

ANDREW PRICE



THE WOW FACTOR

Create jaw dropping effects in Blender

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FOREWORD

Hello and congratulations for choosing to learn more about the compositor!

When I first started using the compositor I was as complexed and confused as you are, if not more so! So I know exactly how you are feeling right now. I have since learnt the ins and outs of everything relating to the compositor and will be guiding you through your entire learning process. Don't stress!

I have jam packed this book with tips, explanations, screenshots and tutorials, so understanding the compositor should be a breeze.

By the end of this book I expect you to be able to grab the compositor by the horns and harness it to bring you amazing results. So don't wait a second longer, get into it!



Andrew Price

Introduction

What is the compositor?

The compositor is a way of adding effects, making adjustments and combining elements within blender, to create a more polished image. Color grading, motion blur, render passes, lens distortion and depth of field, are just some of the things that you can do with the compositor.

Original Render:



After Compositing:



■ Getting started Introduction

How does it work?

The compositor works off a **node based system**, which means the final look of the image is controlled by connecting boxes that are joined together with squiggly lines. It can be confusing at first, but once you understand the basics it will all make sense.

The best way to understand compositing is to imagine it as one big conveyor belt.

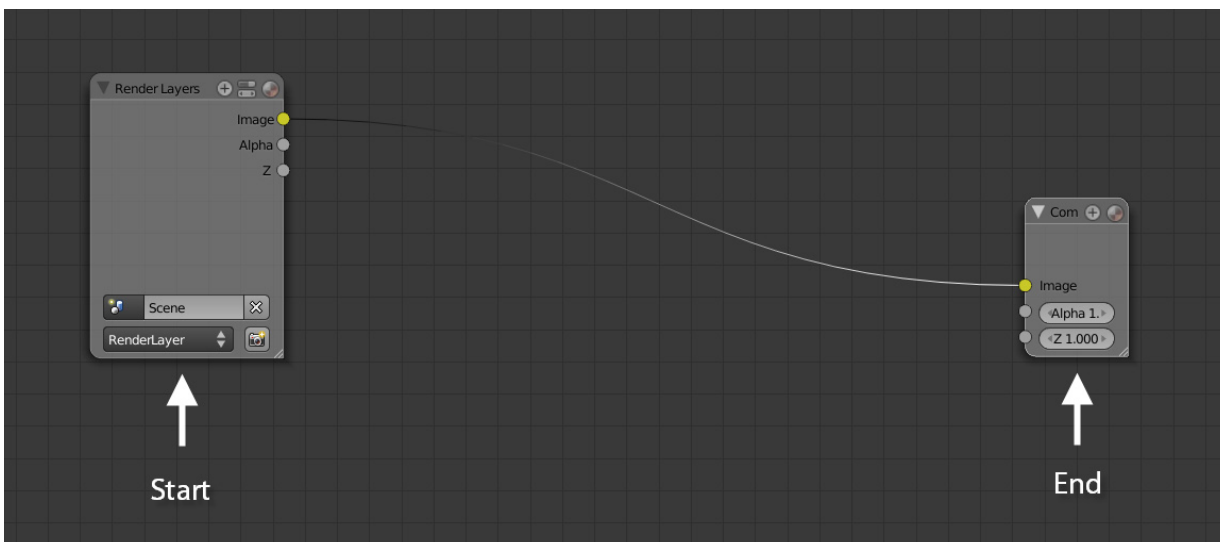


Photo: Special KRB / Karen

At the start, a piece of food is placed on the belt. Then as the food moves along, machines change things, add things, remove things and combine things, until finally the food reaches the end of the conveyor belt where a final product is declared.

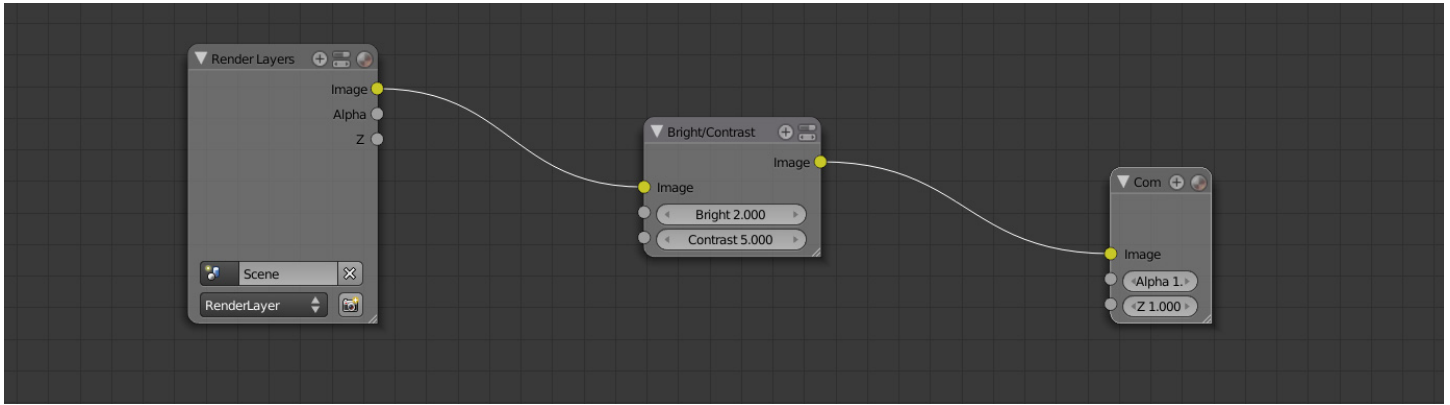
That is essentially what the compositor does.

The **render layer** acts as the starting point, and the **composite node** acts as the end point.



■ Getting started Introduction

Along the line, nodes step in and can make adjustments.

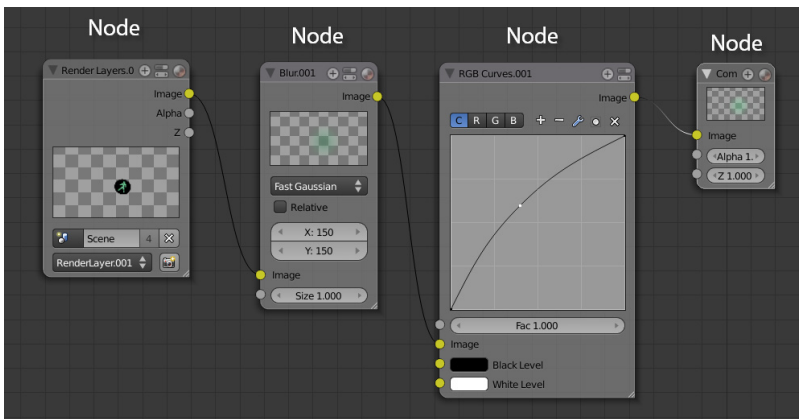


Which in turn, changes the final result.

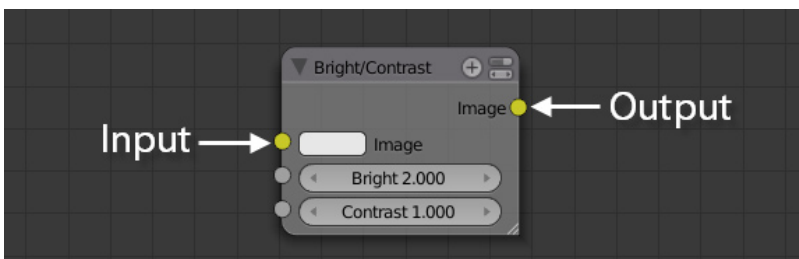


What are nodes?

Nodes are boxes that act as control points along the render line. Each node has a different job and can be added, removed or duplicated accordingly.

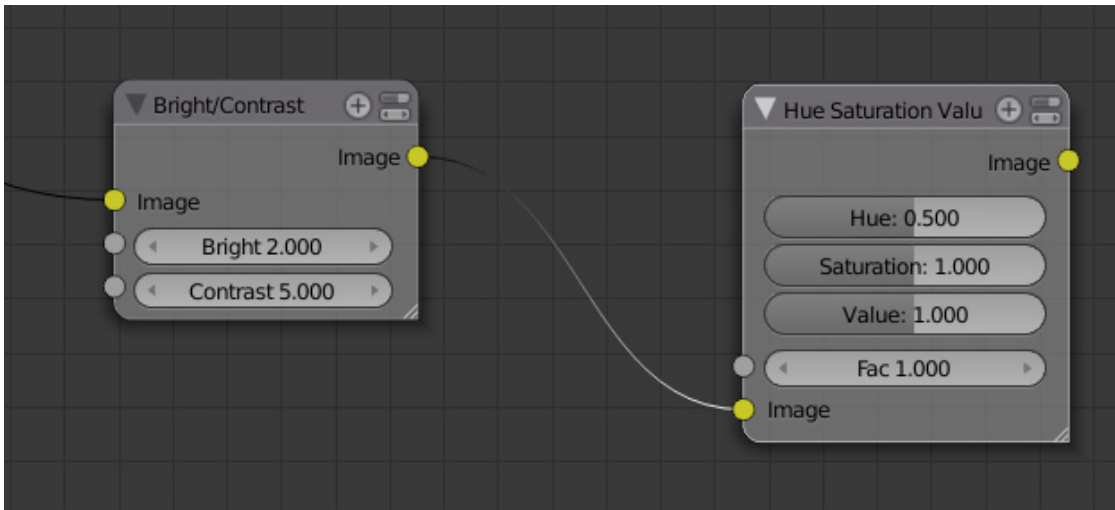


Most nodes have an input and an output.

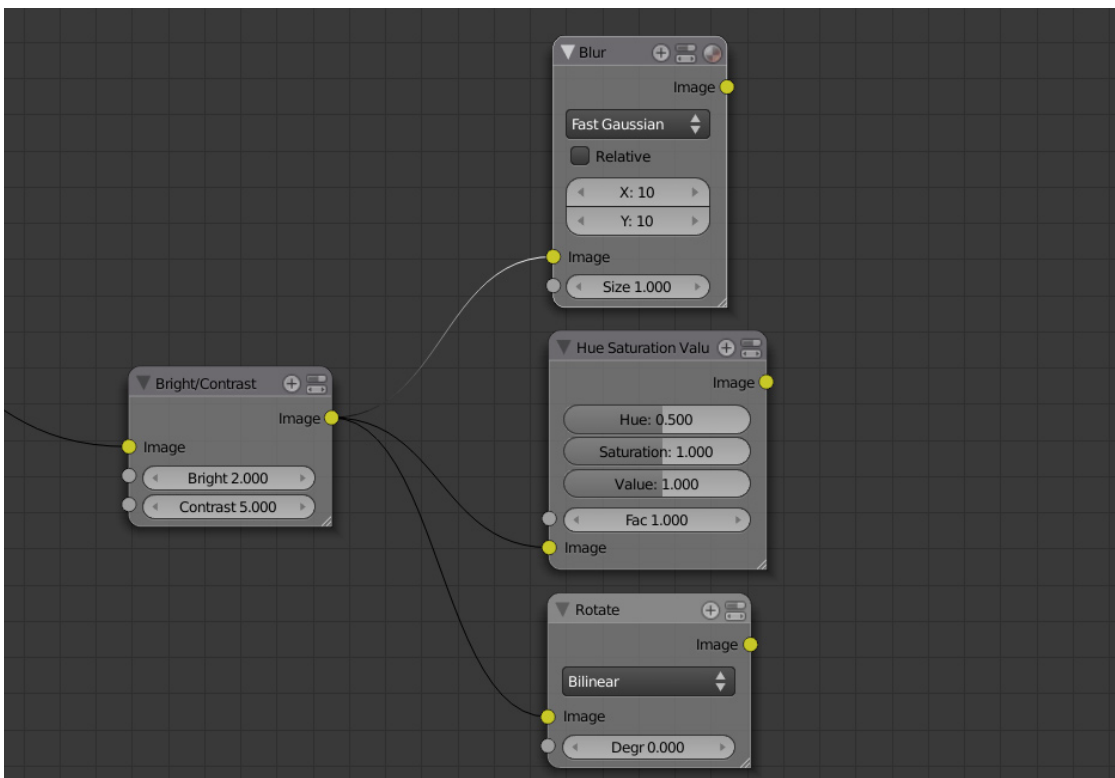


■ Getting started Introduction

The squiggly line (called a node string) is connected from one output, into the input of another.

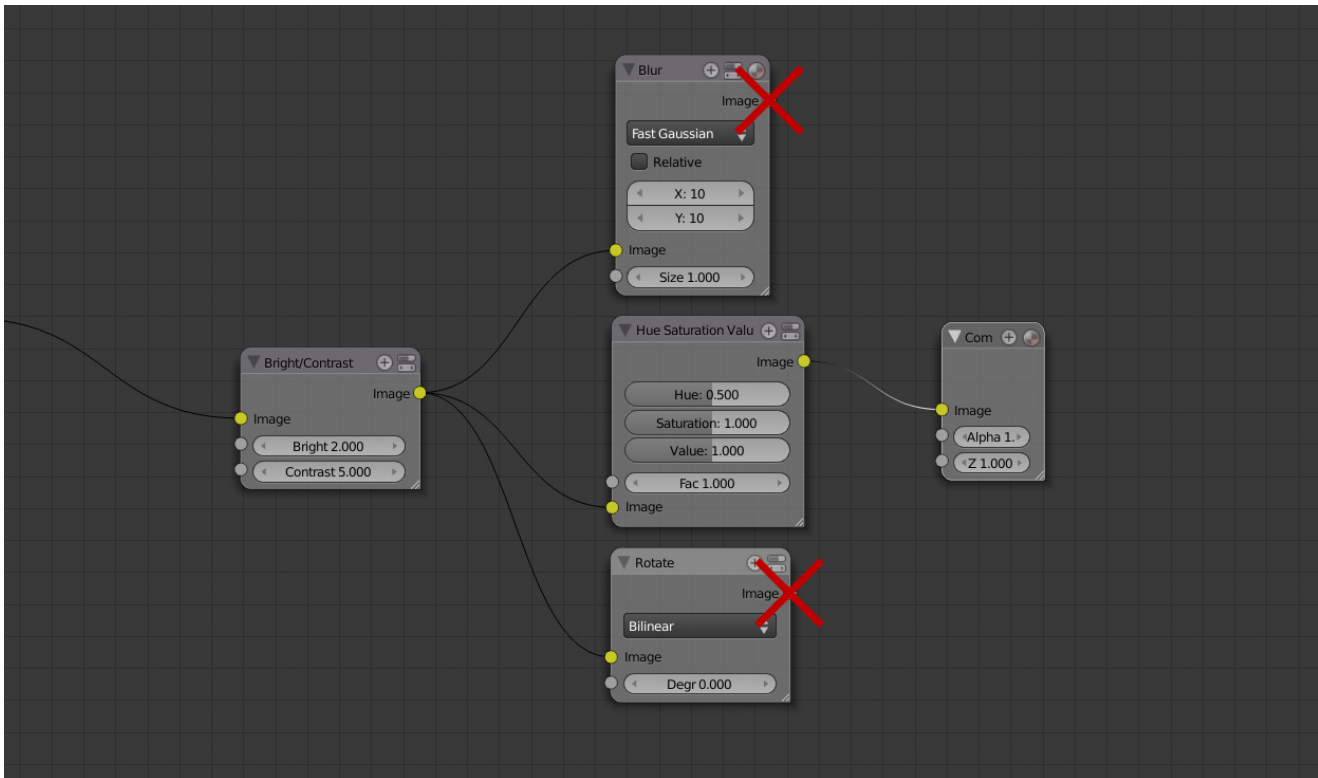


The output of one node can also be split up to go into multiple nodes.

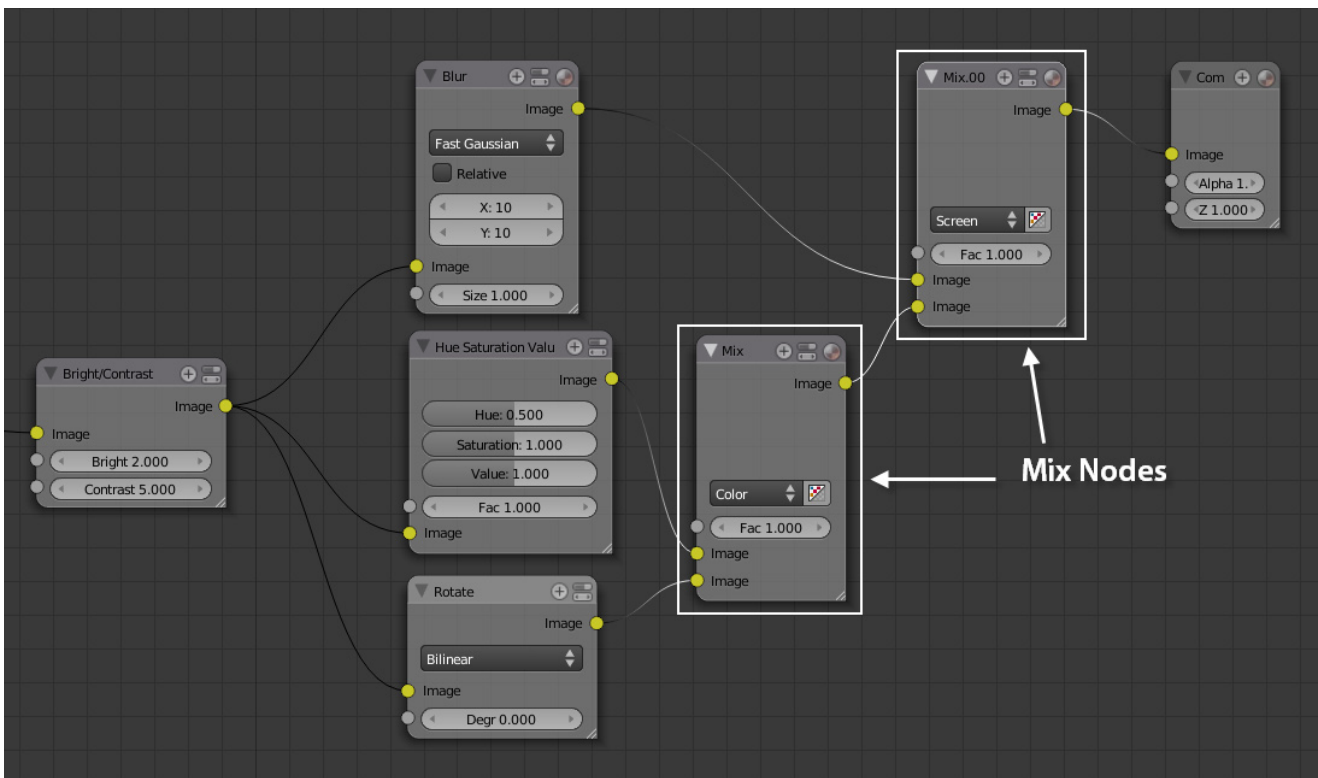


■ Getting started Introduction

However only one node can occupy an input.



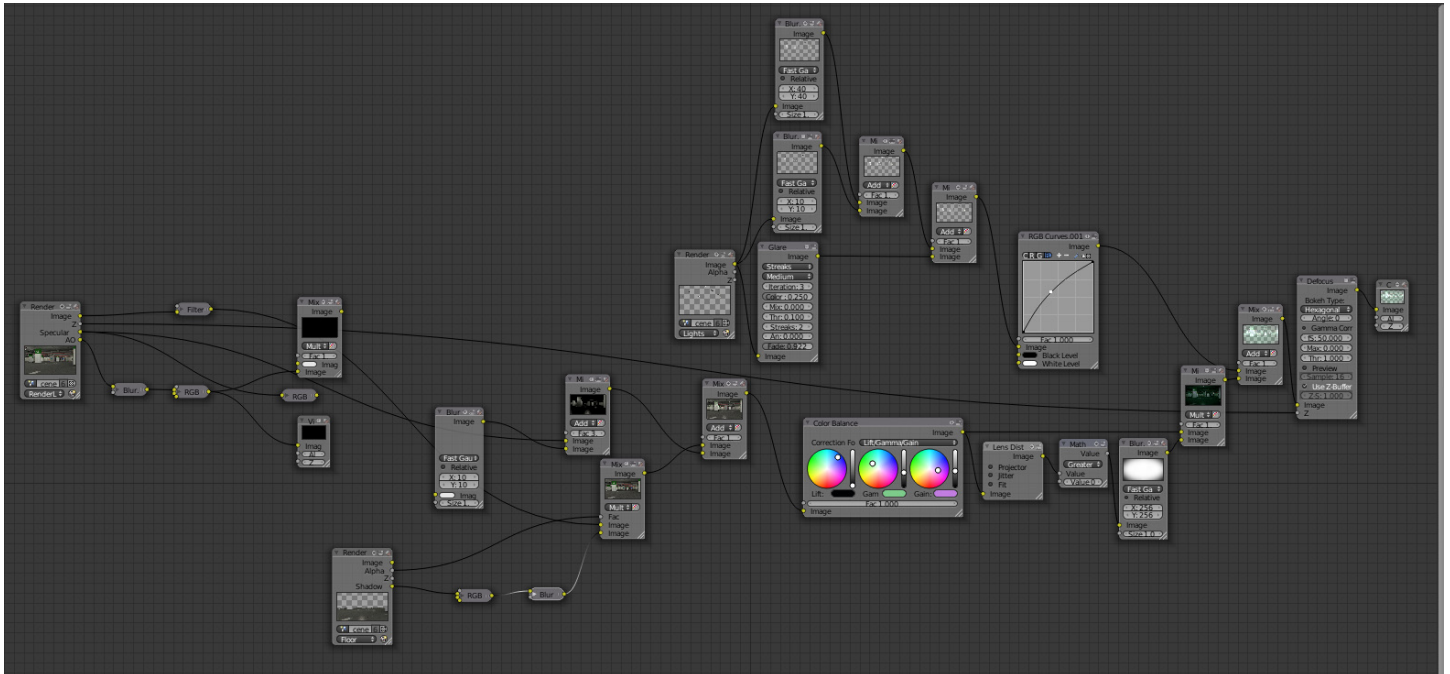
Therefore, to combine multiple node strings together, a special node is used called a **mix node**. This takes two outputs and combines them into one. Other combining nodes exist, but this is the most common.



