image below shows an example of the GMIC filter dialogue that will appear after its selection, which is performed via **Filters>GMIC>Lights & shadows>Light rays** against the **current** layer in the GIMP layers dialogue window. In this case the layer is a silhouette of a ballerina on a transparent background.



The red highlighted sections are :

1. **Input/Output** – whenever using GMIC filters you must set these options first. Typically for this (and most other) filters the values selected from each drop down list should be as shown above. This means the filter processes against the **active layer**, creates a **new layer** for the outcome and **Verbose (layer name)** is extremely useful as GMIC includes both the filter name and your parameter settings in that new layer name.
2. **Lights & Shadows** – indicates that this filter section has been opened up and the blue highlighted 'Light rays' filter has been chosen for operation
3. **Light rays** – in the top right corner contains the **parameters** available to the user when operating this filter in order to modify its operation and change the way in which the light rays appear. A real time **preview** of the result of such actions is shown in the top left corner of the dialogue. When the filter opens, the parameters are all set at their default values, to which you can always return by pressing the **'Reset'** button.

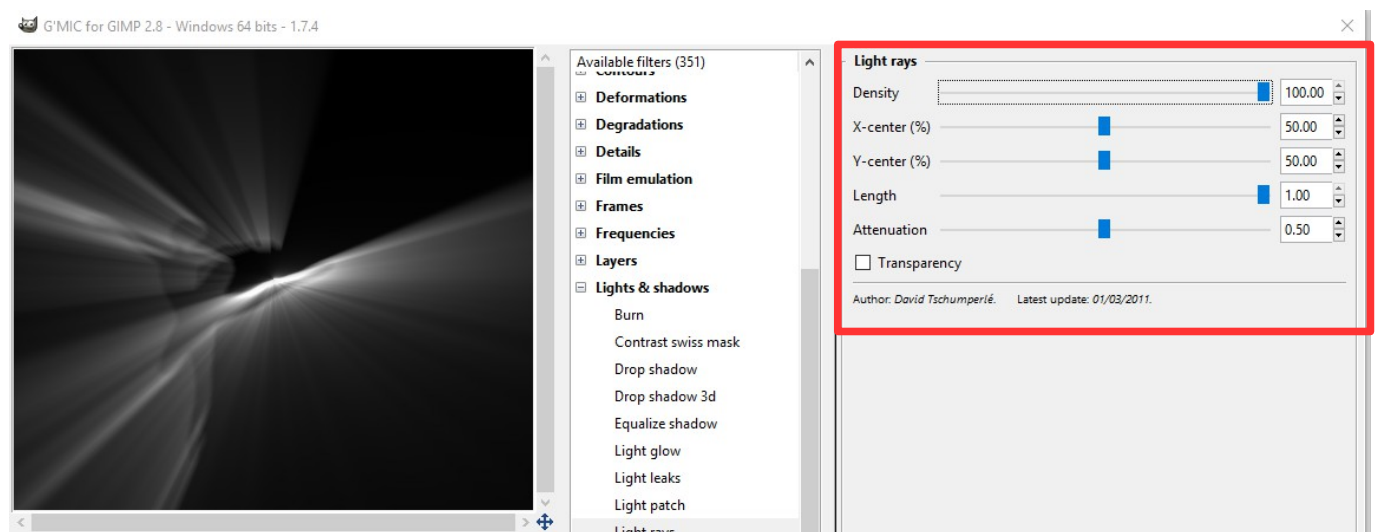
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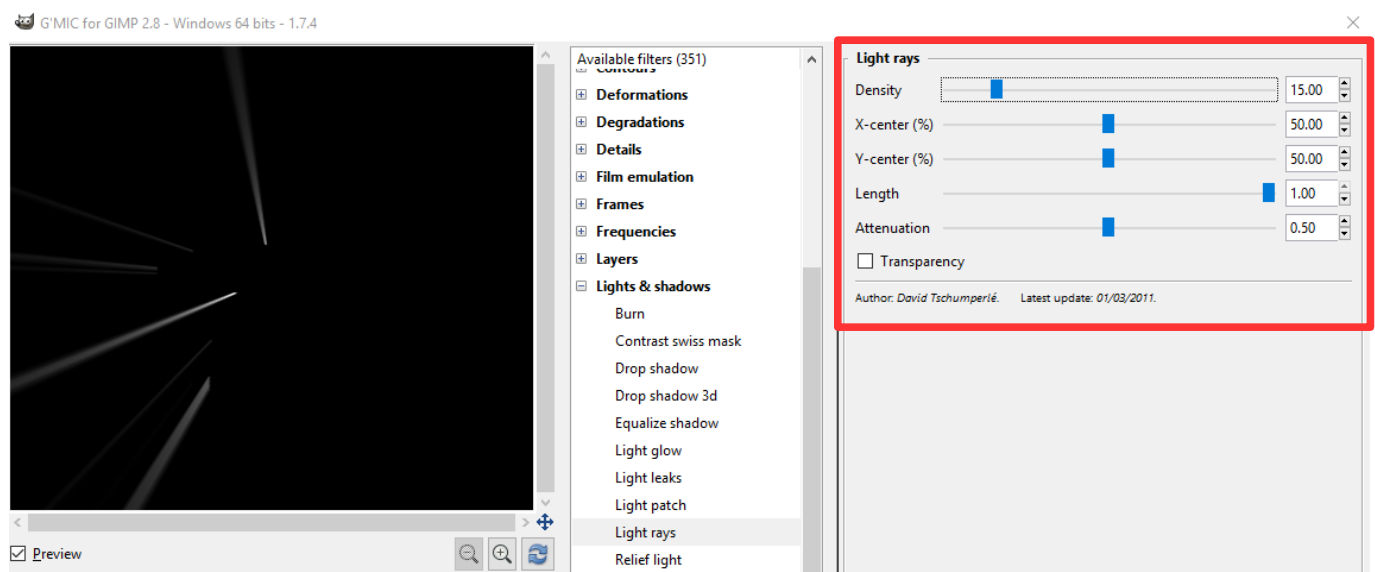
I believe that understanding the effect of changing the values of these parameters is **fundamental** to obtaining your desired and many different outcomes with this filter – although I am a great fan of serendipity! Lets look at what happens with each available parameter in the examples below of a ballerina silhouette, offset from centre on a transparent background.