■ Getting started Introduction

This complex system of splitting, changing and combining things can create some very confusing layouts.

But if you ever get confused, all you need to remember is to read the node strings from left to right.



Introduction Tutorial

Original:



To get you more familiar with how the compositor works, I will be demonstrating several different effects on this standard render of a traffic signal.

This tutorial will teach you how to:

- Isolate an object by using render layers
- Access the compositor
- Use different glow effects
- Change the brightness of different elements
- Apply a glare effect
- Add a background image
- Combine several elements together to produce a final image

Finished Result:

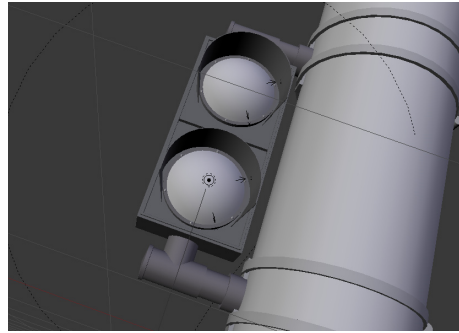


Time to complete: 18 minutes

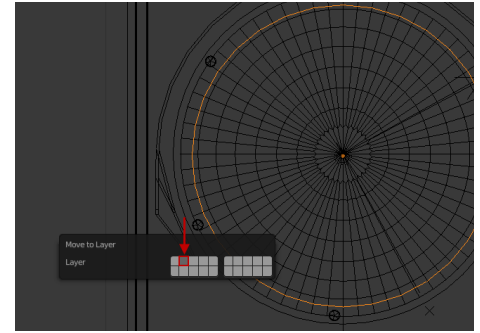
PART ONE

Isolating the elements

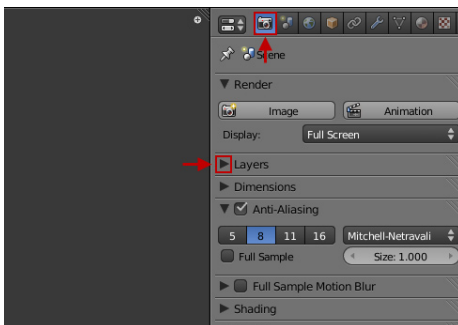
The most important part of compositing is first working out what you want the end result to look like, then isolating those separate elements.



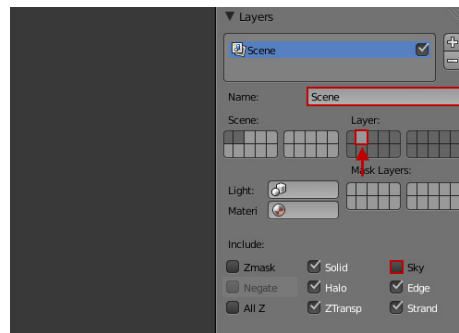
The main focus of this image is going to be the green man, so we want it to glow brightly. To do this, the green man object needs to be on a separate render layer to the rest of the scene.



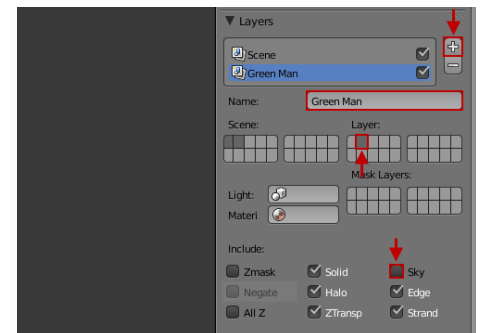
01 With the green man circle selected, move it to layer **2**, leaving the rest of the scene on layer **1**.



02 You need to define what elements will be included in each render layer. To do this, open the **render settings** panel, and click the arrow next to **Layers** and expand the options.



03 Rename the default render layer to **"Scene"** to make it easier to identify. The green man is on layer two, which we don't want included in the scene render layer, so **deselect** it. We don't want to include the default grey sky, so deselect the **Sky** checkbox. This will render the background transparent.

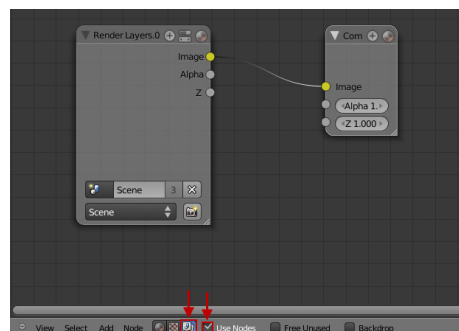


04 To create a separate render layer for the green man, click the **+** button. Rename the layer **Green Man**. Click the **second layer** and deselect everything else. This will render the green man onto a separate render layer so we can adjust it's appearance later. Deselect the **Sky** checkbox.

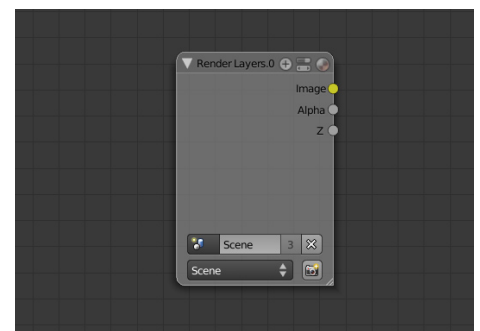
PART TWO

Get Compositing!

Now that all the boring scene setup is out of the way, we can move onto compositing!

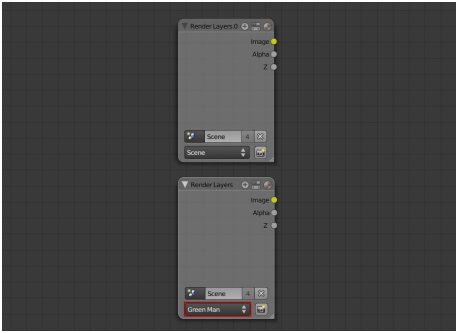


05 Switch to the compositor. A quick shortcut for this is **Ctrl+Left Arrow**. This will change your layout to compositing mode. In the top portion of the screen click the **compositing icon** and **Use Nodes** to get started. Hover over the top portion of the screen and press **Ctrl+Up Arrow** to make it fullscreen.



06 **Disconnect** the default render layer from the composite node. Drag the composite node further to the right so you have room to add some effects.

► Tutorial Introduction



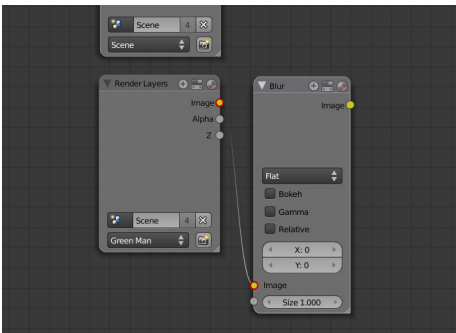
07 At the moment the default render layer is for the main scene. To add the green man render layer press **Shift+A** and select **Input>Render Layer**. In the newly created render layer, click the drop down box and select **Green Man**.

If we were to connect the green man render layer directly to the composite node, we would see this. This means the scene is correctly set up! We can now add glow effects to the green man without affecting the rest of the scene.

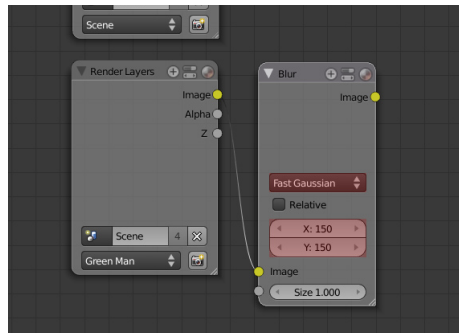
PART THREE

Green means GLOW!

Time to start making things glow! To start with we will be creating a thick glow effect, which will simulate light shining through air particles.



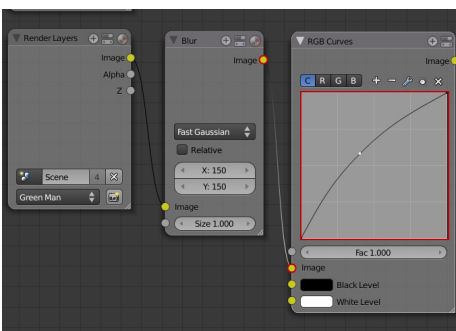
08 Add a blur node, by hitting **Shift+A** and selecting **Filter>Blur**. Connect this node to the green man render layer.



09 From the drop down list, select **Fast Gaussian**. This is the most common type of blur you will be using as it is the smoothest and quickest to process. The X and Y value defines how big to make the glow. It can be as large as 256, but in this case 150 produces the desired result.



If we rendered just this blur node, we would see a result similar to this. And whilst it does the job, it's not bright enough. The reason for this, is that when you blur something, you are spreading out the luminosity over a greater area, which in turn makes it duller.



10 To increase the brightness of the glow, add an **RGB curve** (**Add>Color>RGB Curve**) and connect it to the Blur node. In the main window of the curve, create a slight hump shape by clicking and dragging. This will increase the brightness and decrease the contrast.



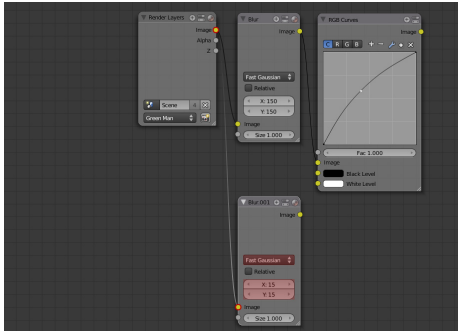
The thick glow is now finished!

PART FOUR

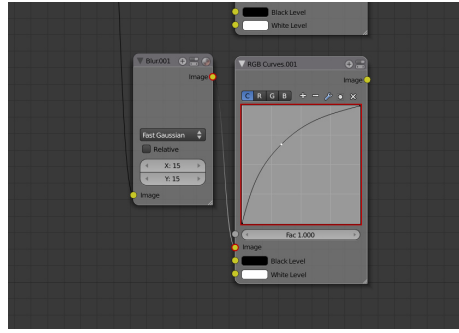
Small is better

Now we will create a small glow which will sit tightly around the green man. This will simulate glare that the eye would see. This type of glow will give the object a powerful boost making the light source appear really bright.

► Tutorial Introduction



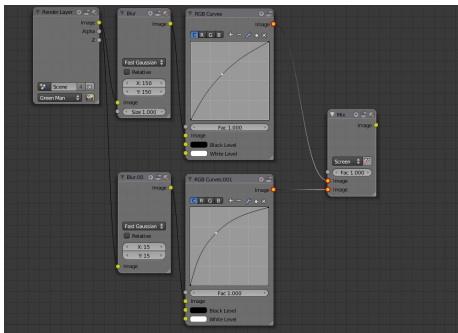
11 Add another **blur** node and connect it directly with the render layer. Set the type to **Fast Gaussian** and set the X and Y to only 15.



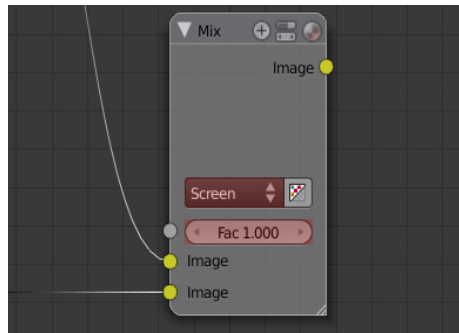
12 Just as we did previously, we need to brighten the glow to boost its effect. To do this add another RGB Curve and connect it to the blur node. In the curve window, create a slightly larger hill shape then before.



Nice! The small glow is now complete.



13 Combining the small glow with the thick glow is as simple as adding a mix node (**Add>Color>Mix**). Connect the outputs from both RGB Curves to the inputs of the mix node.



14 Because the glow effects are bright in color, the blending type will be **Screen** (this is used for combining light values over another). The Fac value defines the opacity of the bottom input over the top input. This will almost always be set to 1.

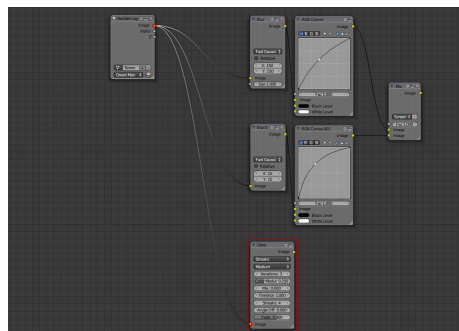


Looking good! The glow effects are now combined together, producing a very realistic glow.

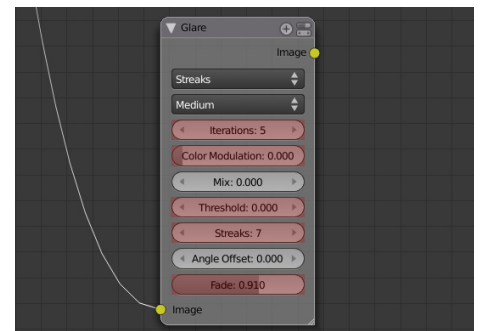
PART FIVE

MY EYES!

Now we will move on to creating a glaring light streak effect. This is to simulate the effect that bright light sources have on cameras and eyes.

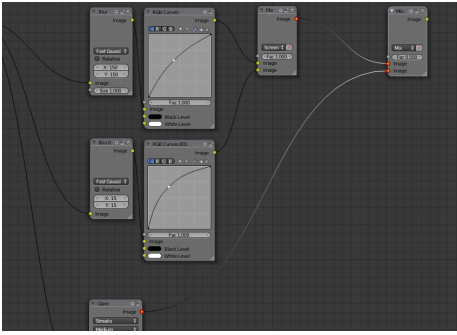


15 Add a glare node (**Add>Filter>Glare**) and connect it to the original render layer.

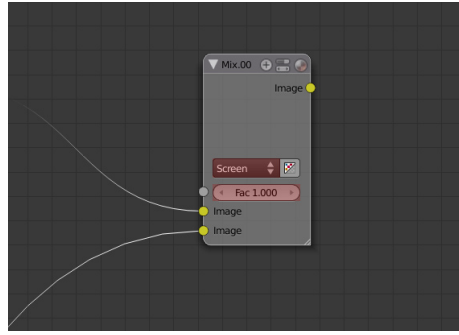


16 In the glare node, set the number of iterations to 5 (for smoother glare), the color modulation to 0 (for less random glare patterns), the threshold to 0 (for a brighter glare), streaks to 7 (for more streak lines), and fade to 0.910 (for slightly longer streaks).

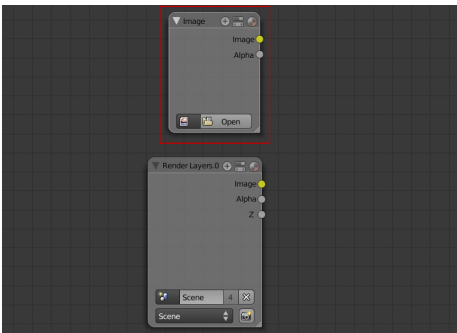
► Tutorial Introduction



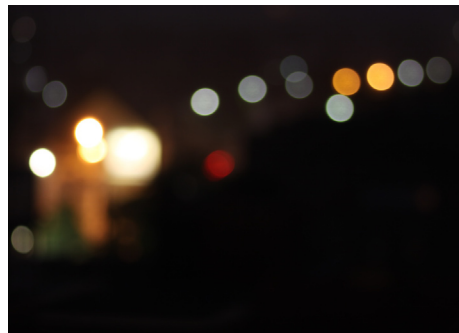
17 To combine this glare effect with the glow effects, add another **mix** node and connect one input to the glare node and the other to the previous mix node containing the glow effects.



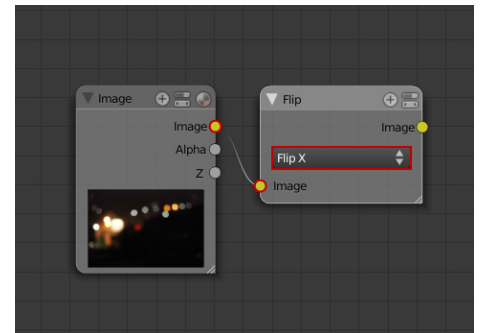
18 Just as we did before, set the type to **Screen** and the Fac value to 1.



19 To add an image input press Shift+A and select **Input>Image**. Click the load button to load an image of your choice.

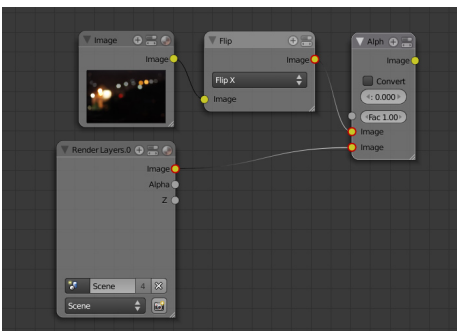


For the sake of this tutorial I will be using this image which I found on flickr. The only problem is, it's currently facing the wrong way around. The dotted lights should be on the left side.

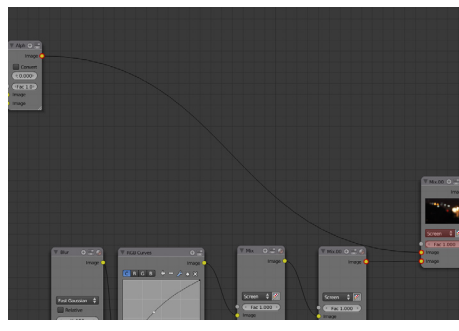


20 To fix this, add a flip node (**Add>Distort>Flip**) and select **Flip X** from the drop down list. This will flip the image horizontally.

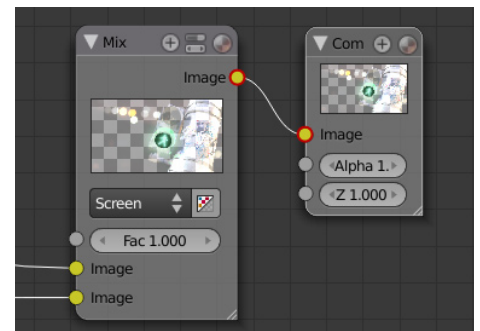
(you may skip the next step if your image does not require flipping)



21 To combine this image with our scene render layer we need an Alpha Over node (**Add>Color>Alpha Over**). The alpha over node is for combining solid objects (such as the scene render layer) over another layer. Connect the scene render layer into the bottom input and the image into the top output.



22 Almost there! To combine the glare and glow effects with the scene and background, add another **mix** node and connect it with the output from the Alpha Over and the last mix node we created. Set the type to **Screen** and the Fac value to 1.



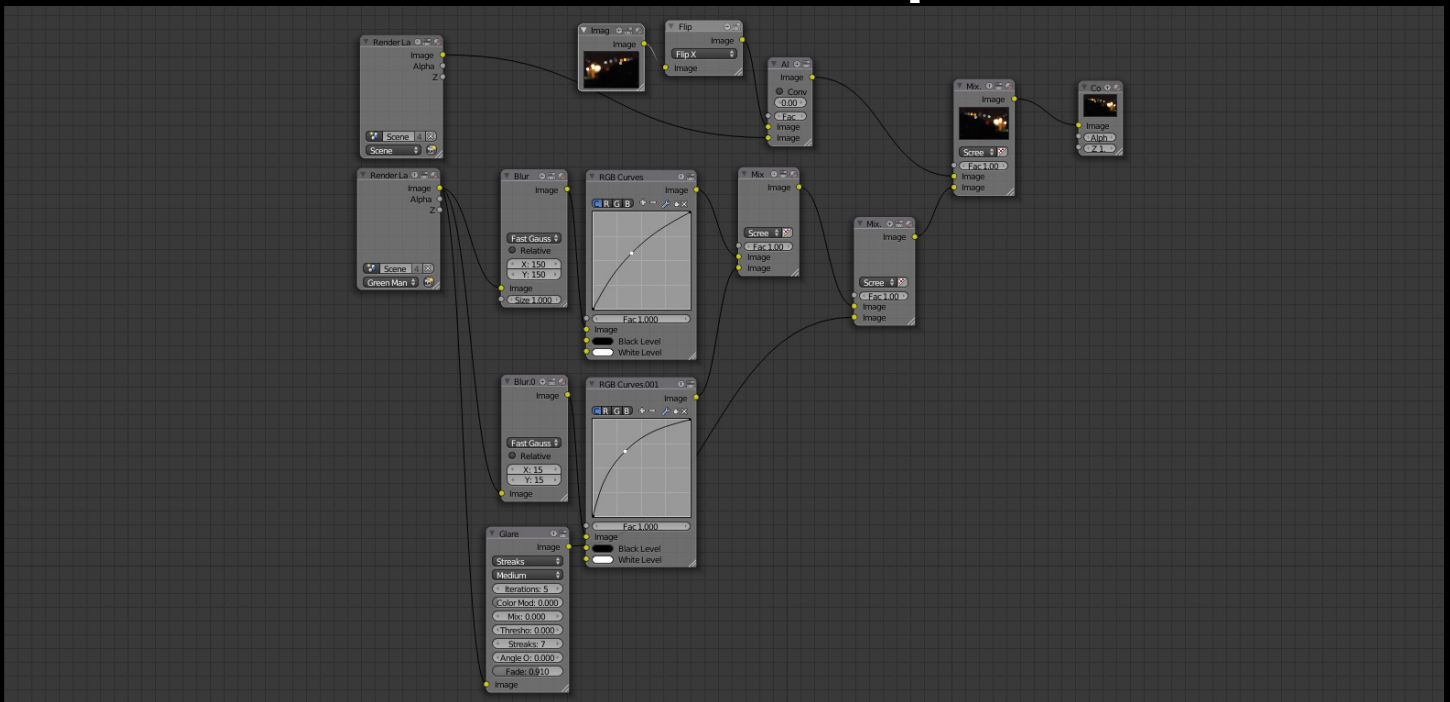
23 Connect the output from the mix node to the composite, and you're finished!