Density

In the example image above, default **Density** set at default 80%, the light rays are both long and broad. You can see the difference immediately below when the density value is increased to 100% as the rays are thicker/brighter and the ballerina shape is clearly visible.



When the **Density** is set to 15% as in the image below, there is a significant change and the rays resemble thin light beams and no discernible ballerina can be seen.



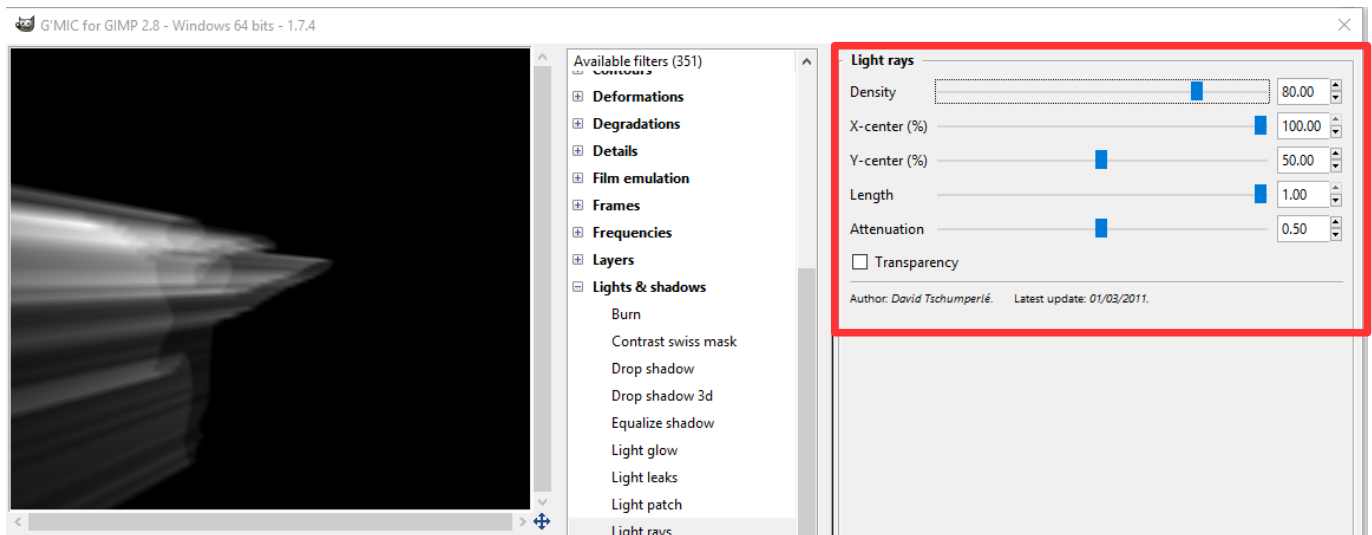
Practice varying these **Density** settings to better understand the results that can be obtained with different values.

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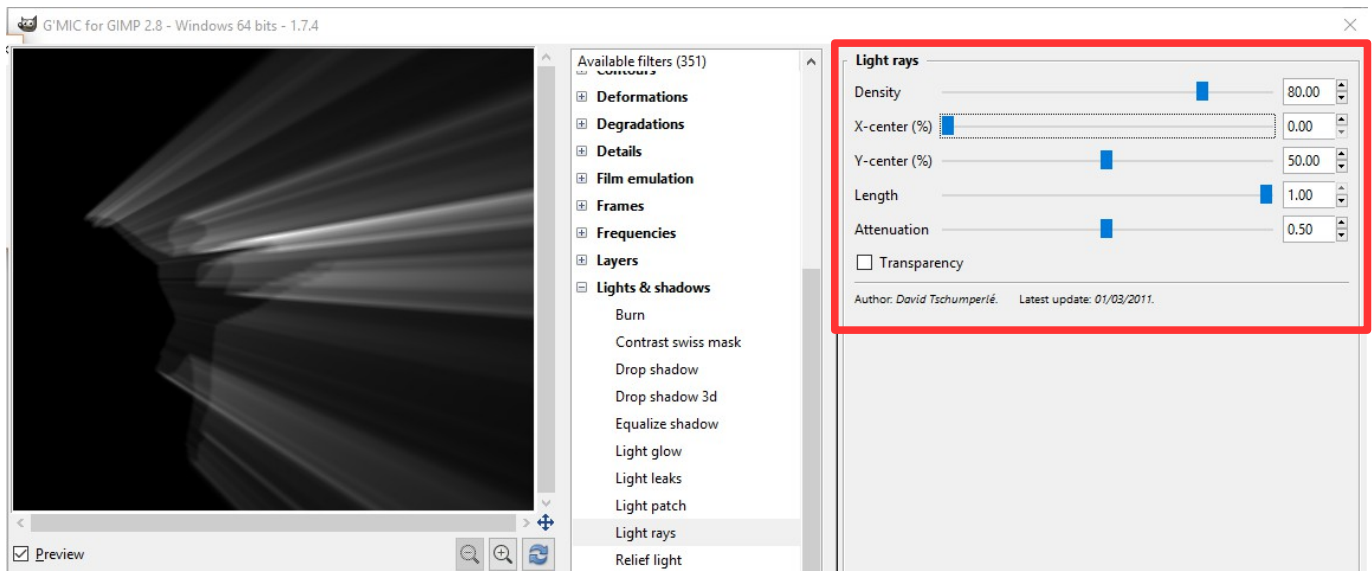
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X-center (%)

This parameter directs the centre of the light rays position along the X axis – that is 0% means fully directed to the right and 100% means fully directed to the left. In the example image below the **X-center (%)** value has been changed to 100% but all others are at default values. The impact is clear as the rays now start at the right border of the ballerina silhouette and shoot left.



When **X-center (%)** value is changed to 0% the rays start at the left border of the ballerina silhouette and shoot right as shown below.



Practice varying these **X-center (%)** settings 0% to 100% to better understand the results that can be obtained.

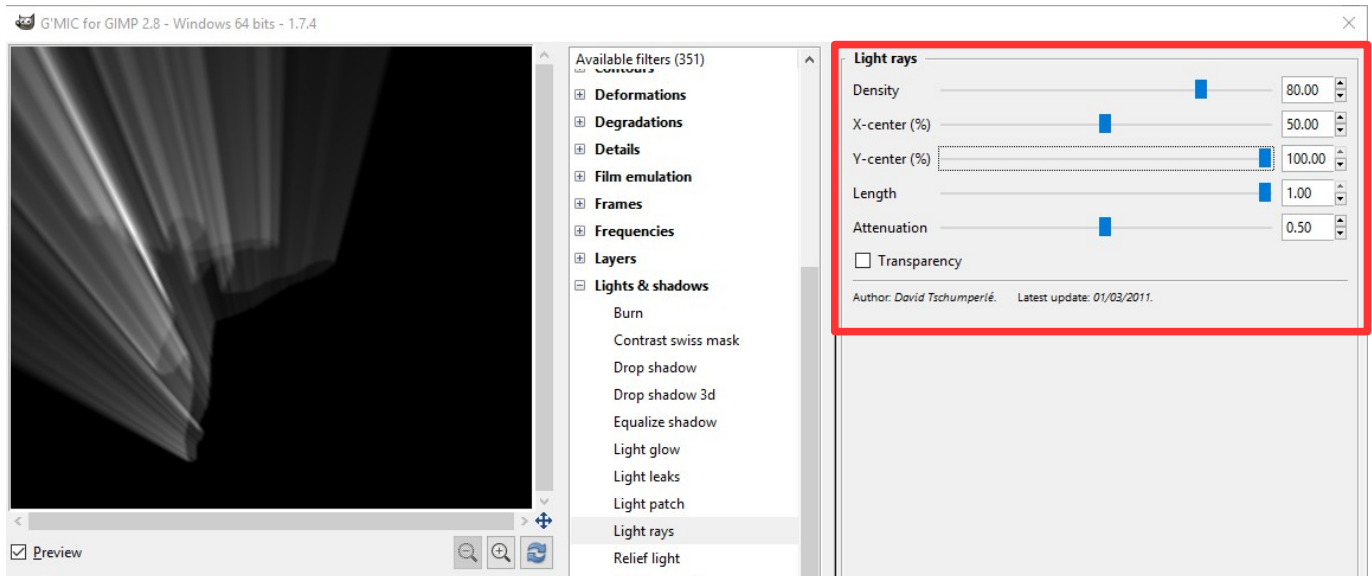
Y-center (%)

This parameter directs the centre of the light rays position along the Y axis – that is 0% means fully directed downwards and 100% means fully directed upwards. In the example image below

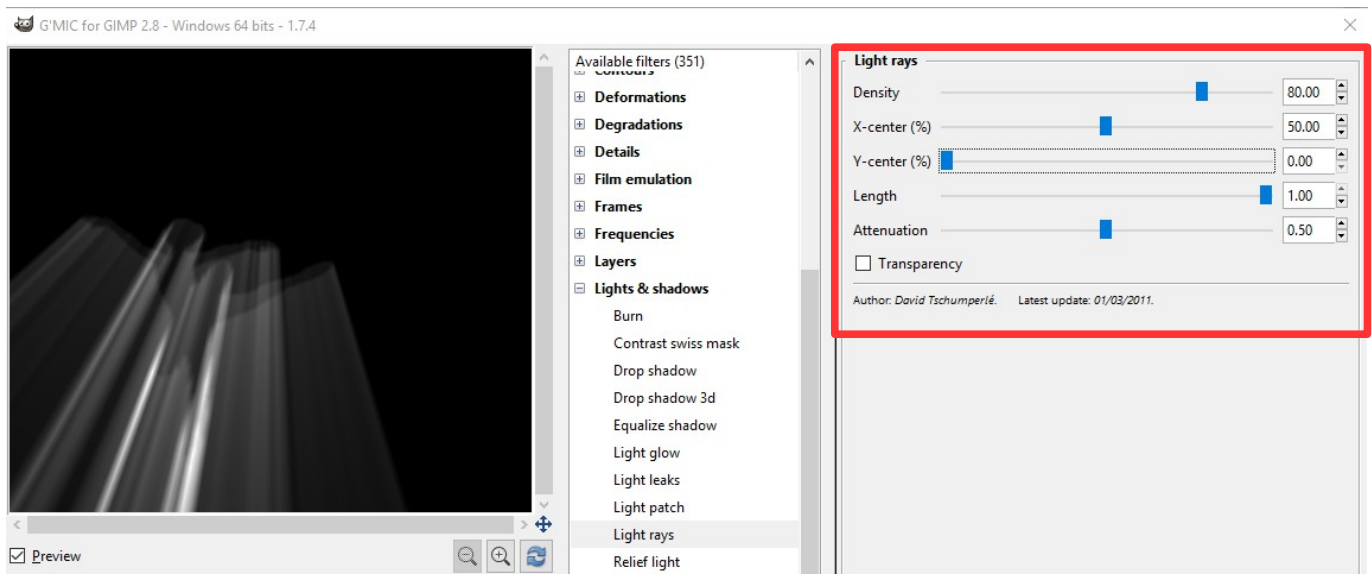
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the **Y-center (%)** value has been changed to 100% but all others are at default values. The impact is clear as the rays now start at the bottom border of the ballerina silhouette and shoot upwards.



When **Y-center (%)** value is changed to 0% the rays start at the top border of the ballerina silhouette and shoot downwards as shown below.



Practice varying these **Y-center (%)** settings from 0% to 100% to better understand the results that can be obtained.