PART SIX

Adding a background

To seal the deal, we want to add a background image. This is done easily by adding an image input and combining it with our scene render layer.

Final Node Setup



Finished Result



By using a couple of simple glow effects we have turned this standard render of a traffic signal into a more visually engaging image that grabs the viewers attention.

Soft Glow

aka Standard Glow

What is it?

Low energy light sources like Christmas lights and candles, emit a soft glow when photographed. The soft glow is actually the early start of a standard lens flare, but because the light is so dull, a soft glow is only visible.



Photo: Thomas Quine

When used correctly the soft glow can give the scene a warm atmosphere and improve realism. But be warned: this effect is *addictive*! A big mistake is to get carried away and apply it to the entire scene, which looks stupid (trust me). So it's important to exercise restraint.

When to use it

Soft glow shows the viewer that an object is emitting light. Because the soft glow is very subtle it should only be used when light is very low energy. Examples might be candles, Christmas lights, oil lamps, energy saving bulbs, television screens, computer monitors, moon light etc.



Soft glow was used in this image of a firework.

Soft Glow Tutorial

Before:



After:



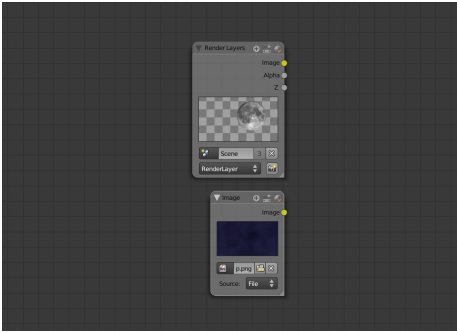
In this tutorial I will be demonstrating soft glow on this render of a moon that I used as the opening shot from my short: The Ballad of the M4 Carbine.

This tutorial will teach you how to:

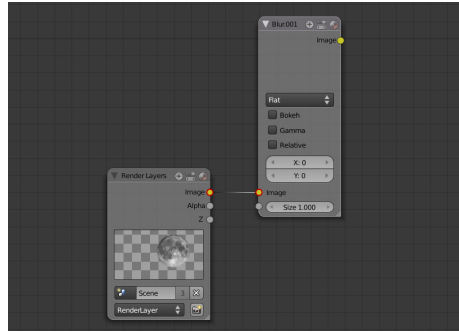
- Make an object or complete scene emit a glow
- Combine the glow effect with original object

Time to complete: 6 minutes

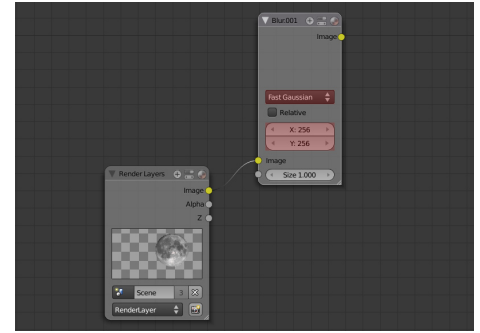
► Tutorial Soft Glow



For this example, I will be adding a glow effect to a render of the moon and then combining it with a matte painting of a starry night sky.



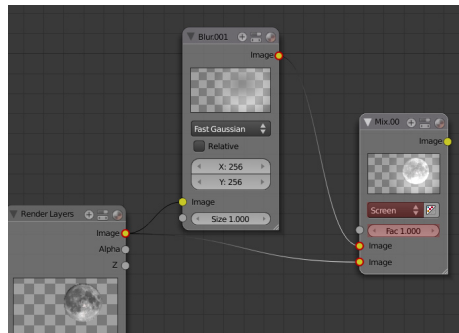
01 Add a blur node (**Add>Filter>Blur**) and connect it to the layer that you want to apply the glow to.



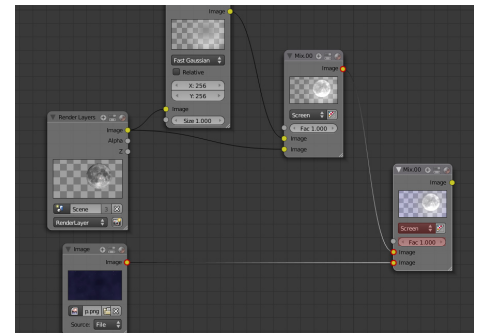
02 Set the type to **Fast Gaussian**. The X and Y factor defines how big to make the glow, so you will need to experiment with what works for your scene. In this case I will be setting each of them to the largest value possible: **256**.



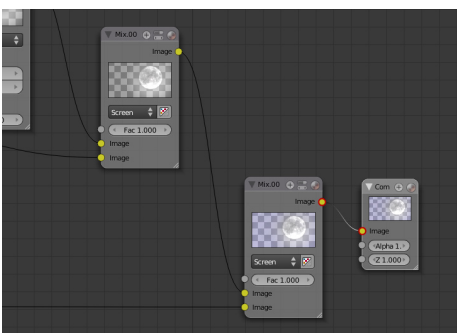
This is the effect the blur node produces. It's taken the moon and blurred it so far that it looks like a soft glow. Now all we need to do is combine this glow with the original layer.



03 To do this, add a mix node (**Add>Color>Mix**) and connect it to the blur node and render layer outputs. Set the blending type to **Screen** and the Fac value to **1**.

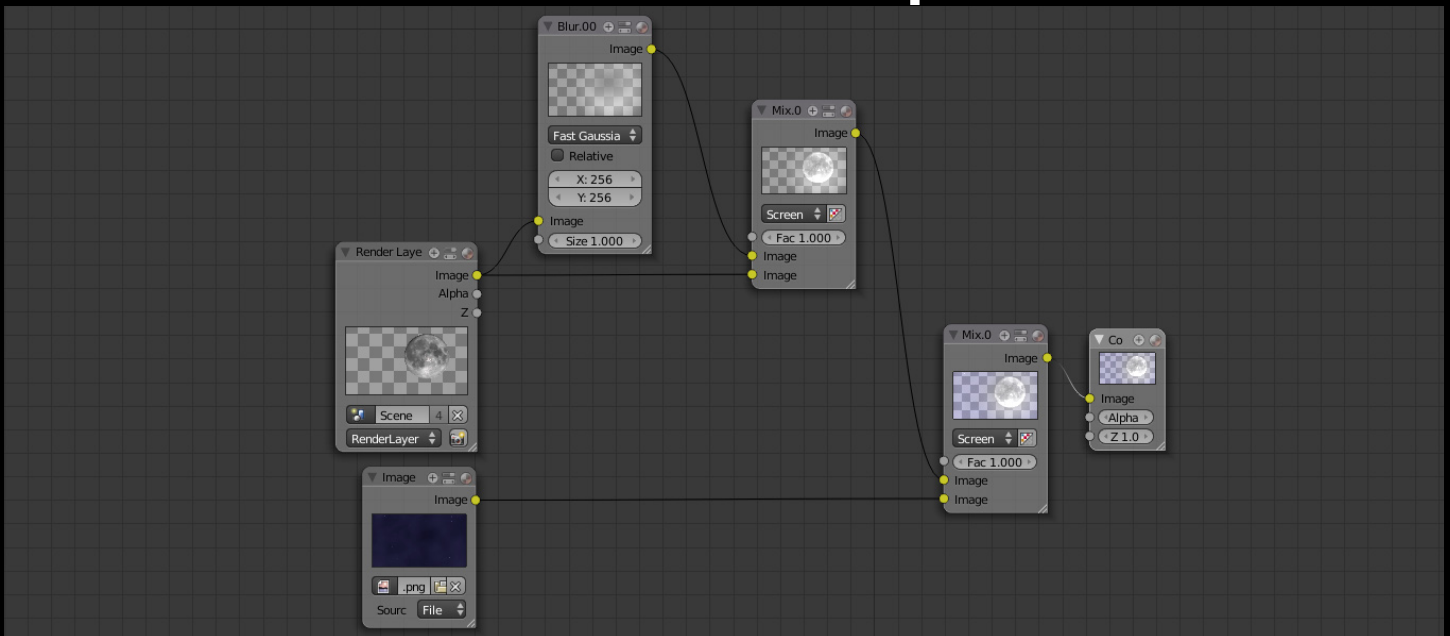


04 In my example I need to combine my moon with the night sky. So to do this, add a mix node (**Add>Color>Mix**) and connect it to the output of the mix node we just created and the render layer of the night sky.



05 Finally, connect the output of this mix node to the compositor.

Final Node Setup



Finished Result



With soft glow the moon now looks as realistic as we would see with the human eye or a camera.

Bright Glow

What is it?

Bright glow is very similar to *soft glow* in that it produces a hazy glare around light sources. However, unlike the *soft glow*, distinct rays of light are also visible, giving the appearance of a star.

You can spot these rays of light in most photographs taken at night. The reason for this is that the standard 'point and shoot' camera will try to let in as much light as possible to correctly photograph the night time surroundings. However, because light sources are significantly brighter, this produces these streaks around the lights.

Strangely enough, a similar effect is also visible to the human eye. If you look into a car headlight at night and squint your eyes, you will also spot rays of light.



Photo: Daniel Garcia



Photo: Jixar

When to use it

The star glow should be used when artificial light sources are visible. This includes incandescent bulbs, halogen bulbs, fluorescent tubes or any light source that is brighter than a candle.

The effect is usually only visible in night time photos, but if the light is bright enough, it can also appear in daytime shots as well.

Star Glow Tutorial

Original:



For this tutorial I will be demonstrating the star glow effect on this render of school building at night.

Currently the lights look bland and not very bright, but by adding effects in the compositor we can fix that.

This tutorial will teach you how to:

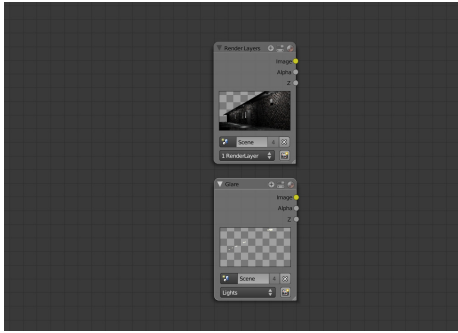
- Create light streaks
- Add two types of glow to make the object appear bright

Time to complete: 12 minutes

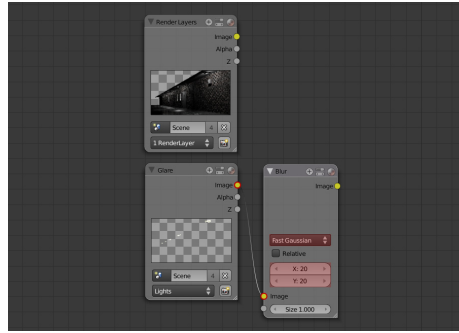
Finished Result:



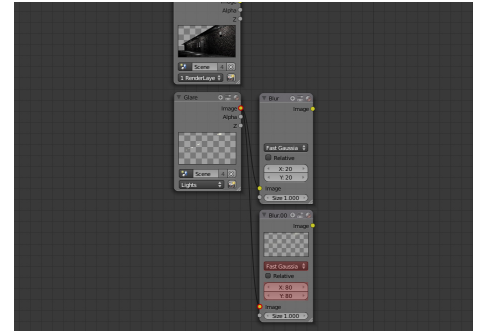
► Tutorial Star Glow



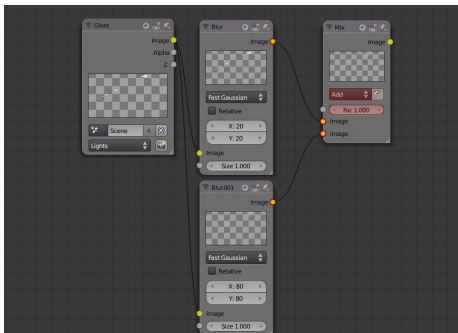
01 Make sure your light objects are on a separate layer. Follow the *Isolating Objects* tutorial at the start of this eBook if you are unsure how to do this.



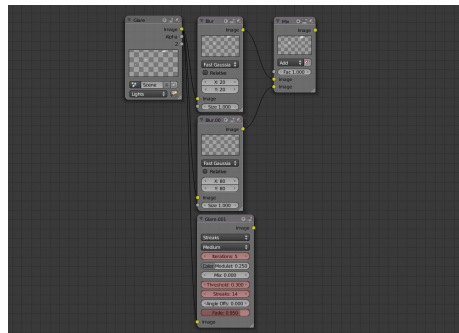
02 Add a blur node (Add>Filter>Blur) and connect it to your lights layer. Set the type to **Fast Gaussian** and the X and Y value to **20**.



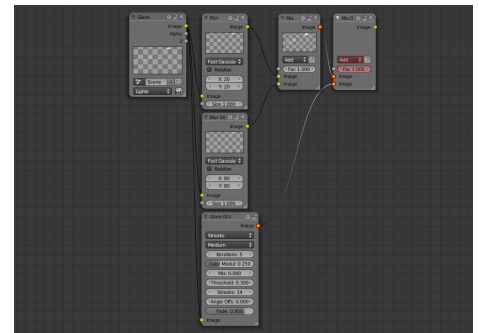
03 Add a second blur node and connect it to your lights layer. Set the type to **Fast Gaussian** and the X and Y value to **80**.



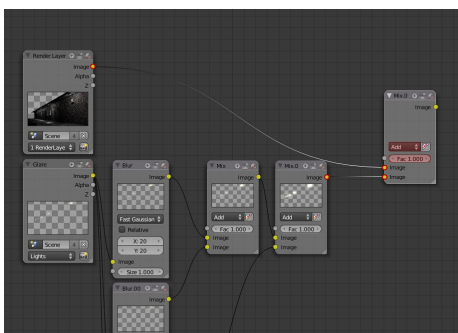
04 Add a mix node (Add>Color>Mix) and connect it to the two blur nodes we just created.



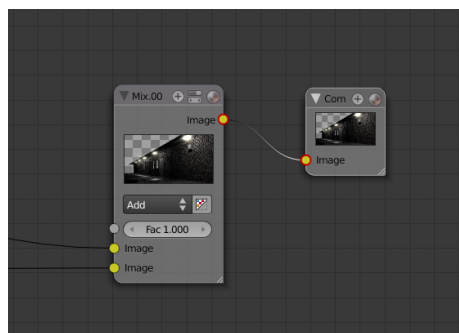
05 Add a glare node (Add>Filter>Glare) and connect it directly to the lights render layer. Set the **Iterations** to **5** (which gives smoother results) the **Threshold** to **0.3** (which brightens and desaturates the glow), the **Streaks** number to **14** and Fade to **0.950** (which defines the length of the streaks).



06 Add a **Mix** node and connect it to the glare node and the mix node we created earlier. Set the type to **Add** and the **Fac** value to **1**.



07 Add a third mix node and connect it to the mix node we just created and the render layer with your scene on it. Set the type to **Add** and the **Fac** value to **1**.

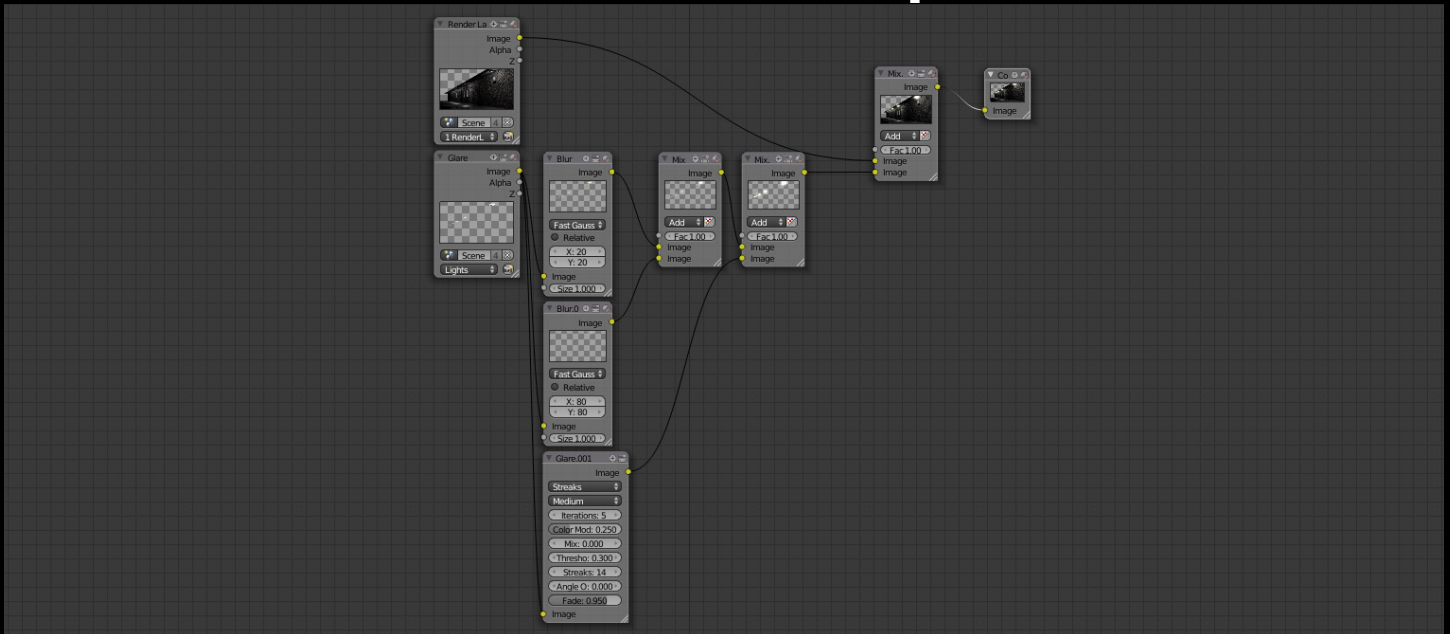


08 Finally, connect this node to the compositor node!



Finished!

Final Node Setup



Finished Result



By adding a star glow effect, the lights look brighter and more realistic.

Anamorphic Flare

What is it?

Chances are you've already seen this in music videos and movies: horizontal lens flares.

This effect is unique to a special type of lens called an anamorphic lens. The lens takes a 16:9 shot and compresses it to 4:3. Then later when the film is played through a projector a special reverse anamorphic lens converts it back to its original ratio. It's this complicated procedure that creates the unique horizontal glare.

Because an anamorphic lens is more expensive than normal lenses, the effect is rarely seen outside of Hollywood. However since its first appearance, photographers have been captivated by its aesthetically pleasing look and have been trying to replicate it through other ways. Some have even resorted to smearing grease on the camera lens.

Luckily, as a blender user you can keep your fingers dry by easily creating this effect in the compositor.



Photo: good-god-guy



The anamorphic lens flare effect as demonstrated in 50 Cent's music video, 'Get Up'

Photo property: Shady Records

When to use it

Like all lens flares, it appears when a bright light source is in view or slightly off camera. Examples could be an open window, car headlights or the sun. The benefit of using an anamorphic flare is that they are usually associated with expensive productions, so adding it to a render can imitate a high end look.

Recently some cinematographers have been criticized for overdoing the effect, including the director of the 2009 movie *Star Trek*, JJ Abrams. Critics slammed the overuse of lens flares as distracting and adding nothing to the film. In an interview, Abrams admitted that he had gone a bit overboard with the effect, but wanted to make the film seem futuristic.



The anamorphic lens flare as seen in the 2009 film, *Star Trek*

Photo: Courtesy of Paramount

Anamorphic Flare Tutorial

Original:



Finished Result:



For this tutorial I'll be showing you how I created the image on the front cover of this book.

I started with a rendering of a Mazda RX8 and then isolated the headlights onto a separate layer. Then by using only the compositor I added an anamorphic lens flare.

The settings used throughout this tutorial have been tested to work for this scene. However, depending on the object to which you are adding glow, and the size of the scene, the settings may require tweaking.

This tutorial will teach you how to:

- Add a unique horizontal glow to your light source
- Add complimentary glow and glare effects
- Change the color of the final glow

Time to complete: 18 minutes

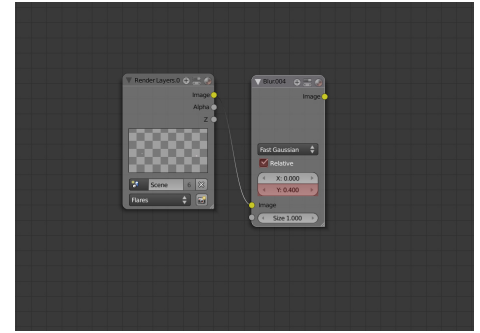
PART ONE

Horizontal blur

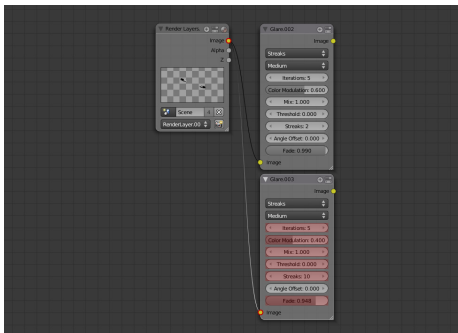
This section will cover how to replicate the unique horizontal blur that is the key to anamorphic lens flares. We will also add light streaks to seal the deal.



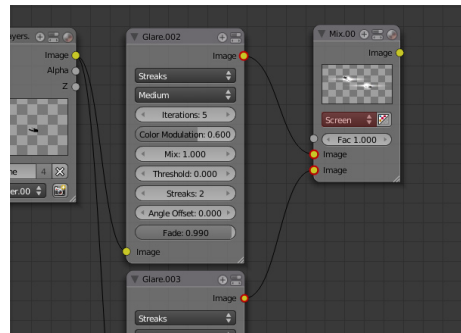
01 Start by isolating the light source (in my case the headlights) in a separate render layer.