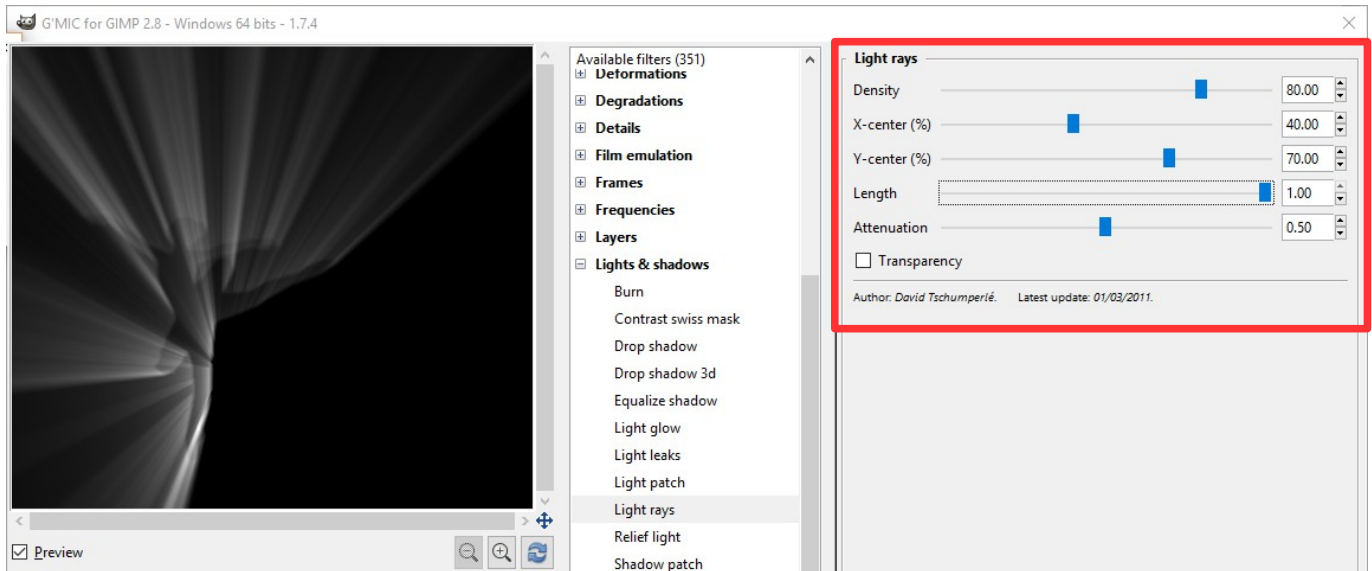
Changing X-center (%) and Y-center (%) values in combination

When you have developed an increased awareness of just what effects the individual changes to the X and Y axes produce, it is time to try changing both X and y parameter values in combination. I have produced an example below for an image, slightly off centre, with X centred at 40% and Y centred at 70%.

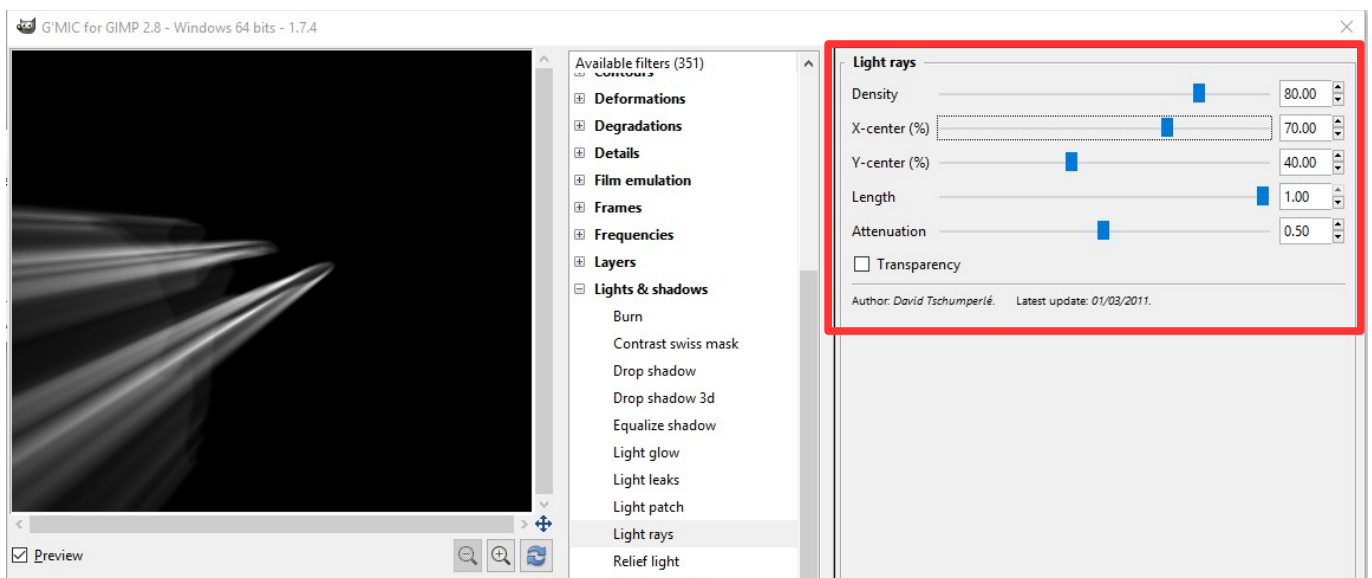
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You can see that these changes in combination force the rays away from the right side of the canvas based on the X axis value (40%) and away from the bottom level of the canvas based on the Y axis value (70%). this means that first quadrant clockwise is half covered in rays and the second quadrant clockwise has no rays at all.



Reversing these values produces a concentration of sharply focused rays in the third quadrant clockwise of the image as shown in the example below.



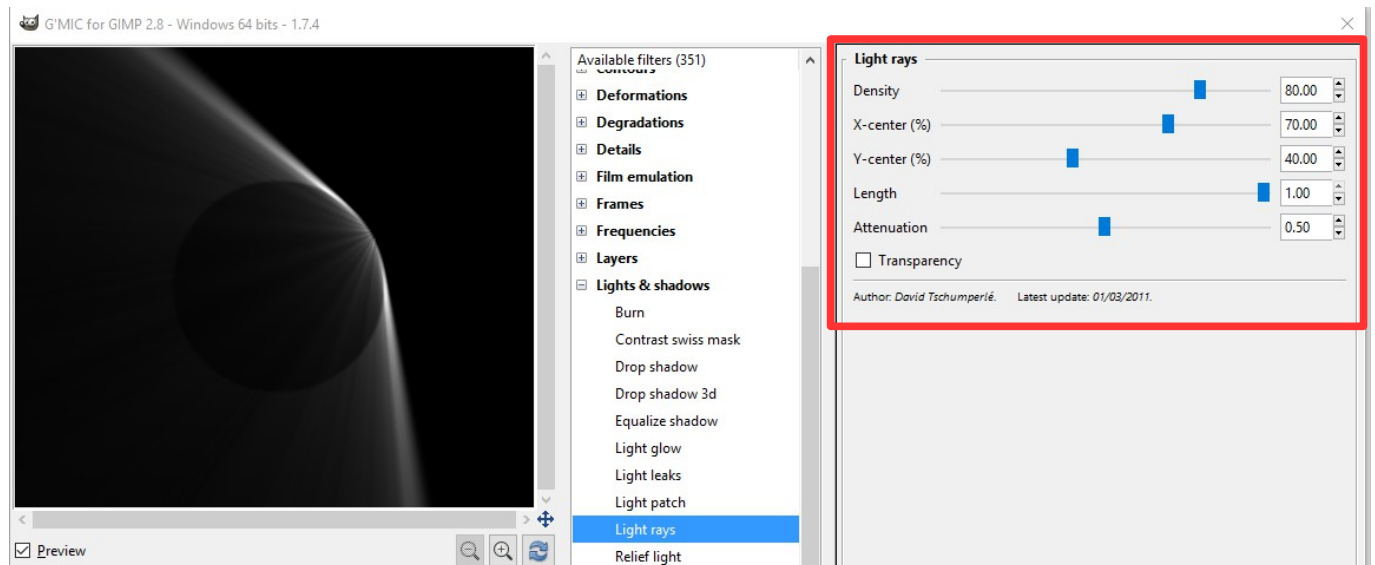
Now these examples should have provided you with some idea of the potential outcomes of manipulating these X and Y axis parameters. However, it seems there are other factors in the internal algorithm of the filter that need to be taken into account, but over which you will probably have little or no influence:

1. the **shape of the subject image** to which the filter is applied
2. the **location** of that image on the canvas
3. the **size** of the subject image.

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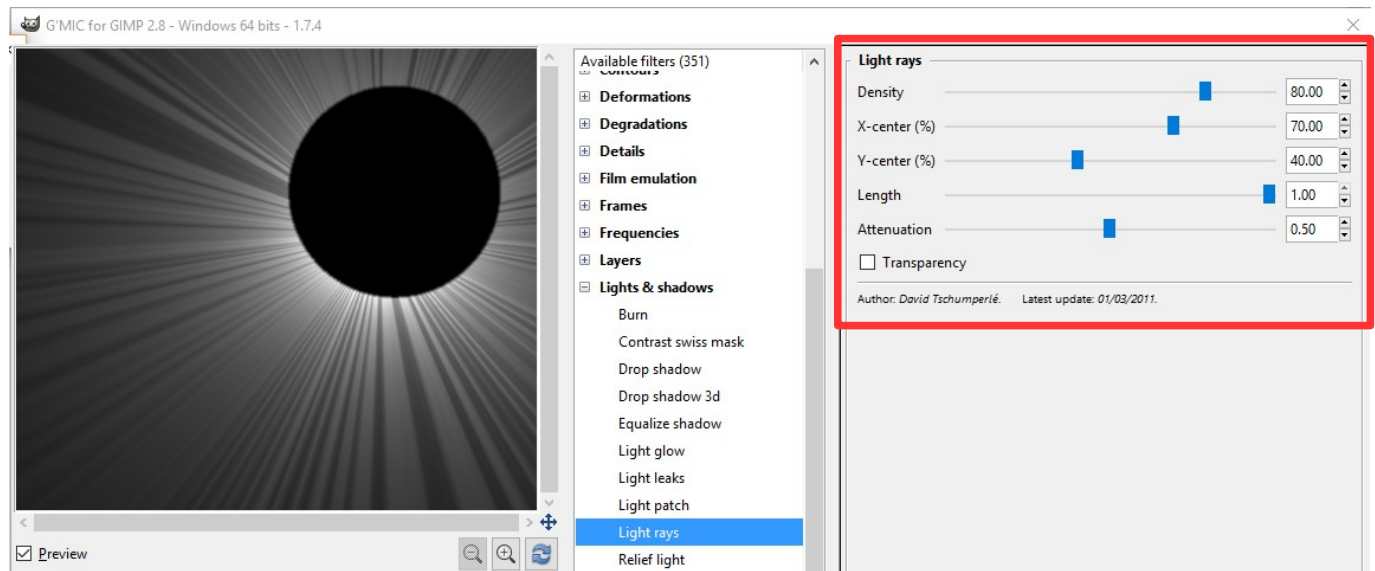
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I have exemplified this below, using the **same axis parameters** as above, for a black sphere positioned centrally, then top right and a smaller sphere positioned top right.



The centralised sphere above appears to conform somewhat with previous examples of the ballerina with the rays starting from right edge shooting upwards and downwards to the left.