02 Add a glare node (**Add>Filter>Glare**). Set the Iterations to 5 (for smoother results), Color modulation to 0.6 (variations of color), the Mix to 1 (only produce the blur) the Threshold to 0 (to blur the whole object), the Streaks to 2 (for the horizontal blurs) and Fade to 0.990 (for longer streaks).



03 To add more streaks, add another glare node, and set the Iterations to 5, Color modulation to 0.4, Mix to 1, Threshold to 0, Streaks to 10 (for more streaks) and Fade to 0.948. You may need to experiment with the fade option depending on your scene.

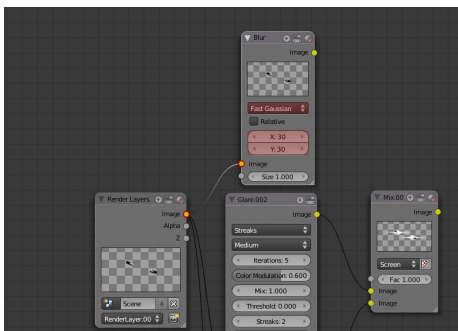


04 To combine both the horizontal blur and the extra light streaks, add a mix node (**Add>Color>Mix**) and connect it to both glare nodes. Set the type to **Screen** (as we are combining two white blurs) and set the Fac value to 1 (to make both blurs even).

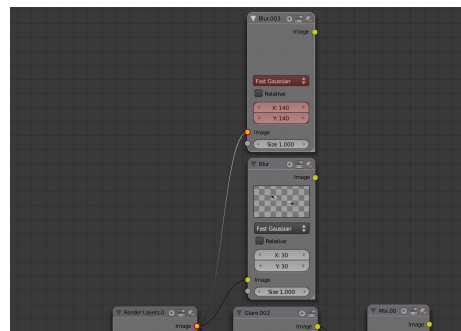
PART TWO

Extra glow

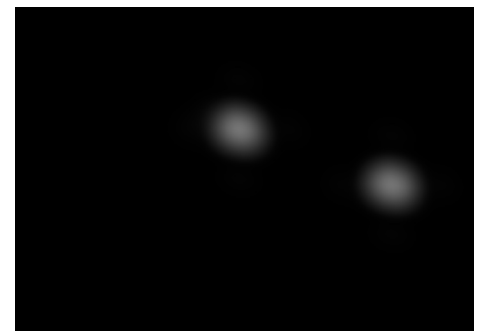
This part will be optional depending on your scene, but to make the headlights more believable I'll be adding a powerful glow.



05 Add a blur node (**Add>Filter>Blur**) and connect it directly to the render layer. Set the type to **Fast Gaussian** and the X and Y value to 30. This will give us a nice small glow around the headlights.

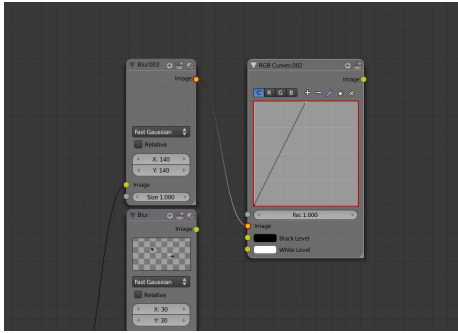


06 To produce a bigger, wider glow, add a second blur (**Add>Filter>Blur**) and connect it the same way as the other, only make the X and Y values 140. You may want to experiment with these numbers depending on your scene.

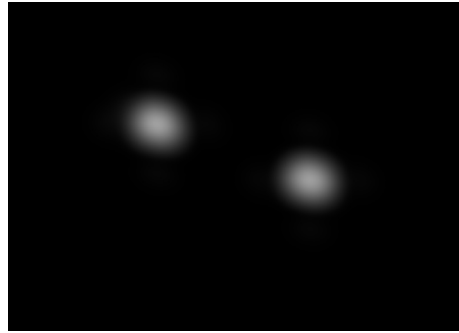


If we connected this blur node to the composite node, this is what we would see this. And whilst it does the job, it's looking fairly weak. Let's brighten it up...

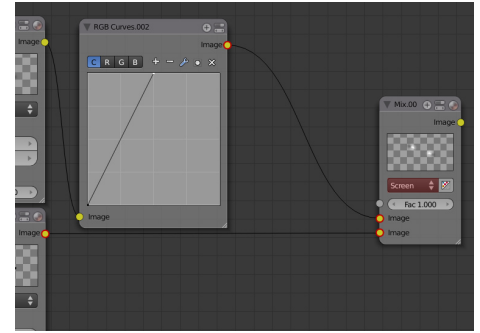
► Tutorial Anamorphic Flare



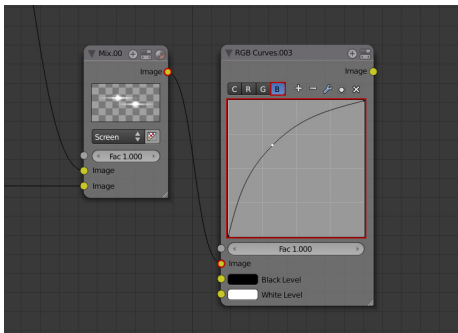
07 Add an RGB curve (**Add>Color>RGB Curve**) and connect it to the wider blur node. **Create a sharp slope** by dragging the top right anchor point across the grid (you can hold control to make it easier). This will increase the brightness of glow without blowing it out across the entire scene.



Much nicer. The glow is now more powerful and will become more obvious in the final composite.



08 To connect both of these glow effects together, add a mix node (**Add>Color>Mix**) and connect it to both the RGB curve and the small blur node. Set the type to **Screen** and the Fac value to **1**.

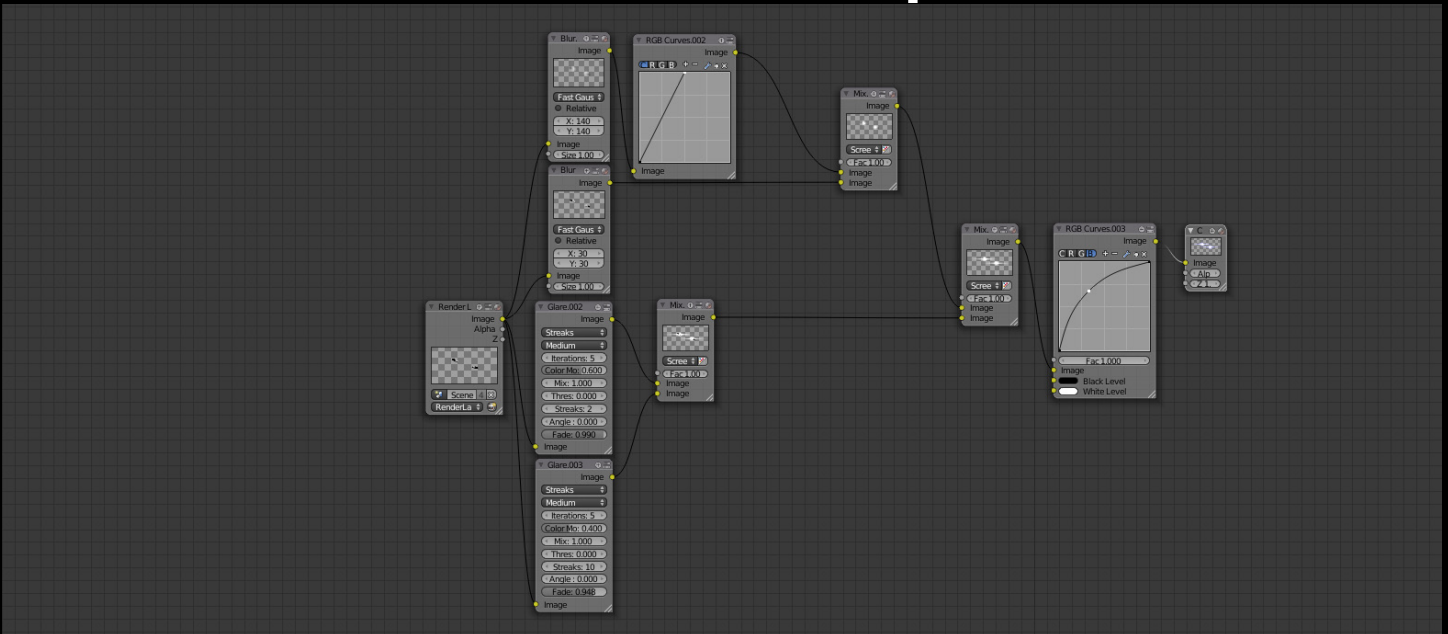


09 Finally to add the iconic blue tint to the glow, add an RGB Curve (**Add>Color>RGB Curve**) and connect it to the mix node we just created. Click the **B** at the top (this will show the curve that effects the blue channel). Create a slight hump in the curve to increase the amount of blue.



Finished! You can combine this effect with your scene by adding a mix node, setting the type to Screen and Fac value to 1. Then connecting the mix node to your composite node.

Final Node Setup



Finished Result



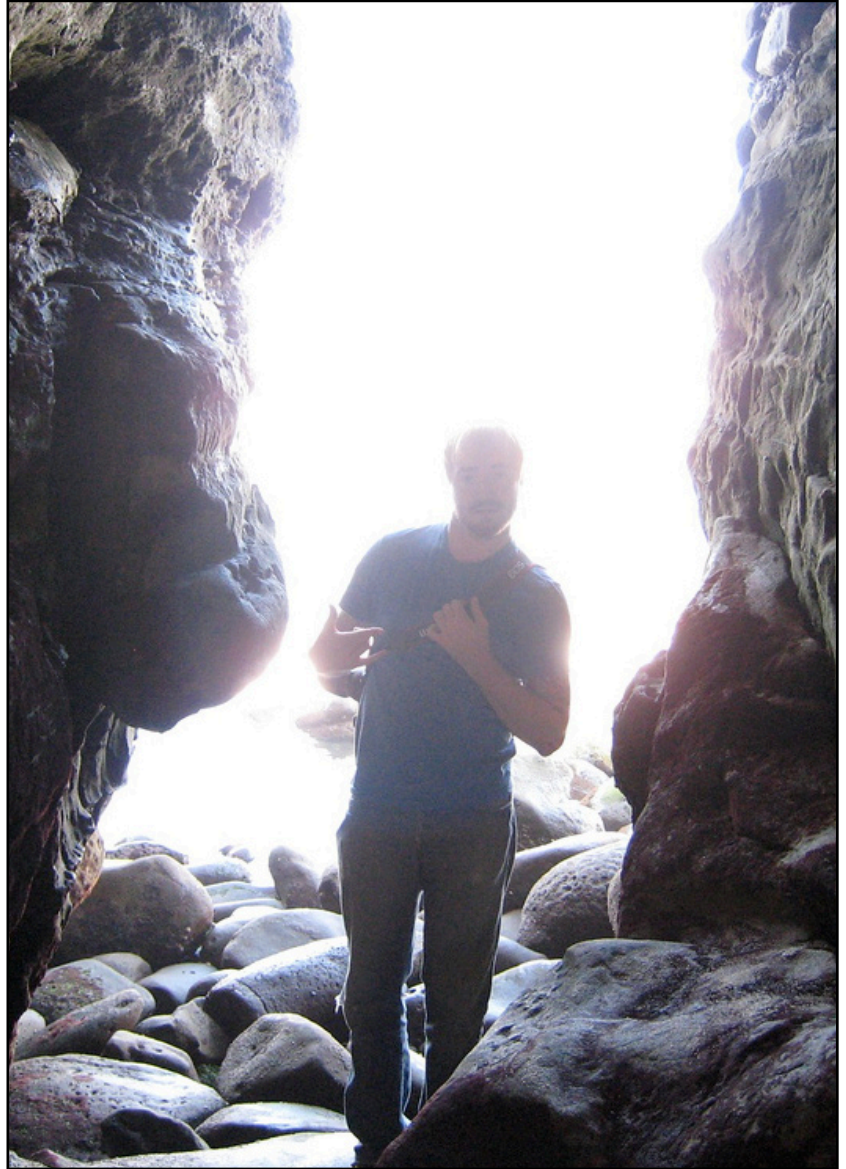
By adding the anamorphic lens flare we have significantly improved the image. The headlights are now a primary focus point and demand the viewers attention.

Bloom

What is it?

Bloom usually occurs when somebody indoors tries to take a photo of something outdoors through a window or door. The window appears extremely bright and emits a soft glow.

The cause of this is incorrect light settings used on the camera. When cameras are used indoors they usually adjust to a high light sensitivity to absorb as much light as possible, but if something much brighter comes into frame it blows out the image. Photographers can avoid this by manually adjusting the light sensitivity setting on the camera.



Bloom is visible here in this photo of a cave. The edges of both the cave entrance and the person are washed out.

Photo: Jeremy Carbaugh

When to use it

Bloom can be used in films to illustrate a sudden change to a character's situation, like the moment they wake up in a hospital bed, or step out of jail into the free world. This tells the audience that the next chapter of the story is beginning. But it can also be applied to an entire frame to illustrate a flashback. An example is in the movie *Gladiator*, when the lead character dreamed of his home town in his final moments between life and death.

More recently, bloom has also made an appearance in video games as a way to simulate the effects of a real camera lens as well as adding atmosphere to the game.

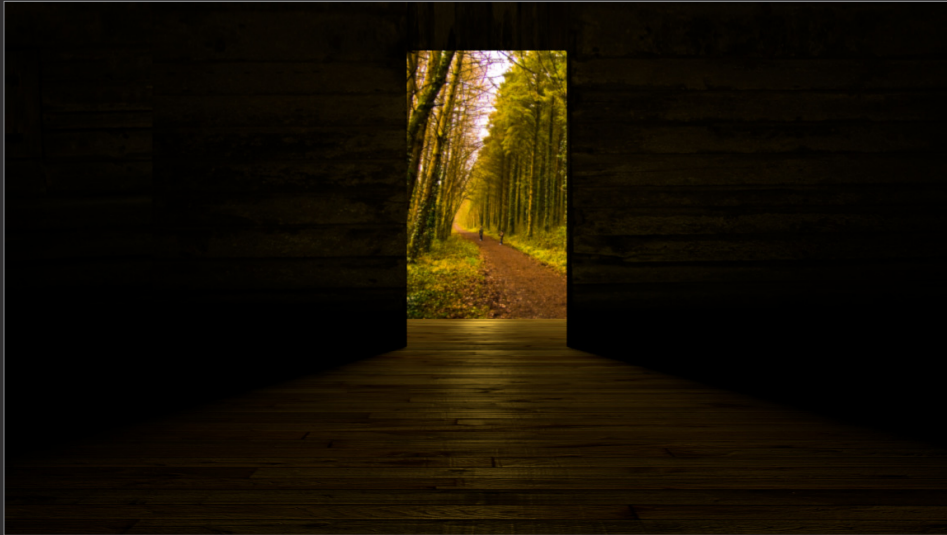


Bloom, as used in the video game Half life 2: The Lost Coast

Image: Valve

Bloom Tutorial

Original:



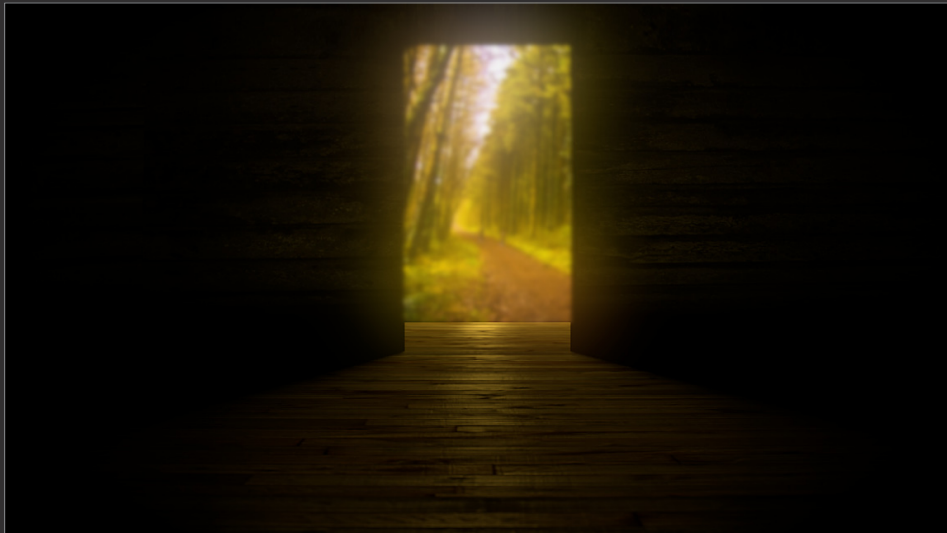
In this tutorial I will be demonstrating bloom on this scene of a doorway. This will add atmosphere and realism.

During the tutorial you will learn how to:

- Isolate your environment from the scene
- Use two blur types to simulate over exposure

Time to complete: 15 minutes

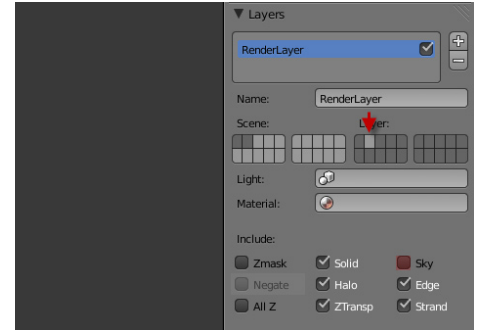
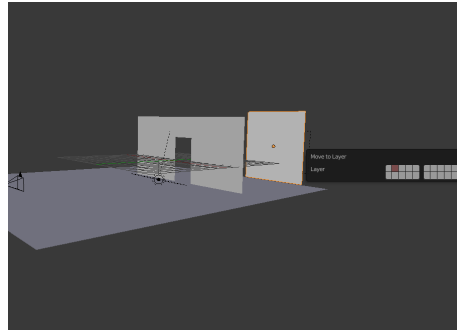
Finished Result:



PART ONE

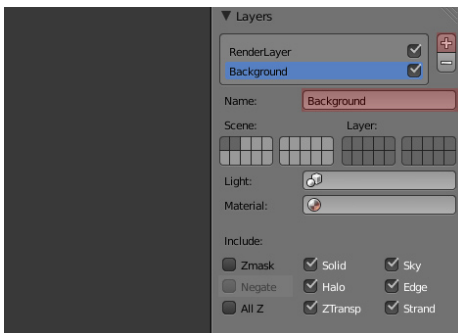
Isolating the glow

To prevent the entire scene from being blown out, we first need to separate our bright light from the rest of the scene.

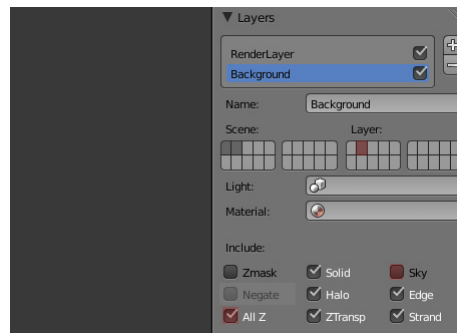


01 This simple scene comprises of just three planes; a wall, a floor and the background plane. The background plane contains an image of a forest, to which we will apply the bloom. To separate it from the rest of the scene, move it to a separate layer.

02 In the render layers panel deselect the layer with the background plane (**Shift+Click**). Also uncheck Sky from the options.



03 Add a new render layer and name it **Background**.

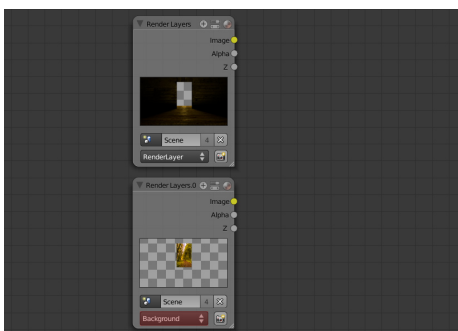


04 For this render layer, select the layer you moved the background plane to. Deselect Sky and check **All Z**. This ensures the doorway will block out that part of the image.

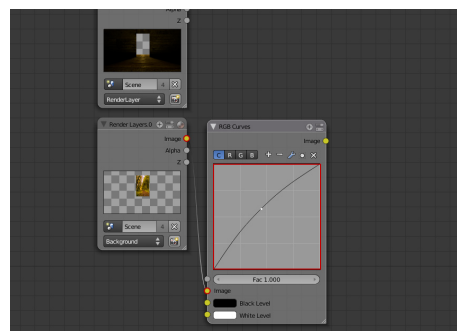
PART ONE

Glow baby, glow.

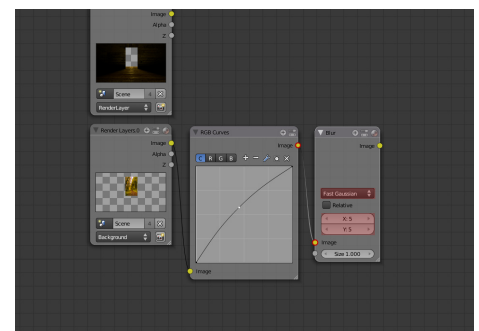
With the background successfully isolated, its time to get into the fun stuff: Bloom.



05 Add a new render layer (Add>Input>Render Layer) and select 'Background' as the type.

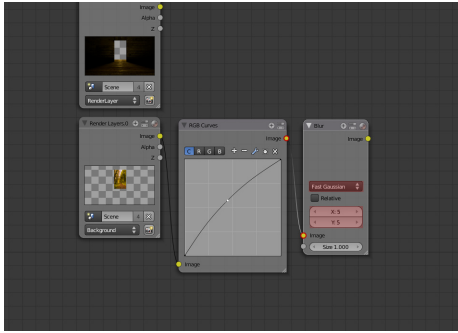


06 Add an RGB Curve (Add>Color>RGB Curve) and connect it to the background layer. Give the curve a slight bow. This will increase the brightness of the background to simulate the camera's over exposure.