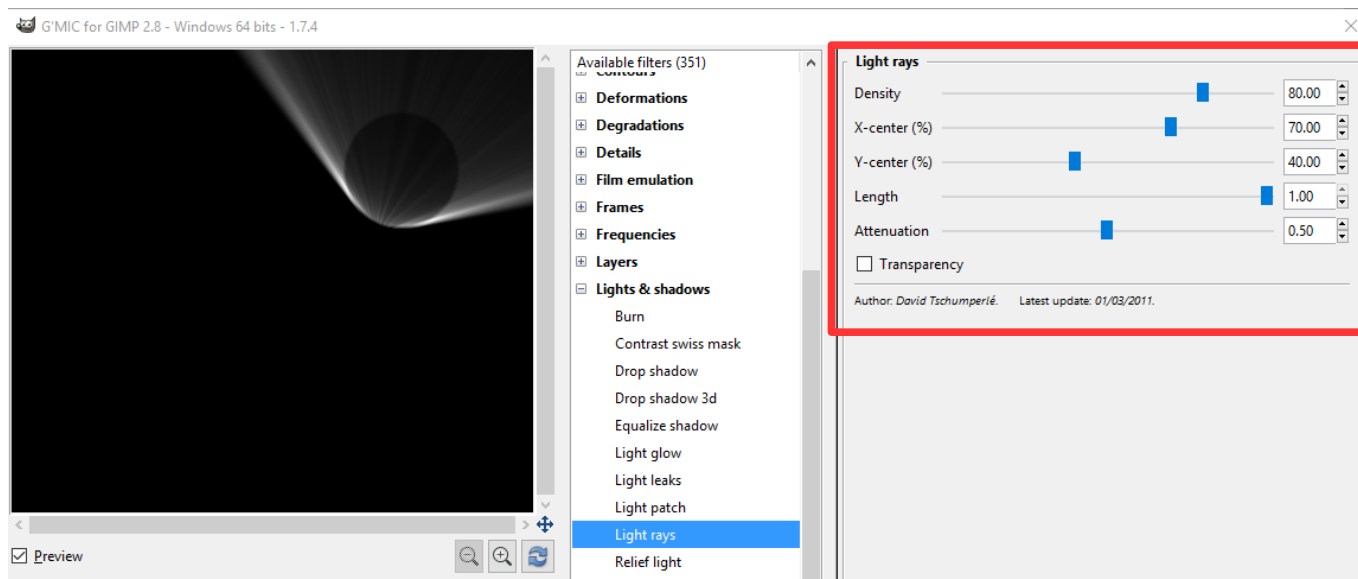
However, when the same size sphere is located in the top right quadrant of the canvas the behaviour of the rays changes dramatically even with the same parameter settings.



For a smaller sphere located in the top right quadrant of the canvas, the behaviour of the rays with the same parameter settings is different again, as the example image shows below. The rays start from the lower edges and shoot upwards to both left and right.

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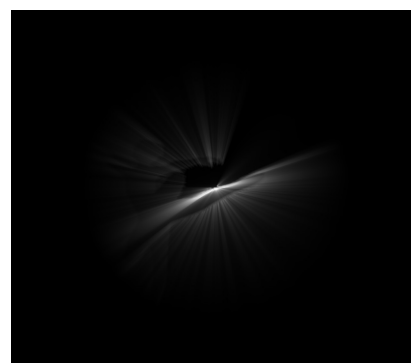
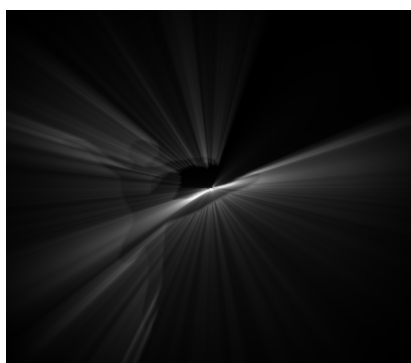
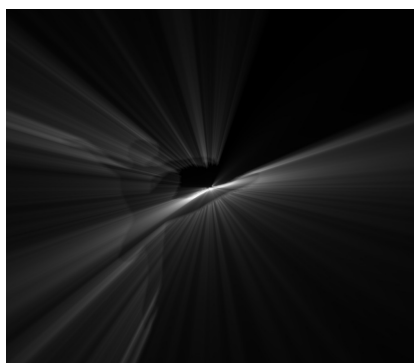


Practice varying both the **X-center (%)** and **Y-center (%)** settings in combination, from 0% to 100% against rectangles, spheres and other odd shapes to better understand the results that can be obtained against various shaped objects in different locations on the canvas.

So, the conclusion is that, whilst you may find it difficult to predict exactly the how the light rays will look in any given situation, you should have a general idea of what outcome you can obtain. Later in this series of tutorials we will show ways of homing/shaping the rays more to your liking.

Length

This parameter sets the relative length of the light rays produced by the filter as demonstrated by these examples showing lengths of 1.00, 0.50 and 0.00.



Practice changing the value of this parameter to become comfortable with its impact on the rays of your selected image.

Attenuation

Attenuation is defined as “a general term that refers to any reduction in the strength of a signal and is a natural consequence of signal transmission over long distances”. I take this to mean that the light ray will fade progressively over its length at a rate governed by the value of this

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parameter. However, I have not observed any impact from changing the value of this parameter and I do not use it.

Transparency

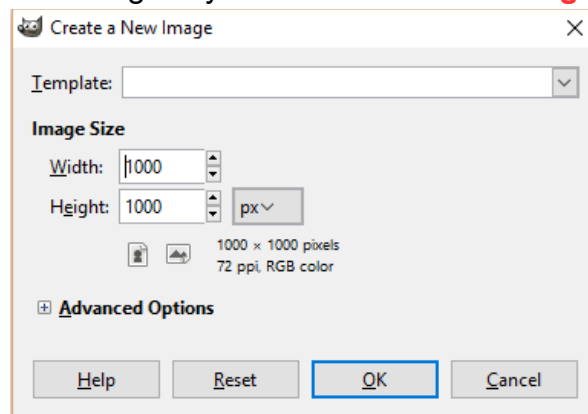
This check box parameter governs whether the light ray produced has a black or transparent background. I use both types of outcomes for different effects and find the black background used with blend mode [Screen](#) is extremely effective, especially when multiple or duplicate light ray layers are used.

Section 2 – Step by Step Tutorial 1

Hopefully you have not been deterred by my long introduction to the GMIC light rays filter, so now lets create our first light rays image. Enclosed with this tutorial set is a 'png' image of a ballerina in silhouette, which we will use in our first creation with standard GIMP gradients.

Our objective is to create an evocative image using only one set of light rays, the default settings and some coloured gradients. Remember to save your xcf file regularly.

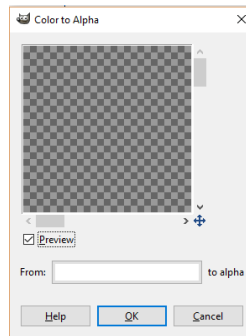
1. Let's open a new canvas; click on [File>New](#) to show the [Create a New Image](#) window as below, then enter 1000 pixels for both [Width](#) and [Height](#) of the image canvas and click OK. You will then have a single layer in white named **Background**.



2. To assist with positioning, lets set up some 'cross hair' guides at the centre of your canvas. Move your cursor to the top edge of the canvas window, left click, hold the button down and then drag a [horizontal guide](#) level with the 500 pixel marker on the far left of you canvas.
3. Now move the cursor to the far left of your canvas and repeat the actions in step 2 to create a [vertical guide](#) at the 500 pixel marker at the top of your canvas window.
4. Now click [File>Open as Layers](#) and in the file selection dialogue select the **omg_lightrays_ballerina.png** file from wherever you stored it after downloading this tutorial.
5. If you see that the silhouette is on a white background. You can delete this background with a right click on the ballerina layer and select [Colors>Color to Alpha](#) from the menus to display the window below, nominating that white will change to transparent. Click [OK](#) and then you will now have the ballerina on a transparent background.

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6. Now select [Filters>GMIC](#) to display the GMIC menu window. Then select [Lights & shadows>Light rays](#). You should then see the preview window with light rays around the ballerina shape based on the default values discussed in section 1 above. Make sure that you have the [Input/Output](#) options selected correctly as on page 4 above.
7. Click the [Apply](#) button in the GMIC window and as a result a new layer in [Normal](#) blend mode will be created named **[G'MIC] Light rays: -gimp_lightrays 80,50,50,1,0.5,0**. Then you can close the GMIC window. Everything looks a bit bland right now so let's create a new transparent layer and add some colour.
8. Right click in the [Layers dialogue](#) window to display the menu, select [New Layer](#) to display the [Create a New Layer](#) window, ensure you select the [Transparency](#) option then click the [OK](#) button to create the layer which will be named automatically as [Layer #1](#).
9. Double click on the layer name and rename the layer as [yellow orange](#).
10. Now select the [Blend Tool](#) in the [Tools](#) window. In the [Tools Options](#) tab search for and select the standard [Yellow Orange](#) gradient. Then in the [Shape](#) selection drop down, choose [Radial](#).
11. Position your cursor on the centre cross hairs, hold down the left mouse button and drag directly right approximately to the 930 pixel mark, then release the left button to apply the gradient colour.
12. Change the blend mode of this gradient layer to [Overlay](#) via the drop down selection box at the top of the Layers dialogue. You should now be able to see your first coloured ray image but we have not finished yet.
13. Now repeat steps 8 through 12, this time using the standard [Golden](#) gradient. This will reduce the extent of the coloured rays and provide a circular effect.
14. Next repeat steps 8 through 12 but this time using the standard [Shadows 1](#) gradient. You will see that this addition now gives you a bowl effect in the middle of the screen surrounding the ballerina in the GMIC light rays layer.
15. Repeat steps 8 through 12 again using the [Shadows 1](#) gradient, but this time selecting the shape as [Conical \(asym\)](#). This time drag the cursor from the centre to the top right corner of the canvas. You will now see that a richer colour has been effected to the coloured bowl. Reflect the change to the conical shape when you modify the layer name. But we have not finished yet!
16. Now relocate the **omg_lightrays ballerina** silhouette layer to the top position, above all others. You should now have a beautiful silhouetted ballerina set in a golden bowl of light rays – simple was it not?
17. Optionally you can right click on the [Layers](#) dialogue and select [New From Visible](#) to create the image on a single layer at the top. Then you might like to run [Filters>Enhance>Unsharp Mask](#) against that layer to optimise the light rays.
18. Your completed light rays image should look something like my version below.

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Section 3 – Step by Step Tutorial 2

Our objective this time is to create another impressive silhouette image, this time using two sets of rays, each with custom settings and some coloured gradients. Enclosed with this tutorial set is a 'png' image of cupid silhouette, which we will use in this second image, this time with different gradients also included in the tutorial kit.

This particular image contains a set of 'heavy' looking light rays that my Gimp Chat friend Issabella is curious about.

Once again remember to save your xcf file regularly.

1. Let's again open a new canvas; click on [File>New](#) to show the [Create a New Image](#) window, then enter 1000 pixels for both [Width](#) and [Height](#) of the image canvas and click OK. You will then have a single layer in white named **Background**.
2. To assist with positioning once more, let's set up some 'cross hair' guides at the centre of your canvas. Move your cursor to the top edge of the canvas window, left click, hold the button down and then drag a [horizontal guide](#) level with the 500 pixel marker on the far left of your canvas.