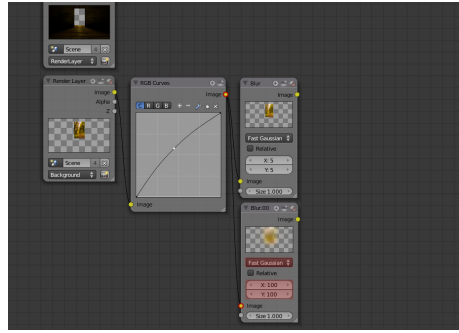


07 Add a blur node (Add>Filter>Blur) and select **Fast Gaussian** as the type. Set the X and Y values to 5. This will give your background a small subtle glow.

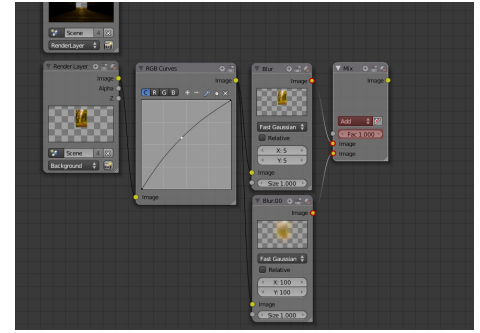
► Optical Flares Bloom



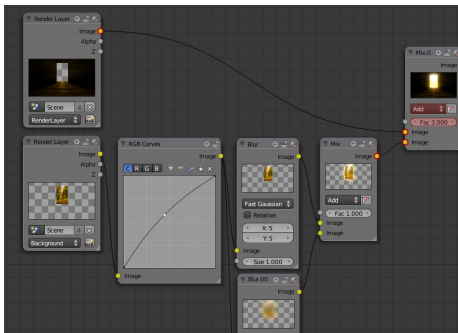
08 To give the background a bigger and bolder glow, add another blur node and connect it to the RGB curve. Select **Fast Gaussian** as the type and set the X and Y values to **100**.



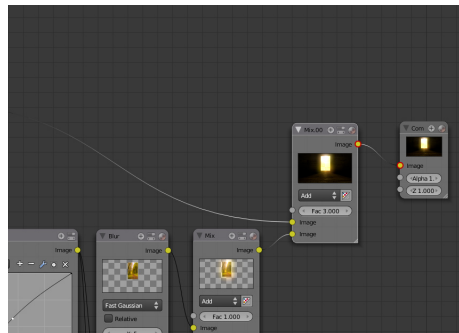
09 Add another blur node (**Add>Filter>Blur**) and connect it to the RGB curve. Select **Fast Gaussian** as the type and set the X and Y values to **100**. This will give the background a bigger bolder glow. You may want to adjust the size of the glow, depending on your project.



10 Add a mix node (**Add>Color>Mix**) and connect the inputs to the two blur nodes we just created. Set the type to **Add** and the **Fac** value to **1.00**



11 Add another mix node and connect the inputs to the render layer of our scene, and the mix node we just created. Set the type to **Add** and the **Fac** value to **3**. We use the value of 3 to multiply the effect of the brightness.



12 Connect the output of that mix node to the compositor and you're finished!

The image shows a Blender 2.80 Node Editor with the following nodes and connections:

- Render Layer** (Scene): The starting node, outputting a scene image.
- RGB Curves** (Color): Receives input from the Render Layer. The 'Color' curve is adjusted to shift the color towards yellow/green.
- Blur** (Fast Gaussia): Receives input from the RGB Curves. Settings: X: 5, Y: 5.
- Mix** (Add): Receives input from the Blur node. The 'Fac' (Factor) is set to 1.000.
- Mix.0** (Add): Receives input from the Mix node. The 'Fac' (Factor) is set to 3.000.
- Co** (Alpha): Receives input from the Mix.0 node. The 'Z' value is set to 1.0.

The final output is a blurred, color-adjusted image of a glowing cube, as shown in the 'Image' preview of the Co node.

Lens Flare

What is it?

If you photographed the sun, you would see that not only does it display as a burning white spot, but there are strange beads, rings and circles appearing across the frame in a diagonal pattern. This is a lens flare.

The cause of this is the light reflecting off the internal components of the camera, creating optical patterns. Typically the lens flare is a result of photographing the sun, but other bright light sources such as spotlights and reflective surfaces can create a similar effect.

Photographers can avoid this issue by attaching a lens hood, or a polarizing filter to the outside lens. This cuts out unnecessary light from creeping in as well as lowering the reflectivity of the lens.

In the late 90's, Photoshop added the lens flare to its filter toolbox, giving the general public the opportunity to add lens flares to any photos they wished. This started an unwelcome trend. People were adding lens flares to anything and everything. Family photos, counter strike screenshots, logos, portraits: nothing was spared.

It was a common misconception at the time that lens flares improved the composition of images. Unfortunately this couldn't have been further from the truth. The unnecessary usage has since placed the lens flare in the category of 'amateur tool', and artists have been too scared to use it ever since. However the lens flare does still have its uses.



Photo: Wouter Kiel



Photo: Erin Purcell

When to use it

If your image is showing the sun in some way then a lens flare is still appropriate. The scene would look unrealistic without it, so don't be afraid to use it. Other bright light sources such as spotlights or torches may also benefit from a lens flare.

Sun Flare Tutorial

Finished Result:



Any outdoor scene needs a sun. So for this tutorial I'll be showing you how to recreate the sun from scratch.

During the tutorial you learn how to:

- Setup the sky
- Create a physical sun object
- Composite a sun flare

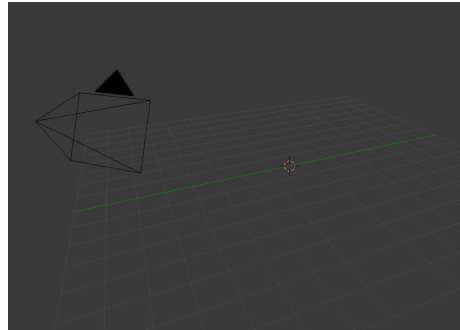
Time to complete: 20 minutes

PART ONE

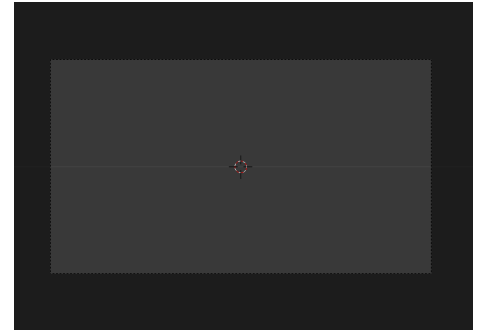
Creating the sun and sky

Before we move to the compositor, we need to set up the scene.

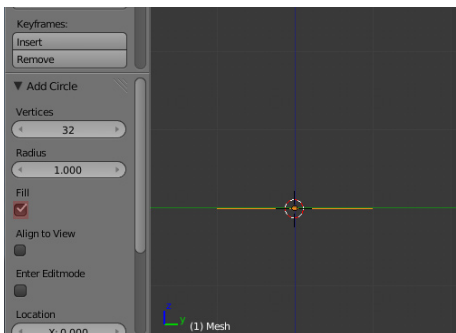
A white circle will be used for the sun and a separate halo object for the sun's rays.



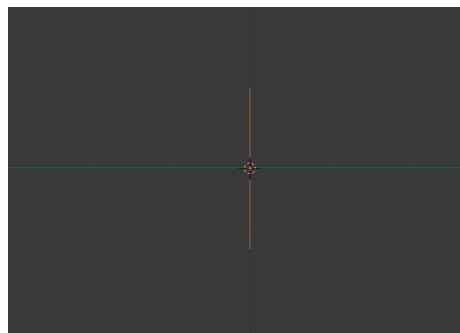
01 Start by opening up a new scene. Delete the default cube and lamp, leaving just the camera.



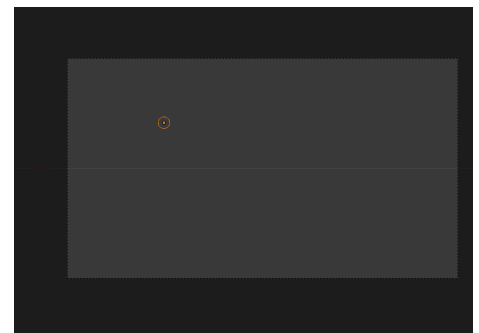
02 Lock the camera to the side view, by pressing **NumPad 1** then **Ctrl+Alt+NumPad 0**.



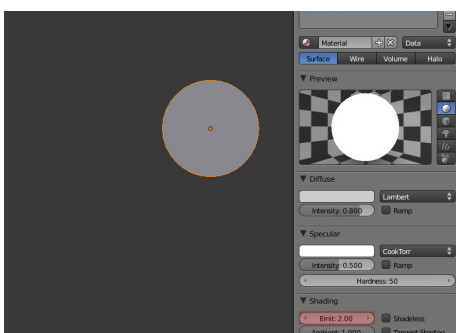
03 Switch to the side view (**NumPad 3**) and add a circle. Press **T** to bring up the toolbar, and select **Fill** in the circle options. This gives us a nice round disc to use for our sun.



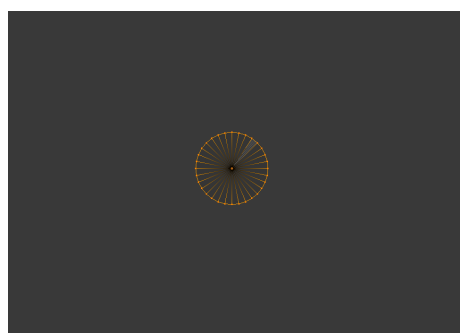
04 We now need to rotate the disk so it's in line with the camera. So press **R** and whilst holding down **Ctrl**, move your mouse to rotate it **90 degrees**.



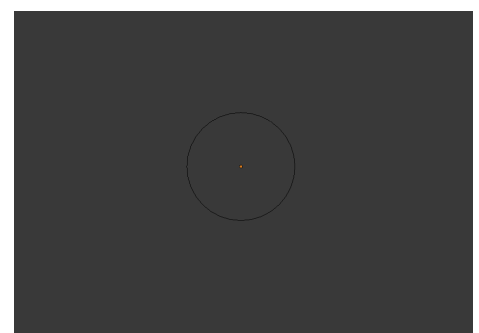
05 Switch back to the camera view (**NumPad 0**) and move the disc to the top left hand quarter of the screen. It's currently too big for the scene, so press **S** and whilst holding down **ctrl**, shrink the sun by **0.4**.



06 We need to setup the sun's materials, so go to the materials panel and click **New**. Leave all the settings as default, but change the Emit value to **2**. This will render the disk as a bright solid white circle.

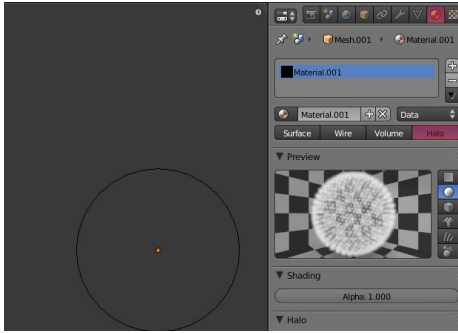


07 We now need to create a separate halo object for the sun rays. Duplicate the disk (**Shift+D**), but leave it where it is. We want to remove all the vertices except the center one. Enter edit mode (**TAB**), and holding down **shift**, right click the center vertex. This will deselect it. Now delete all the remaining vertices.

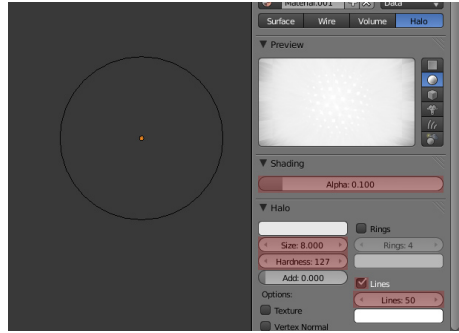


08 This should just leave one lone vertex at the center of the disc.

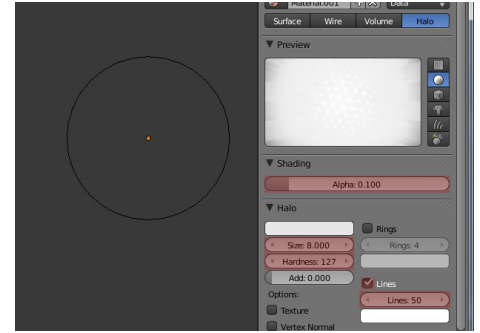
■ Optical Flares Sun Flare Tutorial



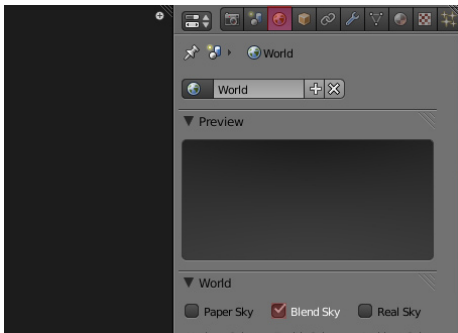
09 Go to the material panel and click **New material** and select **Halo** as the rendering type.



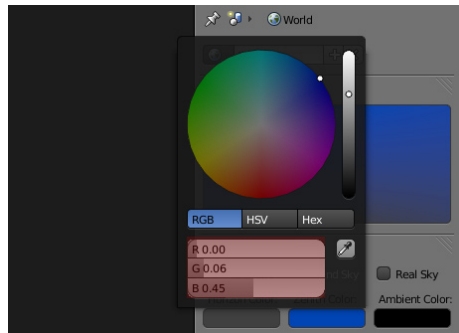
10 Change the Alpha to **0.1**, the Size to **8.0** and the Hardness to **127**. Finally check the Lines box and set the number to **50**.



11 Change the Alpha to **0.1**, the Size to **8.0** and the Hardness to **127**. Finally check the Lines box and set the number to **50**.



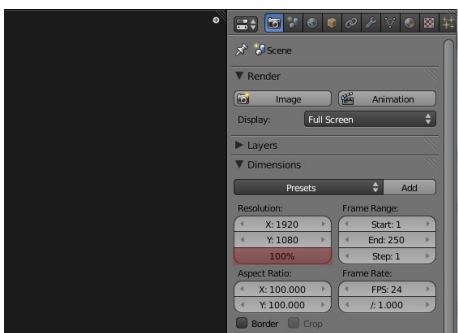
12 We will now setup the sky. Go to the **World Panel**, and select **Blend Sky**.



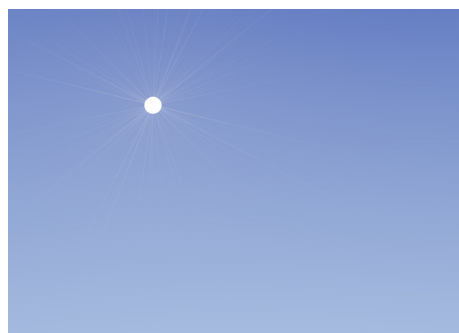
13 Change the Zenith color to a nice dark blue:
R: 0.00
G: 0.06
B: 0.45



14 Change the horizon color to a light blue:
R: 0.51
G: 0.65
B: 0.81



15 Rendering at different resolutions gives different results in the final composite. So go to the rendering panel and increase the size percentage **100%**. This will render at 1980 x 1080.



16 If you rendered now you should see a result similar to this. You are halfway there.

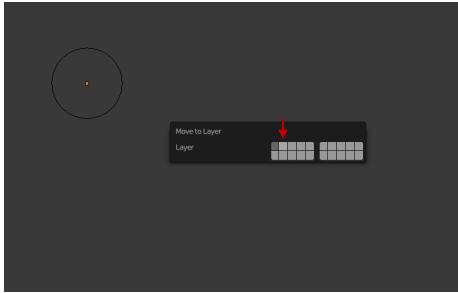
PART TWO

Separating the sunshine

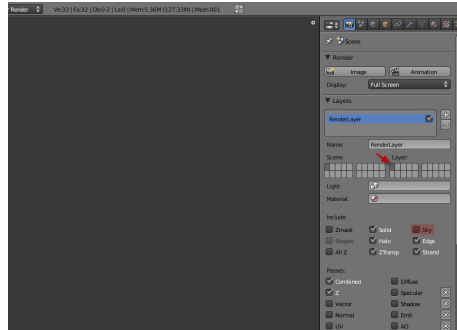
With the sun and sun ray now set up we need to separate the two so that we can apply effects to one without affecting the other.

We will do this by adding render layers.

Optical Flares Sun Flare Tutorial



17 With the sun ray object selected press **M** and click the **second layer** to move it there.



18 Go the render panel and expand the layers box so we can change the options. In the layer options, **select the first layer**, then **deselect Sky**. This will allow us to add effects to the sun without affecting the sun rays or the sky.



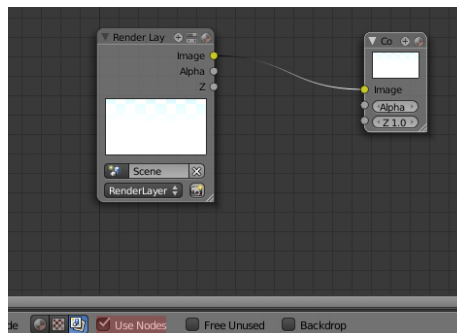
19 Press the **+** button to add a new render layer. Change the name to **Sun ray and sky** so we can find it later. Then click the second Layer where we placed our sun ray.

PART THREE

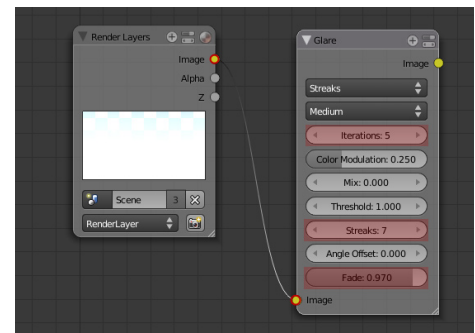
Adding the magic

With the basic scene now in place we can get into the fun stuff: compositing.

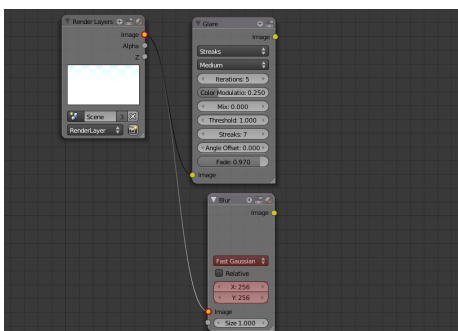
Here we will be adding blurs, streaks, and ghosts to give the famous lens flare effect.



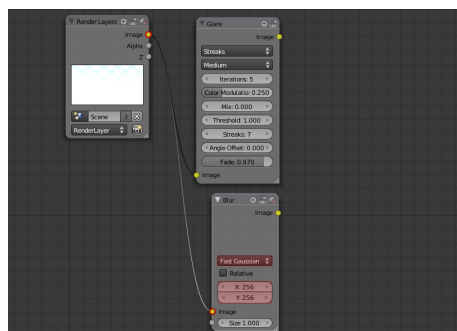
20 Switch to the compositor and hit **Use Nodes**.



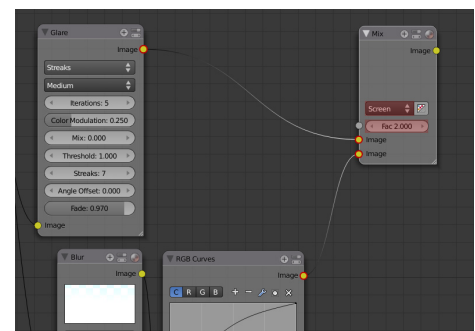
21 Add a glare node (**Add>Filter>Glare**) and change the settings as pictured. The glare node will add faint thick sun rays to the sun.



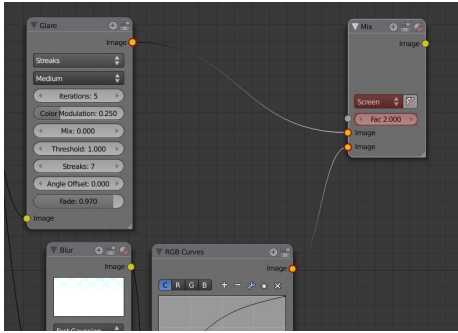
22 Add a blur node (**Add>Filter>Blur**) and place it under the glare node. Change the type to **Fast Gaussian** and set the X and Y to the maximum amount of **256** each. This will add a soft glow around the sun.



23 Add an RGB curve (**Add>Color>RGB Curve**) and connect it to the blur node. Create a sharp bend as pictured. This will amplify the glow and make it more noticeable.



24 Add a mix node (**Add>Color>Mix**) and connect the outputs from both the glare and RGB curve. Set the type to **Screen**. This will combine both effects into one. Set the Fac value to **2**, to amplify the blur effect.

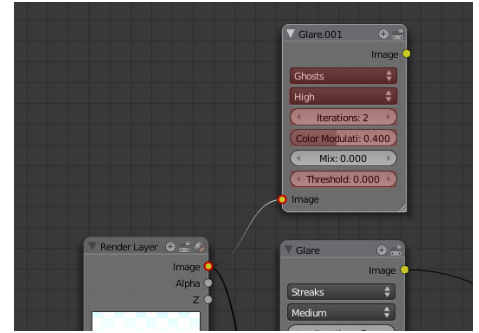


25 Add a mix node (**Add>Color>Mix**) and connect the outputs from both the glare and RGB curve. Set the type to **Screen**. This will combine both effects into one. Set the Fac value to **2**, to amplify the blur effect.