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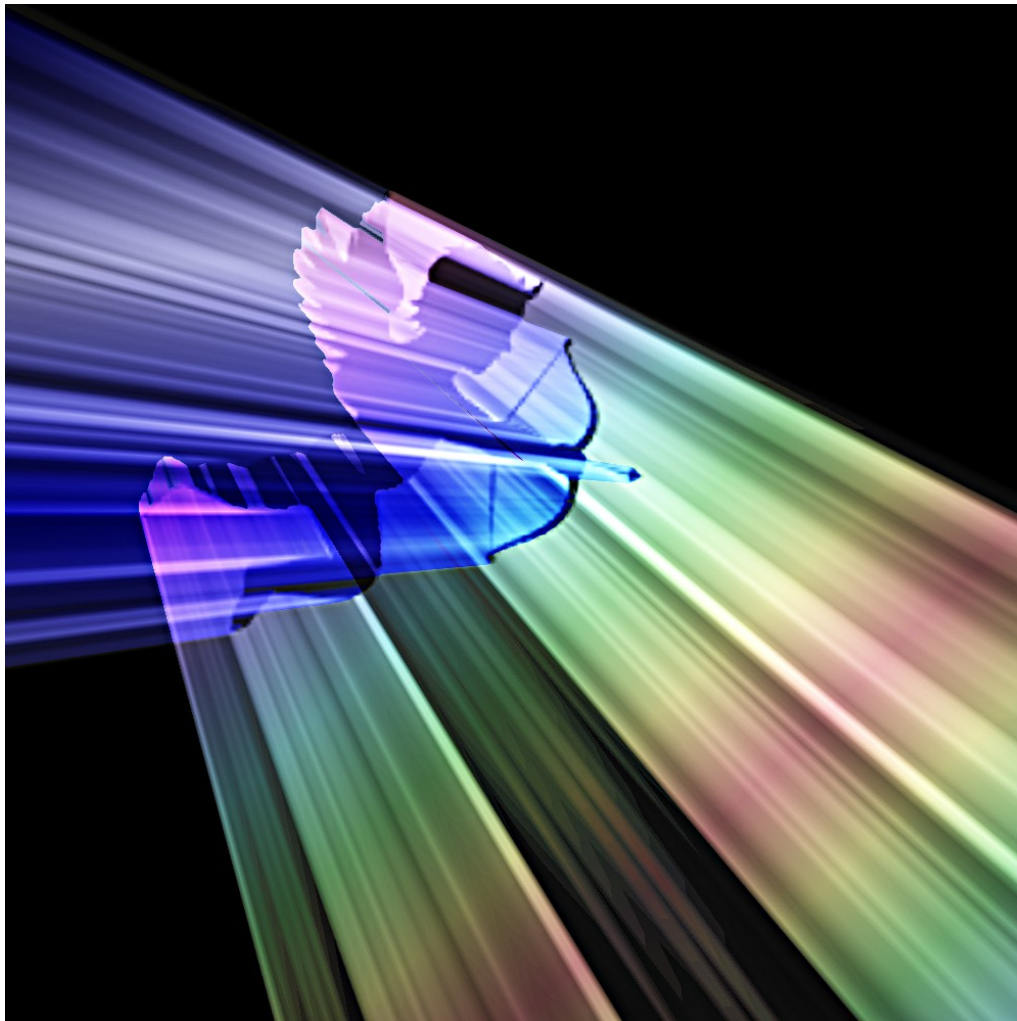
- Now move the cursor to the far left of your canvas and repeat the actions in step 2 to create a **vertical guide** at the 500 pixel marker at the top of your canvas window.
- Select **File>Open as Layers** and in the file selection dialogue select the **omg_cupid_silhouette.png** file from wherever you stored it after downloading this tutorial. Notice that the silhouette is not centred but is positioned upwards towards the top left of the canvas.
- Now select **Filters>GMIC** to display the GMIC menu window. Then select **Lights & shadows>Light rays**. You should then see the preview window with light rays surrounding the cupid shape based on the default values of this filter as discussed in section 1 above – unless of course you have not closed Gimp since the previous tutorial and those settings are still active. If that is the case please click on the **Reset** button. Make sure also that you have the **Input/Output** options selected correctly as on page 4 above.
- Now for the first set of rays, move both **X-center (%)** and **Y-center (%)** sliders to zero %. You will see in the preview window that the resulting rays start from the top edge of cupid and shoot towards the bottom right corner. If that is so, then click on the **Apply** button in the GMIC window and as a result a new layer in **Normal** blend mode will be created named **[G'MIC] Light rays: -gimp_lightrays 80,0,0,1,0.5,0**. Do not yet close the GMIC window as we will create a second set of rays.
- Next move the **X-center (%)** slider to 100% and the **Y-center (%)** slider to 50%. You should now see in the preview window that these rays start on the right of cupid and shoot left and slightly upwards. If so close the GMIC window.
- For the last GMIC layer created set the blend mode to Screen. Both sets of rays will now be visible, so now you can add the colour elements.
- Firstly though lets prepare a selection to colour; from the **Tools dialogue** choose the **Select by Color** tool then click in the top right corner of that **first** GMIC created layer which should then create a selection based on the colour black.
- Now right click on the canvas and choose **Select>Invert** and then click to reverse the selection, which now represents the light rays shooting bottom right.
- Right click in the **Layers dialogue** window to display the menu, select **New Layer** to display the **Create a New Layer** window, ensure you select the **Transparency** option then click the **OK** button to create the layer which will be named automatically as **Layer #1**.
- Now select the **Blend Tool** in the **Tools** window. In the **Tools Options** tab search for and select the standard **Pastel Rainbow** gradient. Then in the **Shape** selection drop down choose **Bi-linear**.
- Position your cursor on the centre guide at the bottom of the image (i.e pixel reference 500 x 1000) then hold down the left mouse button and drag diagonally left to the guide at the left centre (i.e pixel reference 0 x 500), then release the left button to apply the gradient colour. Then right click and choose **Select>None** to clear the selection.
- Double click on the layer name and rename the layer as **pastel rainbow**, then apply blend mode **Overlay** and duplicate the layer.
- Again from the **Tools dialogue** choose the **Select by Color** tool then click in the top right corner of that **second** GMIC created layer which should then create a selection based on the colour black.
- Now right click on the canvas and choose **Select>Invert** and then click to reverse the selection, which now represents the light rays shooting upwards left.
- Right click again in the **Layers dialogue** window to display the menu, select **New Layer** to display the **Create a New Layer** window, ensure you select the **Transparency** option then click the **OK** button to create the new layer.
- Now select the **Blend Tool** in the **Tools** window. In the **Tools Options** tab search for and

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select the [Reflection Blue](#) gradient. Then in the [Shape](#) selection drop down choose [Bi-linear](#).

19. Position your cursor on the cross hairs guide in the centre of the image (i.e pixel reference 500 x 500) then hold down the left mouse button and drag directly up to the top of the canvas (i.e pixel reference 500 x 0), then release the left button to apply the gradient colour. Then right click and choose [Select>None](#) to clear the selection.
20. Double click on the layer name and rename the layer as **reflection blue**, then apply blend mode [Overlay](#) and then duplicate the layer.
21. You will note that the coloured rays now overlap and that there is no discernibly visible cupid. So now left click on the **omg_cupid_silhouette** layer and move it up between the two GMIC created layers or move it directly to the top – your preference. That is it, a second light rays silhouette image using multiple rays and custom settings.
22. Optionally you can right click on the [Layers](#) dialogue and select [New From Visible](#) to create the image on a single layer at the top. Then you might like to run [Filters>Enhance>Unsharp Mask](#) against that layer to optimise the light rays.
23. Your completed light rays image should look something like my version below.



So now you can move on to tutorials 3 and 4, which can be found in separate documents, or just experiment yourself with light rays, their settings and colouring methods. Be sure though to have fun and thank you for doing my tutorial.