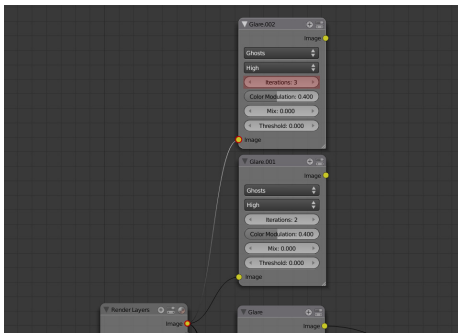
PART FOUR

Beads of joy

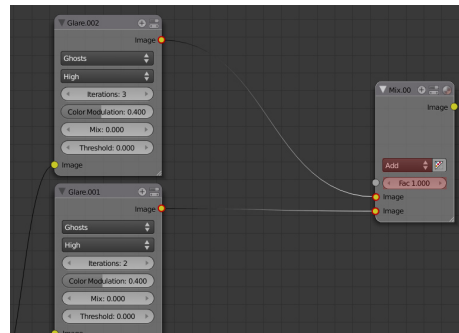
As we discussed at the start, lens flares produce circular shapes in a diagonal line across the screen. This is caused by the light reflecting off the inside components of the lens. We can replicate this look by using the glare node, *ghost* setting.



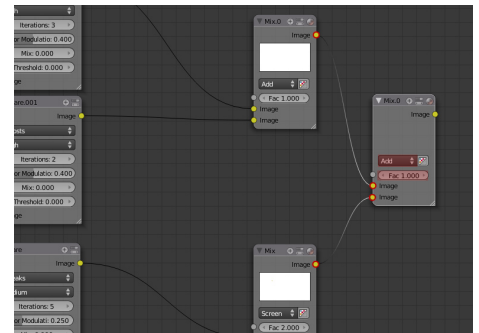
26 Add another glare node (**Add>Filter>Glare**) and connect it to the render layer. Change the type to **Ghost**, the quality to **High**, the iterations to **2**, the Color module to **0.4** and the threshold to **0**. This produces a several duplicates of the light source in a diagonal pattern across the screen.



27 Duplicate the glare node and leave all the settings the same, except change the iterations to **2**. This adds a separate set of circular patterns, but in different places as the other set.



28 Add a mix node (**Add>Color>Mix**) and connect it to the inputs to the two glare nodes we just created. Set the type to **Add**.

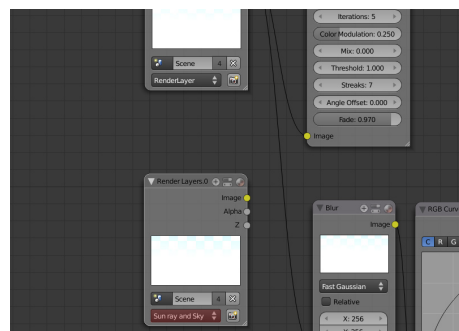


29 Add another mix node and connect it to the outputs of the last two mix nodes we created. Set the type to **Add** and the Fac value to **1**.

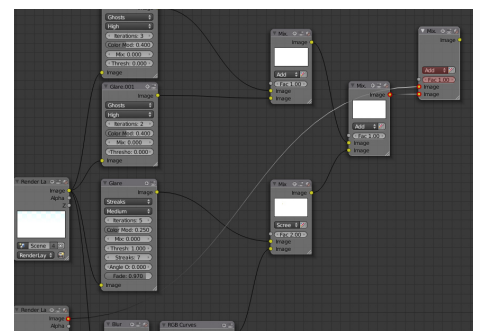
PART FIVE

Combining the sky

Now that we've added the glowing sun node setup, we need to combine it with the sky. So for this we'll need to use the render layer we created earlier.

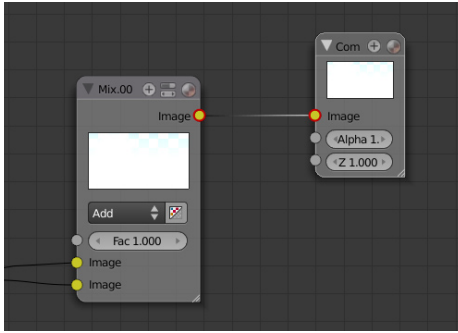


30 Add render layer (**Add>Input>Render layer**). From the drop down list, select the **Sky and sun ray** layer. This brings the layer with the sun rays and skies into the composite.



30 Add a mix node and connect the outputs from the newly created render layer and the last mix node we added. Set the type to **Add** and the Fac value to **1**.

■ Optical Flares Sun Flare Tutorial



31 Finally **connect** that mix node to the composite node. Finished!

Troubleshooting

If by chance your render doesn't look the same as above, that might be due to the size of the white circle. The size of the circle acts as an amplifier for the rest of the effects, so try increasing or decreasing the size. Otherwise, try adjusting the resolution of the scene, as this affects how much glare and glow to use.

Glare Ghost

What is it?

Glare ghosting occurs when light enters the lens and reflects off the internal components to create what looks like a duplicate upside down light next to the real one.

This effect is usually only visible when filming a fire at night, but can also occur whenever a bright object is photographed in low light.

The same thing happens in standard photos taken during the daytime, however the surrounding picture is usually so bright that the effect isn't visible.

Funnily enough, some conspiracy theorists still confuse this standard camera flaw with actual ghosts being present in their photos. They have even tried using these photos as evidence to backup their claims of the supernatural.



Photo: Daniel Garcia



Photo: Sam Davis

When to use it

This effect can be used whenever bright light sources are being filmed at night. Things like campfires, fireworks, sparklers, concert lights, can all benefit from this effect.

Glare Ghosting Tutorial

Before:



For this tutorial, I'll be adding a glare ghosting effect to the most common real life example: a campfire.

The effect is subtle, but it brings you another step closer to realism.

This tutorial will teach you how to:

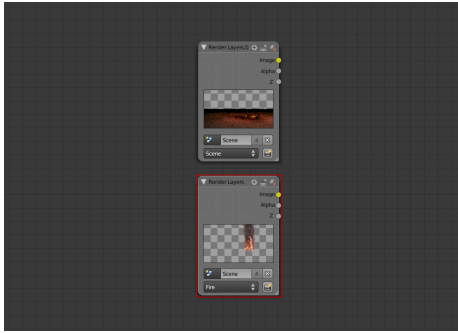
- Lower the contrast of your bright object to make the effect subtle
- Add subtle ghost glare to anything

Time to complete: 7 minutes

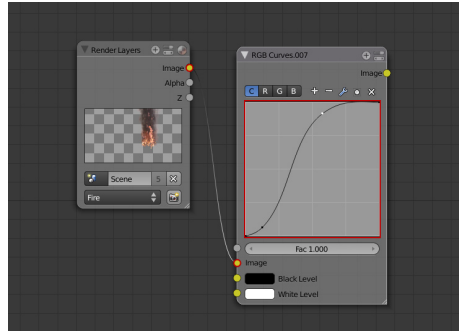
After:



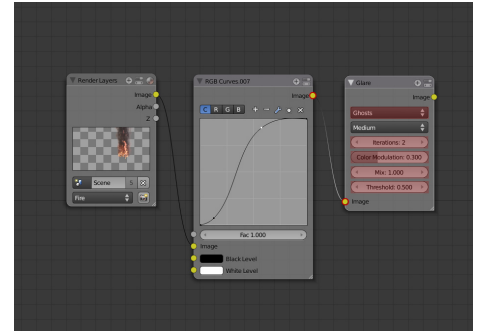
► Tutorial Glare Ghosting



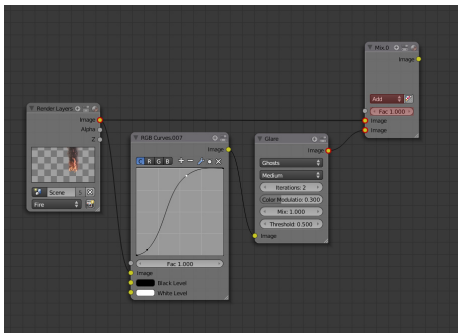
01 Before you begin, make sure that your fire (or other bright object) is on an isolated separate layer.



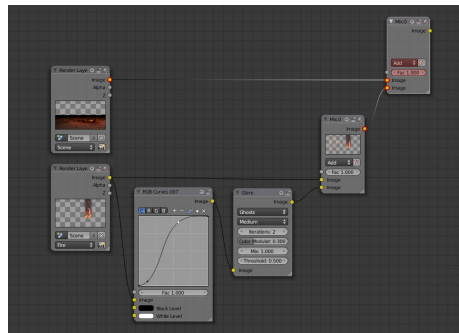
02 Add an RGB curve (**Add>Color>RGB Curve**) and create a top heavy S shape. This will increase the contrast slightly and increase the brightness. This will create a brighter harsher ghost effect.



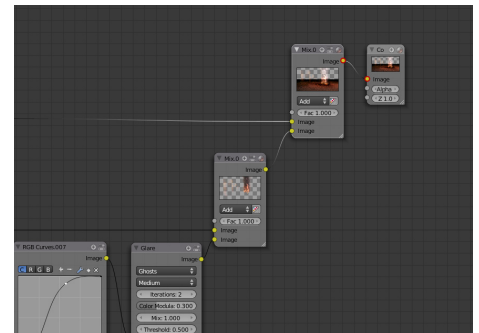
03 Add a Glare node and connect it to the RGB curve. Set the type to Ghost, the iterations to 2 (any higher will be over doing it), Color to 0.3 (for slight color variation), Mix to 1 (so only the ghost appears) and the threshold to 0.5, which makes the ghost slightly brighter.



04 Add a mix node (**Add>Color>Mix**) and connect it to the glare node and the original fire render layer.

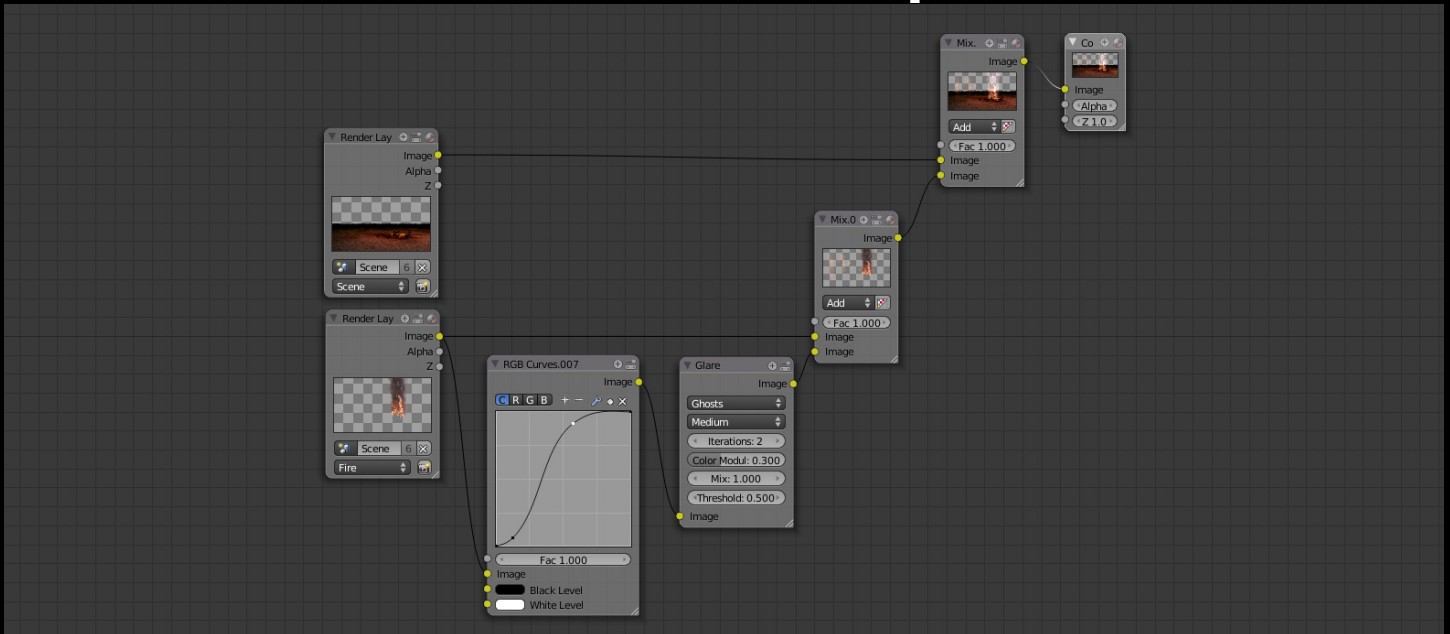


05 Add another mix node and connect it to the mix node we just created as well as the render layer with the scene on it. Set the type to **Add** and the Fac value to 1.



06 Connect the output from the mix node to the compositor.

Final Node Setup



Finished Result



With glare ghosting added, the fire is more recognizable to the viewer as most footage of camp fires suffers from this effect. You may need to experiment with the settings in this tutorial to see how far to take it as it varies depending on your scene.

Reflecting Glare



Photo: Jessica Merz

What is it?

Reflecting glare occurs when sunlight reflects off a shiny surface into the lens of the camera and produces a mini lens flare. The effect is usually visible when photographing water, glass, mirrors or metallic objects in daylight. Smoother objects such as painted walls can also produce reflecting glare; however, the effect is usually reduced to a soft glow.

Because reflecting glare occurs against shiny surfaces, it is often deliberately added to photographs to make company products appear shiny and new. At times, however, the reflecting glare can be a distracting artifact, and can detract from the overall image. Some photographers attach a polarizing filter when taking photos outdoors, to reduce this effect.

In 3d, artists often resort to adding glare in an image editor like Photoshop. Whilst this usually works okay for still images, it can become troublesome for animations. The technique I will teach you in the following tutorial will work for both still images and animations, as well as producing physically accurate effects, relative to the positions of the camera, the reflecting object, and the light.



Photo: Jebb

■ Optical Flares Reflecting Glare

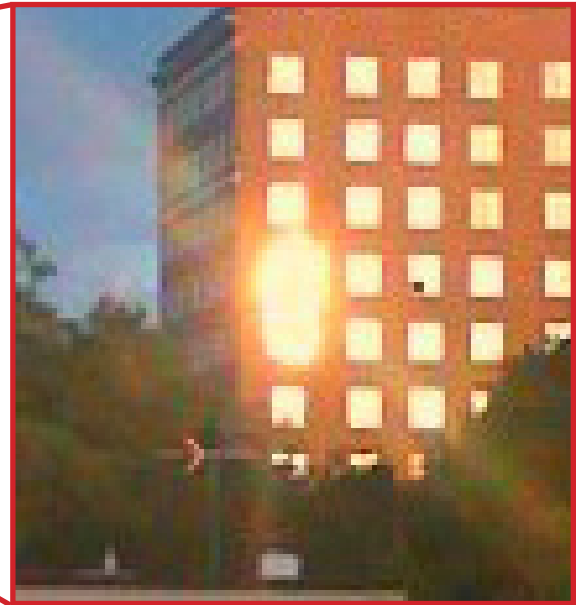
When to use it

Reflecting glare can be used to make an object appear clean or to add realism to an outdoor scene. Glare can be caused by any bright light source, including street lights, camera flashes, or even a full moon. However it is usually produced by the sun.

Use this effect with caution! Eyes are drawn to bright light, so it can be quite distracting at times. If it doesn't compliment the final image, don't use it!



Photo: Kevin Lawver



TIP: Before adding the effect to your scene, take into account the experience of the photographer that would be taking it. Experienced photographers (such as those who work on feature films) would take measures to prevent it, so make sure it suits the purpose of the image.

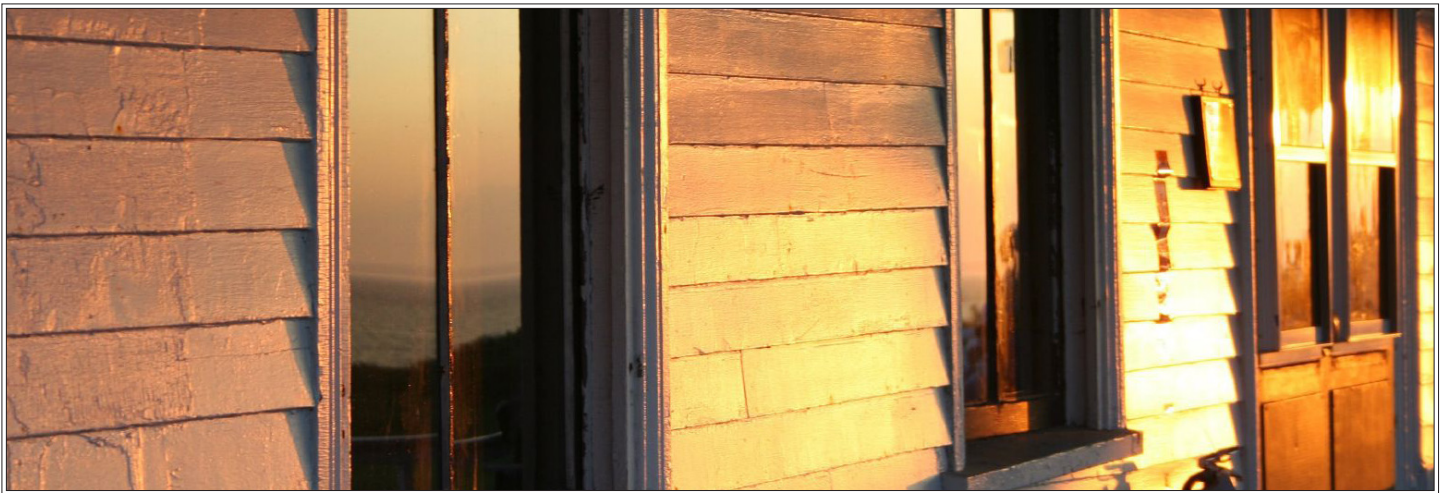


Photo: Cyndy Sims Parr

Reflecting Glare Tutorial

Original:



In this tutorial I will be demonstrating reflecting glare on this render of an M4 Carbine. The reflecting glare will make the gun appear more metallic and oily, as well as showing the brightness of the sun.

This tutorial will teach you how to:

- Generate a specular pass
- Use the specular pass to create a realistic glare effect
- Add eye popping glow effects

Time to complete: 17 minutes

Finished Result:

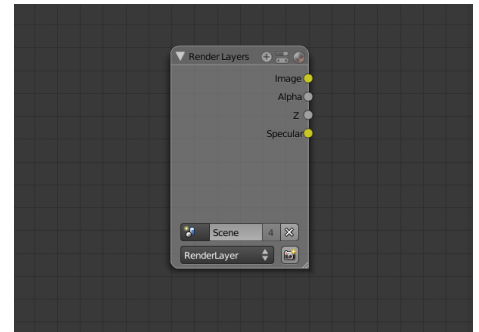
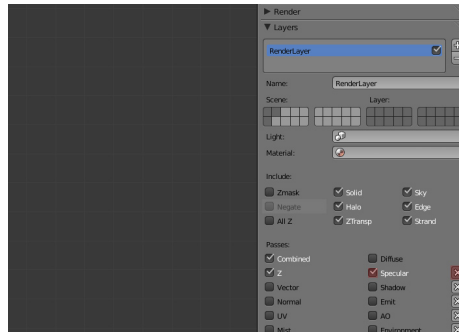


PART ONE

Setting up the specular pass

To make the glare authentic, we want it to affect the actual light source in our scene.

This can be achieved quickly by separating the specular pass from the original render.



01 Open your scene, and go to the render settings panel. Under the layer options, find the specular box and check it, as well as the **X** next to it. This will remove the specular from the image output and make it into a separate pass.

02 Switch to the node compositor, and you should see a Specular output underneath the Z output. This means the specular pass is set up correctly.

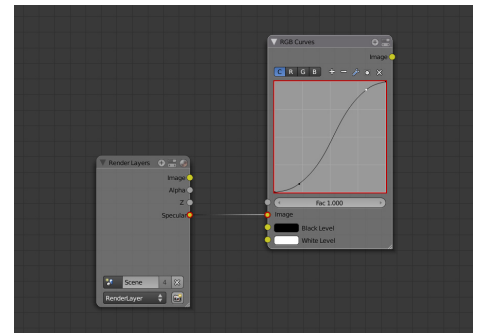


If you rendered just this output you would see a result similar to this. This allows us to add effects to just this pass.

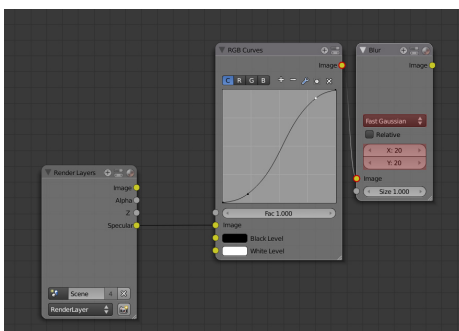
PART TWO

Traditional glow

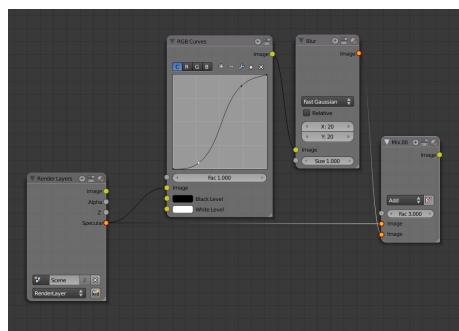
Before we handle the light streaks, we need to tackle the traditional soft glow to give the appearance of a bright light source.



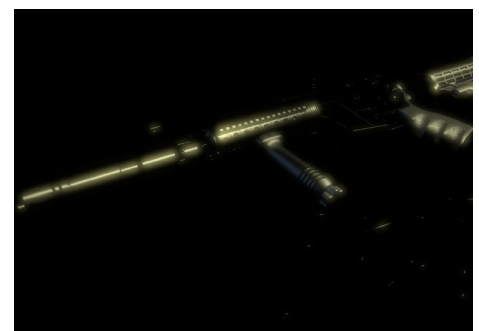
03 Add an RGB Curve (**Add>Color>RGB Curve**) and connect it to the **specular output**. Create a slight S curve by clicking and dragging. This increases the contrast and brightens it.



04 Add a blur node (**Add>Filter>Blur**) and connect it to the RGB Curve output. Set the type to **Fast Gaussian** and set the X and Y value to **20**. This creates a soft glow around the specularity.



05 Add a mix node (**Add>Color>Mix**) and connect it to the **blur node** and the original **Specular output**. The order in which you connect these is important. Make sure the specular pass is going into the *top output*. Set the type to **Add** and the Fac value to **3** (amplify the brightness).

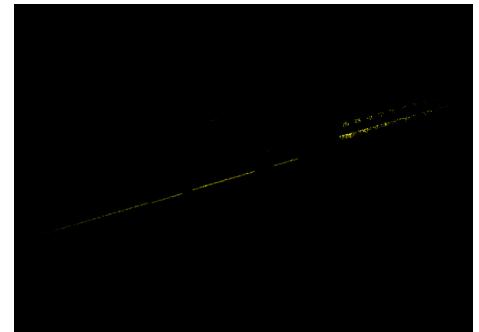
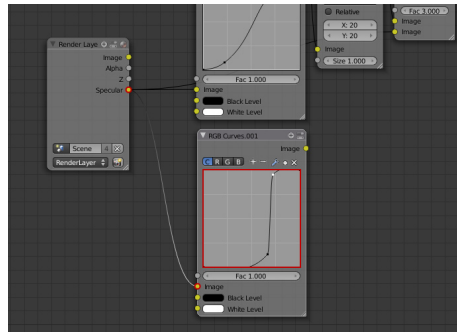


Rendering now will produce a result similar to this. The blur effect is now overlaid on top of the original specular pass, making it look like a soft glow.

PART THREE

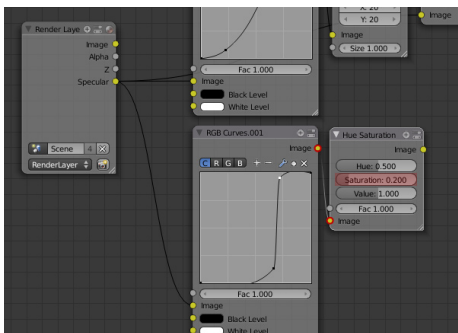
Glinting lights of joy

Now onto the good stuff. This part covers how to create those awesome glinting lights you often see in 3d renders.

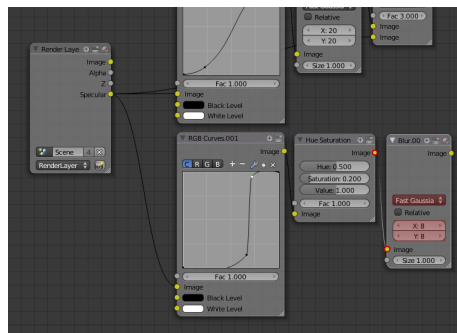


06 Add another **RGB Curve** and connect it to the output of the specular pass. Create a very steep S curve as pictured. This will cut out unnecessary specularity and increase brightness.

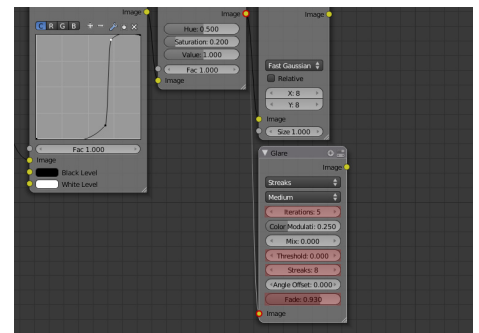
This has given us ultra bright specularity to which we can add effects. The downside to this is it is very saturated. Let's fix that...



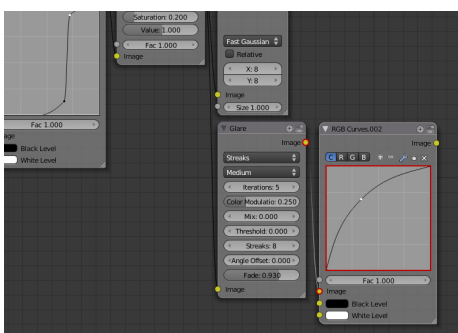
07 We need to desaturate the yellow, so add a **Hue Saturation** node (**Add>Color>Hue Saturation Value**) and set the **Saturation** value to **0.2**. Connect it to the RGB Curve output.



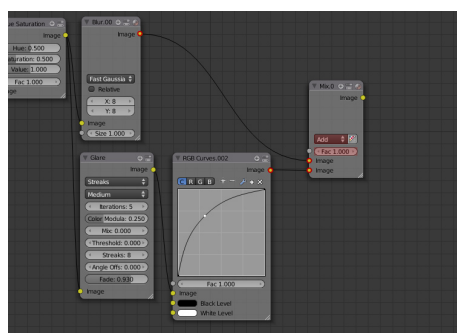
08 Next, add a **blur** node and connect it to the output from the Hue node. Set the type to **Fast Gaussian** and the X and Y value to **8**. This blur node will give a soft glow to the ultra bright specularity.



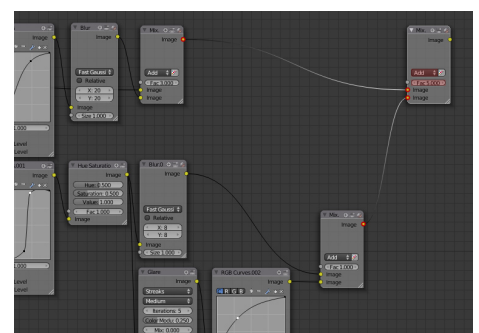
09 To create streaks of light, add a **Glare** node (**Add>Filter>Glare**) and connect it to the **Hue Saturation** node. Set the **Iterations** to **5**, **Threshold** to **0**, **Streaks** to **8**, and the **Fade** to **0.930** (these settings are flexible so feel free to change them according to your scene).



10 To increase the brightness of the light streaks, add an **RGB Curve** and create a bowed curve as pictured.

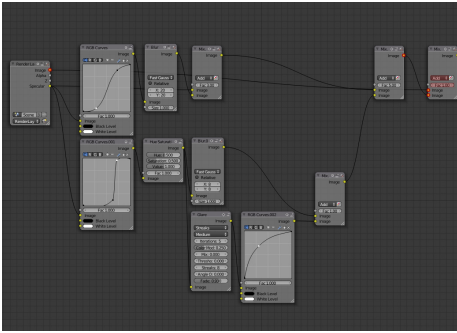


11 Add a **Mix** node and connect it to the RGB Curve and the blur node we created earlier. Set the type to **Add** and the **Fac** value to **1**. This combines both effects from the ultra specularity.

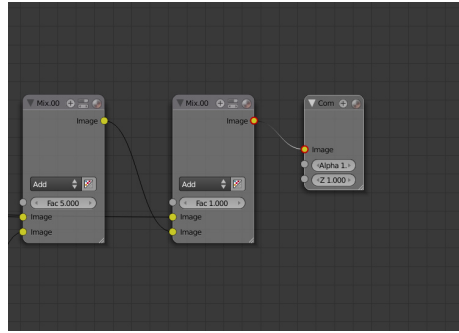


12 Add a **Mix** node and connect it to the mix node we created earlier. Set the type to **Add** and the **Fac** value to **5**. This combines the ultra specularity effects with the soft glow we created earlier.

► Tutorial Reflecting Glare



13 Add another **Mix node** and connect it to the mix node as well as the output from the original render layer. This combines all the effects with the original render.

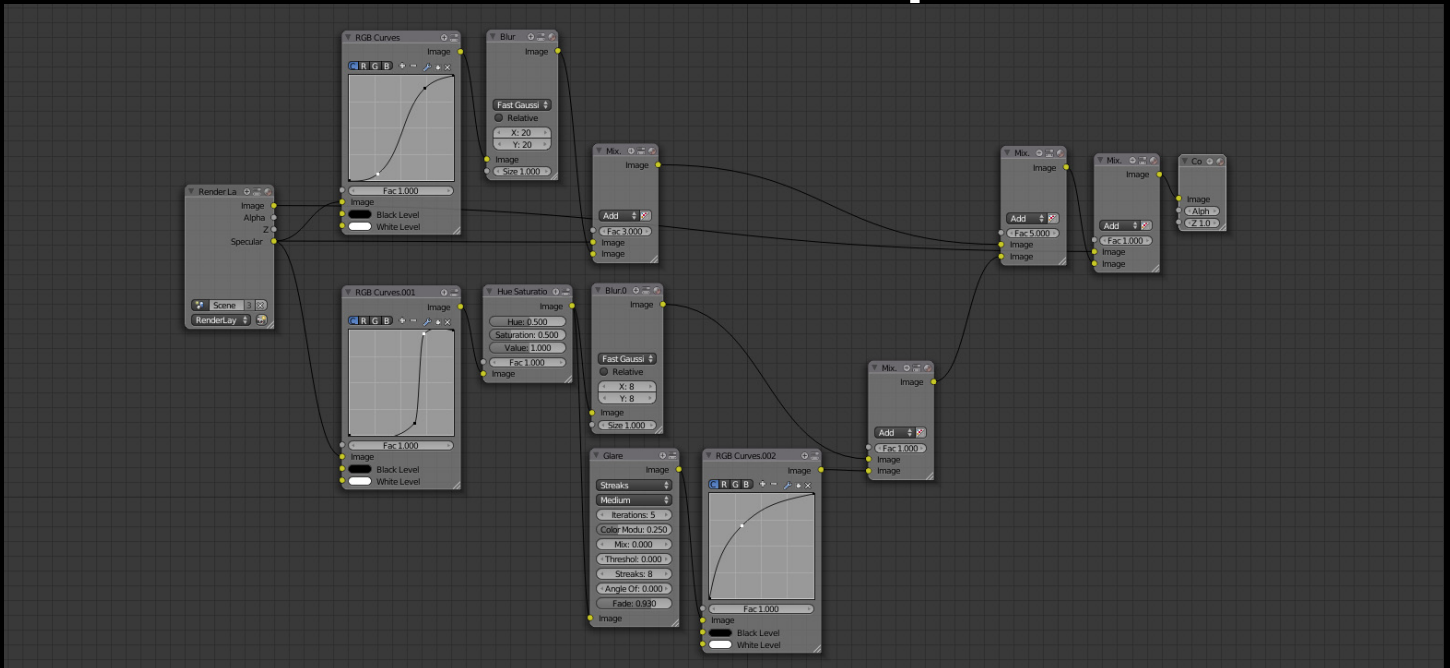


14 Connect this node to the compositor.



Finished!

Final Node Setup



Finished Result



With reflecting glare the rifle looks more metallic and oily, as well as giving the viewer the impression of a bright sun.

Glare Burnout

What is it?

This severe camera flaw is usually only visible in very cheap cameras or when filming extremely bright sources such as a welding iron or the sun.

It occurs when the light is so bright that the camera sensor can't process it correctly and leaks a solid vertical line up the screen. Expensive cameras generally have higher quality image sensors which lessen the effect, but cheaper cameras suffer from this badly.

The other cause for a glare burnout can be shooting video into a strong light source. If you were to take a photograph of the sun you will usually just see a lens flare. But if you switched to the video mode, you would probably see a vertical line. The reason for this is that the camera uses separate light settings when shooting in video mode to process the information faster.



Photo: Toshihiro Oimatsu



In this photo, the vertical line is tilted on an angle due to the type of lens used.

Photo: nugunslinger

When to use it

A glare burnout can be appropriate in scenes where an extremely bright light source is in view. Examples would be, the sun, a welding iron, a sparkler, a firework or an explosion.

I used this effect extensively in my short film, *The Ballad of the M4 Carbine* on for road flares that were being filmed at night.

Glare burnout Tutorial

Original:



For this tutorial I will be showing you how I created the burning road flare effect from my short: *The Ballad of the M4 Carbine*.

During the tutorial you will learn how to:

- Create a solid vertical line emitting from a light source
- Add extra glow effects to improve the appearance

Time to complete: 16 minutes

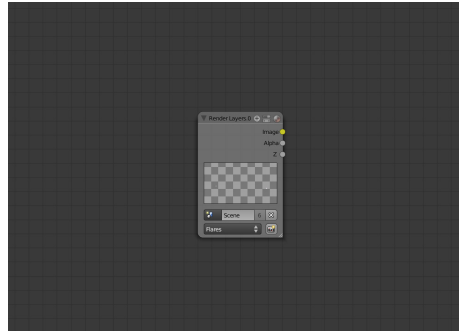
Finished Result:



PART ONE

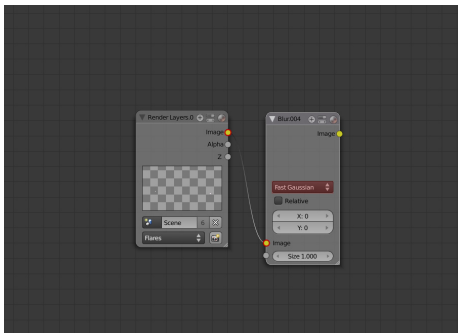
Creating the vertical line

After all, that's why you're reading this tutorial aren't you? So let's tackle that first.

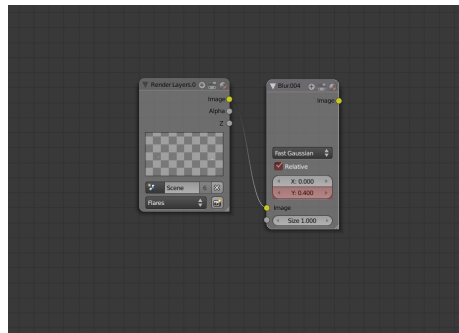


01 Make sure your light source is isolated on a separate layer.

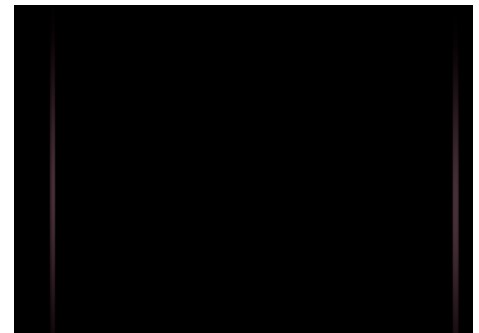
My render layer looks like this. All they consist of are two white spheres. I gave them a material and set the emitter value to **2**.



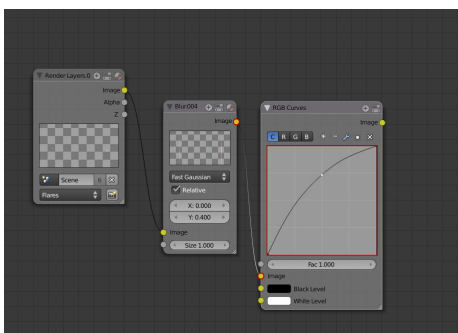
02 Add a blur node (**Add>Filter>Blur**) and connect it to the render layer. Set the type to **Fast Gaussian**.



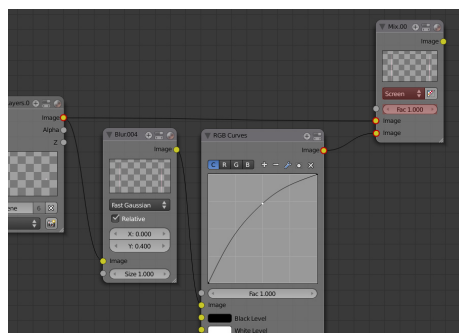
03 We want to crank up the values more than usual so check the **Relative** box. This will allow us to change the blur size based on a percentage instead of the normal value system. Achieving the vertical line is as simple as changing one value: the Y. Go ahead and set it to **0.4**



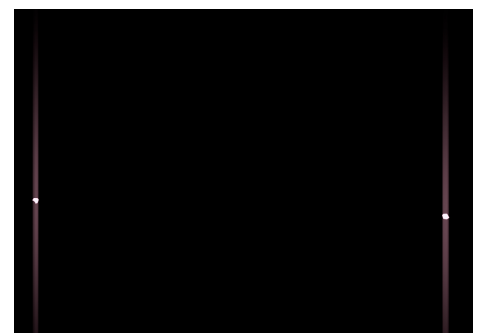
Doing this, has taken those white dots and stretched them out over the Y axis only.



04 To brighten it up slightly, add an RGB Curve (**Add>Color>RGB Curve**) and create a hump in the curve.



05 To combine the blur with the original white dots, add a mix node (**Add>Color>Mix**) and connect it to the output from the RGB curve and the original render layer. Set the blending type to **Screen** and the Fac value to **1**.



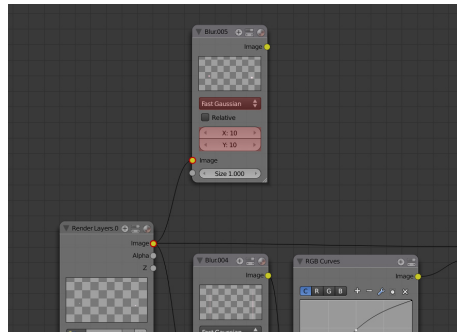
The vertical line is now brighter.

PART TWO

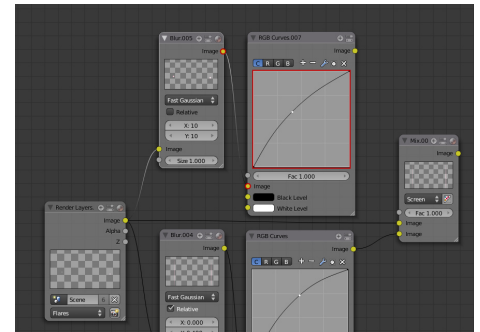
Eye candy

The vertical line is done and dusted, but if you want to add some wow to your factor, then read on.

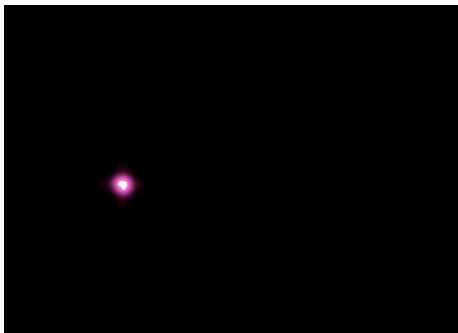
This part will cover how to add extra glow effects to the light source.



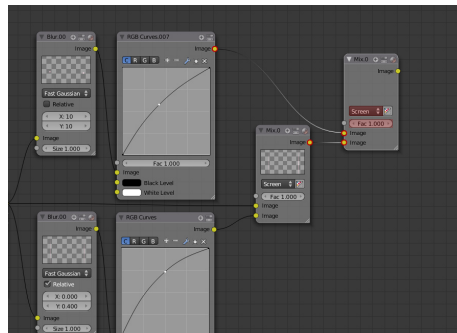
06 Add a blur node (**Add>Filter>Blur**) and connect it directly to the render layer. Set the type to **Fast Gaussian**. Change the X and Y value to **10**. By giving it a low value of 10, it will create the appearance of a small soft glow surrounding the light source.



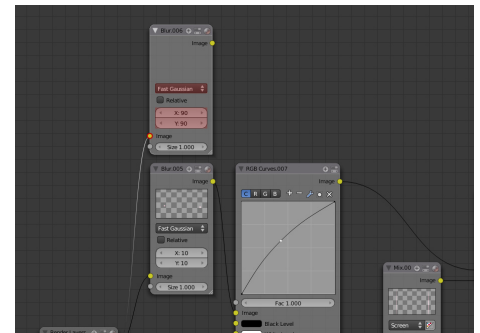
07 To make the glow slightly brighter add an **RGB curve** and connect it to the blur node. Create a slight hump in the curve to increase the brightness.



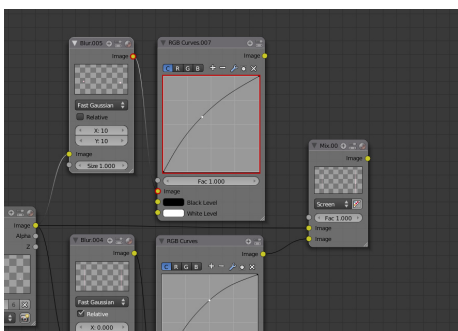
Looking good so far!



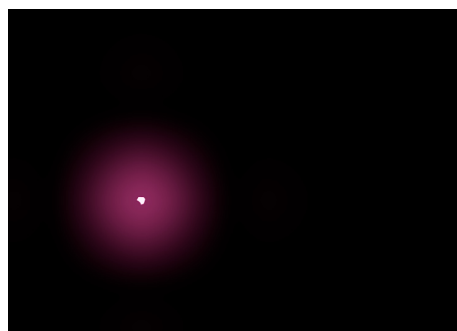
08 Before we move on we need to combine this glow with the vertical line. Add a **mix node** and connect it to our previous mix node and the output from the RGB curve. Set the type to **Screen** and the Fac value to **1**.



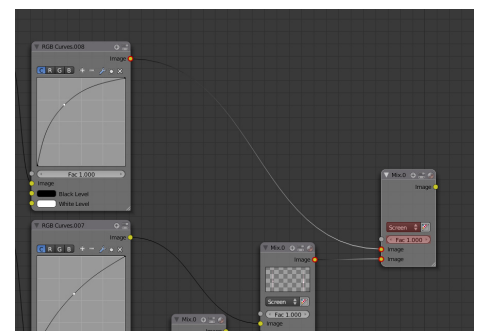
09 We will now create a slightly larger glow. Add another blur node and connect it directly to the render layer. Set the blending type to **Fast Gaussian** and the X and Y values to **90**.



10 Add another RGB curve and create a slight hump in the curve to increase the brightness.

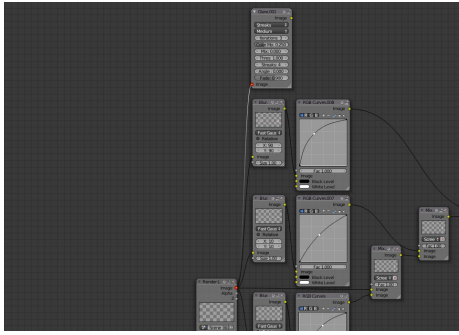


The larger glow gives the appearance of light scattering across air particles.

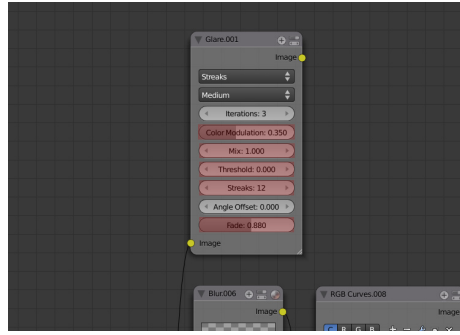


11 Add another **mix node** and combine it with the other mix node we previously created. Set the type to **Screen** and the Fac value to **1**.

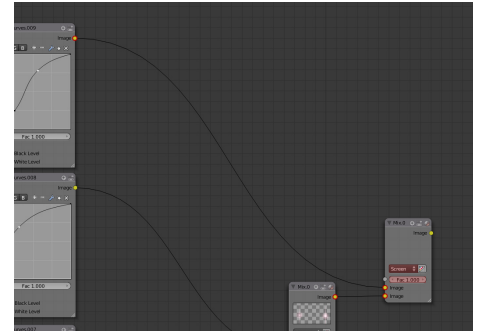
► Tutorial Glare Burnout



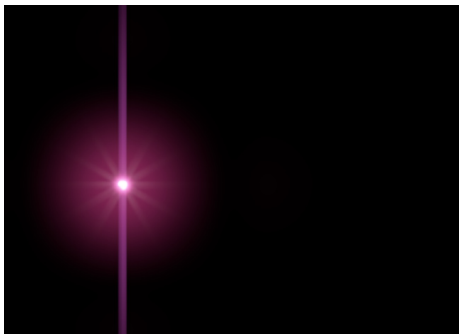
12 We will now add the star shaped effect. Add a glare node (**Add>Filter>Glare**) and connect it directly to the render layer.



13 Change the color modulation to **0.350** to give the streaks some slight color variation. Set Mix to **1** so we see just the effect, not the original render layer. Set the threshold to **0** and the streaks to **12**. Finally, change the Fade to **0.880** to make the streaks slightly shorter than normal.

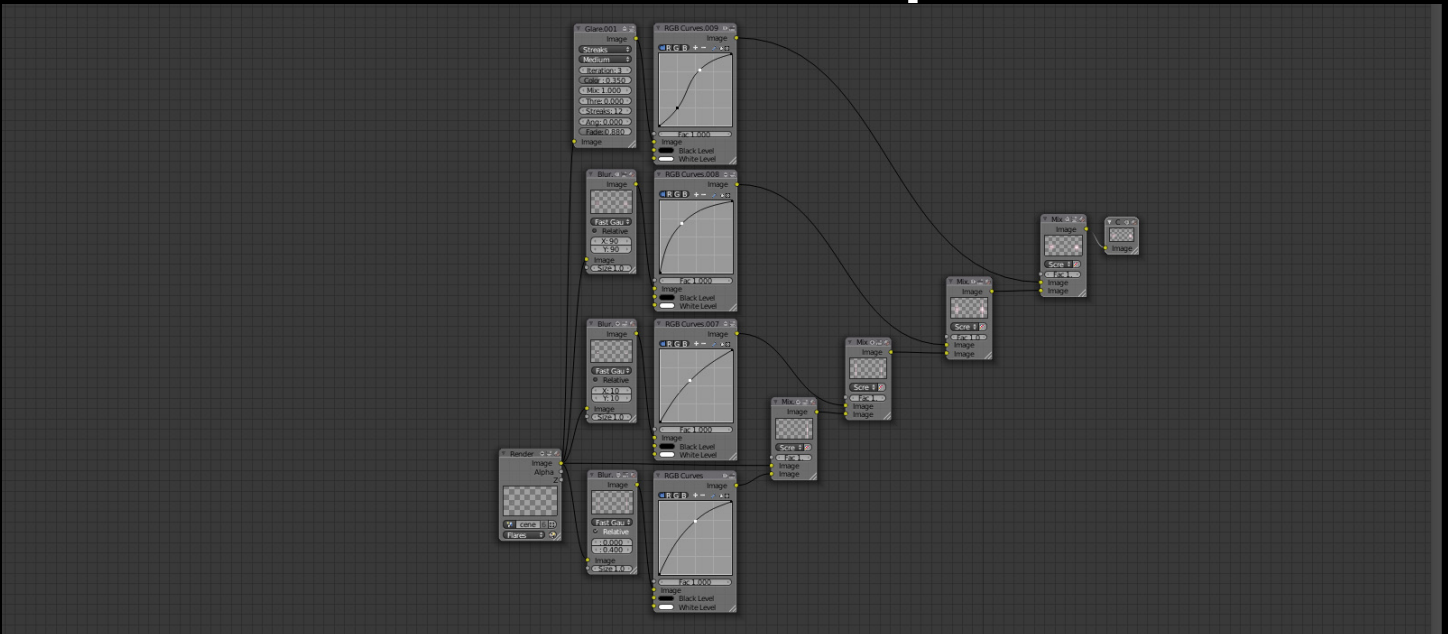


14 To connect the streak effect with all of our other effects, add another **mix node** and connect it to the RGB Curve and the last mix node we added earlier.



Finished! To combine this effect to your scene simply add another mix node, set the type to **Screen**, Fac to **1** and connect it to the last mix node we added and the render layer with your scene on it.

Final Node Setup



Finished Result



With glare burnout the road flares look extremely bright as they appear to have affected the camera's sensor. The other glow and flare effects have also contributed to the look of a brightly glowing light source.

Depth of Field

aka DOF, Focal Blur, Rack Focus

What is it?

Depth of field makes the foreground or background blurry, whilst keeping the main subject in focus.

When taking photos, the amount of focal blur can be determined by adjusting the *aperture*, which is the opening through which light enters the camera. The size of the aperture is measured in *f-Stops*, which you see written on the side of some camera lenses. A higher f-Stop lets in less light, whilst a lower f-Stop lets in more light. The more light that is let in, the greater the focal blur.

Photographers use depth of field to their advantage by drawing attention to a particular area of the image.

It can even be used to assist in storytelling. Often times in movies when the main character sees a beautiful girl, everything else becomes blurry. This is to portray the man's complete undivided attention.



Photo: Nicola Jone

■ Camera Effects Depth of Field

Bokeh (pronounced bow-kay)

An interesting side effect to depth of field is its effect on light sources.

When using a camera, focal blur doesn't always blur everything accurately. For example, bright lights can often bloom out into brightly colored circles.

This “flaw” however is sometimes sought after, as it can be used to change the emotion of the image. In the photo to the right, the bokeh has made the background appear clean, minimalistic and slightly futuristic. This adds character and artistic value to the original photo.



Photo: Mark Sebastian

Older cameras can sometimes display bokeh as different shapes like hexagons, octagons or even sharp triangles. These different shapes all have a different effect on the original photograph.



Photo: Steve Jurvetson



A close up of this photo reveals *octagonal* bokeh.

When to use it

As well as adding realism, depth of field can be used as a powerful way to direct your viewers attention to a particular object. By making the background out of focus, the viewer's attention is directed to the clearest in-focus element of the photo.

Another clever use of focal blur is to hide part of the scene that the audience isn't supposed to see yet. This is frequently used in horror movies to surprise the audience. For example, the main character is faces the camera and all appears calm. But when the background comes into a focus, a man with a knife/axe/birthday cake appears.



Photo: pink_fish13

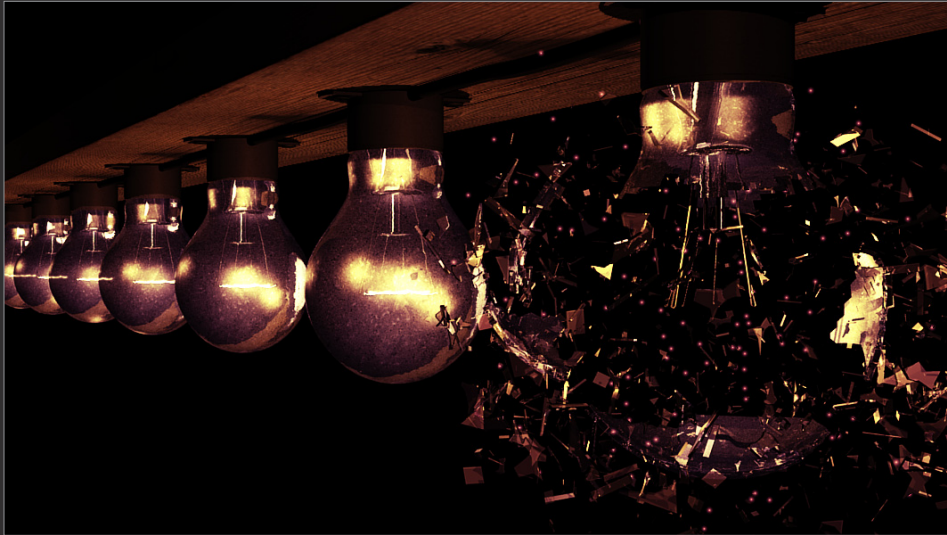
The only time depth of field shouldn't be used is large scale scenes, such as city or aerial views. The reason for this is that depth of field will only work up to a certain distance before everything becomes in focus. Once you go past about 10 metres, it should be turned off entirely.



The flower in this photo is very close to the camera and as a result the focal blur of the grass in the background is amplified.

Depth of Field Tutorial

Before:



For this tutorial I will be demonstrating depth of field on this row of light bulbs.

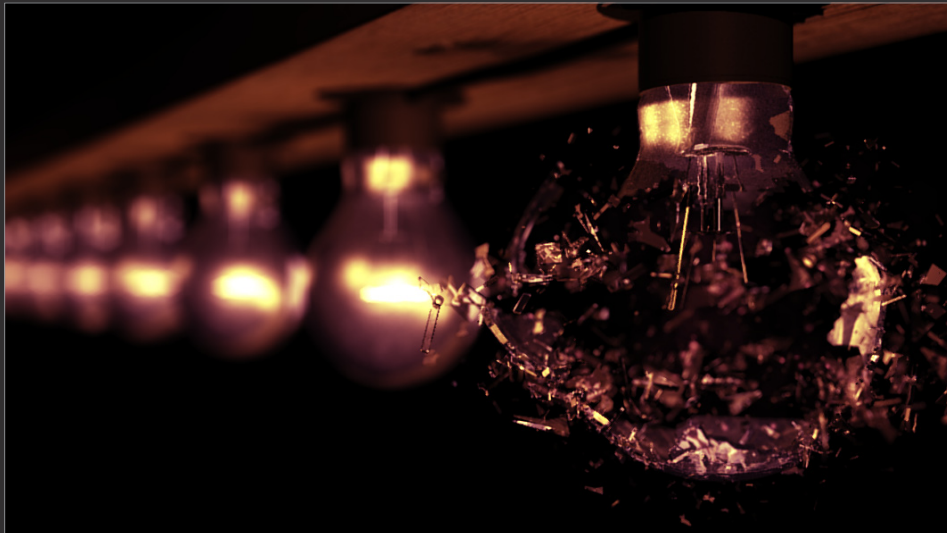
This tutorial was originally posted on blenderguru.com, but has been converted for use in Blender 2.5.

This tutorial will teach you how to:

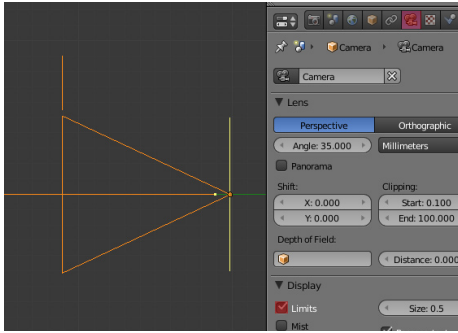
- Set the camera to calculate depth
- Configure the defocus node to produce realistic depth of field

Time to complete: 8 minutes

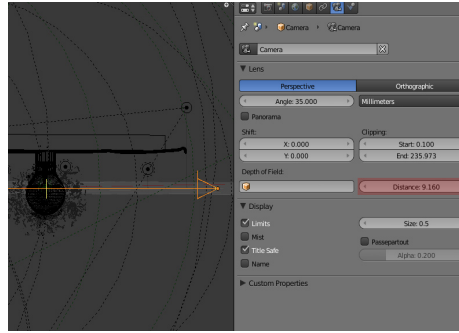
After:



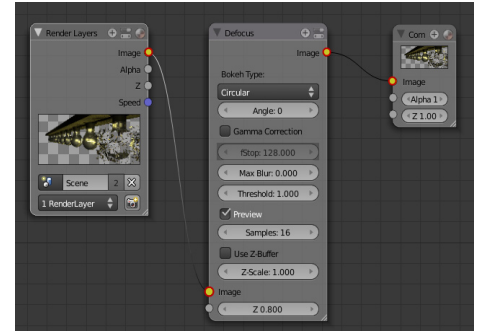
► Tutorial Depth of Field



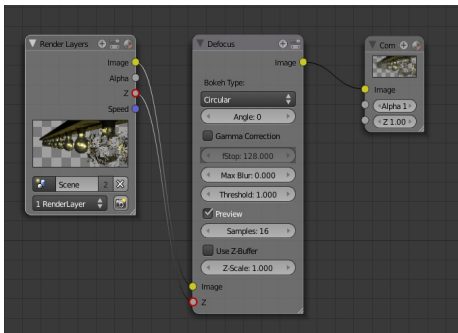
01 Select your camera and press the 'Show Limits' button in the camera panel. You will notice that a yellow cross hair appears at the base of your camera. This is the focal point.



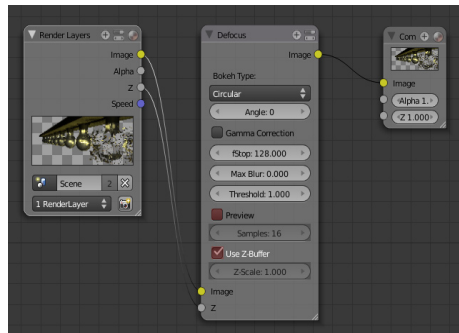
02 The yellow cursor position is defined in the camera panel under Depth of Field. Click the right arrow until the yellow cursor is in line with what you want to focus on.



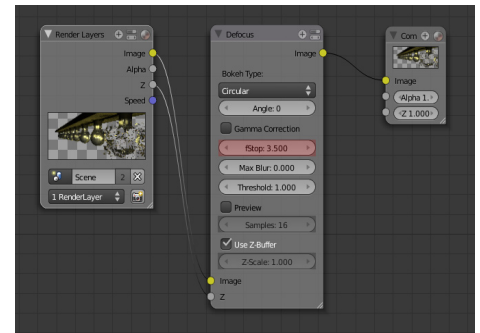
03 Switch to the compositor and place a defocus node (**Add>Filter>Defocus**) between the render layer and the composite. The defocus node will control how the depth of field looks.



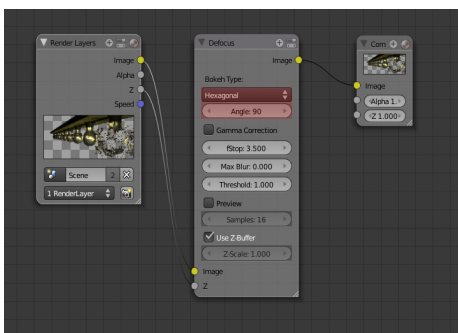
04 Connect the Z output of the render layer to the defocus node's Z input. This will tell the defocus node to use the Z depth from the render to calculate depth of field.



05 Uncheck **Preview**. This is useful for test renders as it renders faster, but isn't needed very often. Check **Use Z-Buffer**. This will ensure the defocus node uses the focal data we previously entered into the camera.

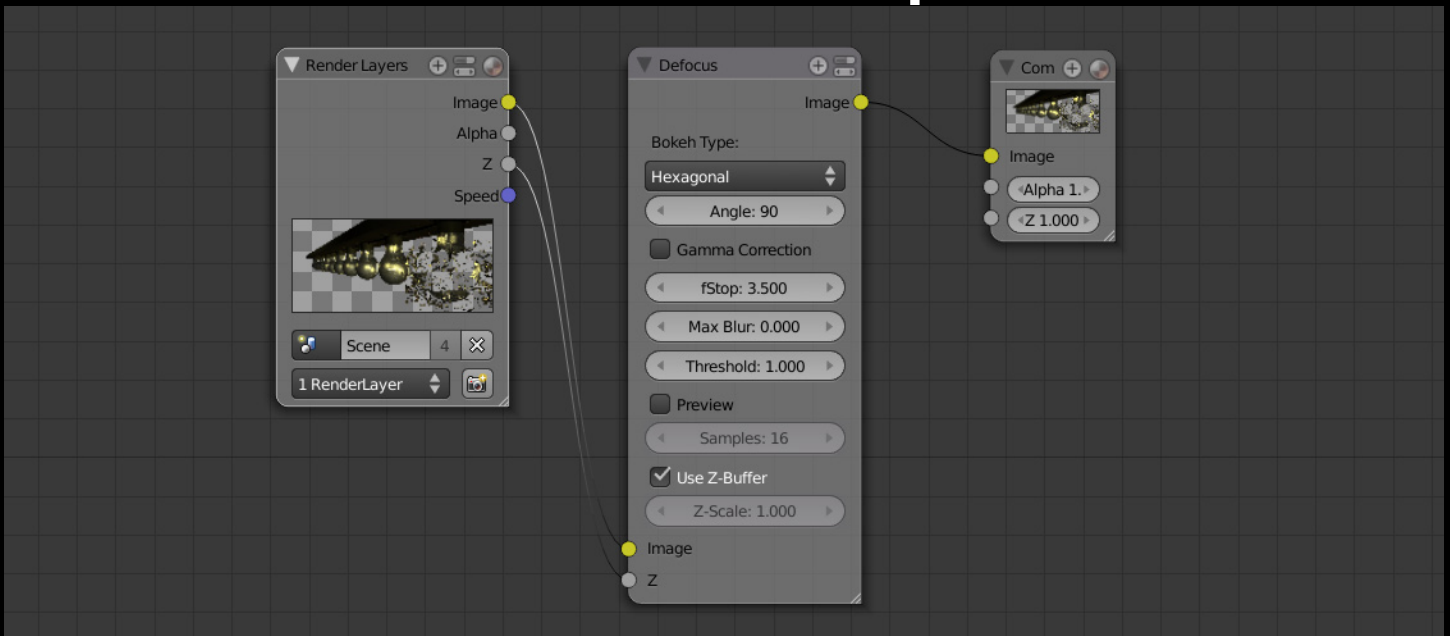


06 The F-Stop value defines how much on either side of the yellow cursor will be in focus. In this instance, set it to 3.5.

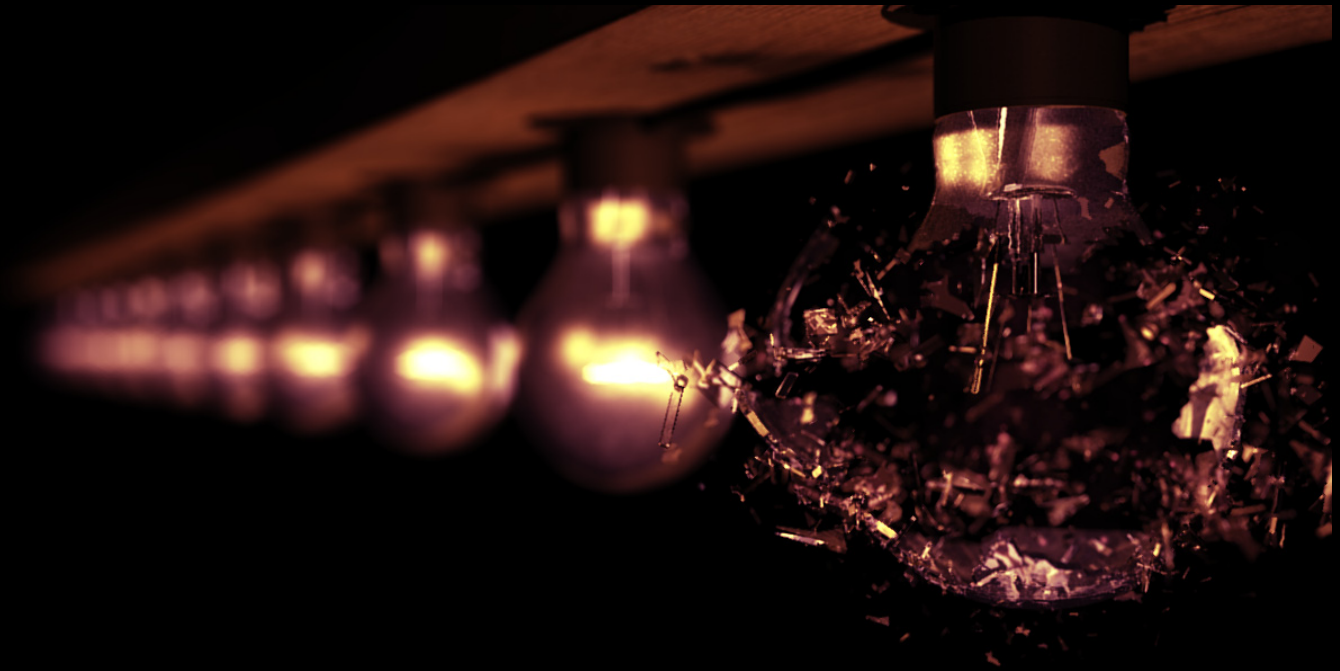


07 The bokeh type defines the shape of the bokeh. In this instance I will set it to Hexagonal and the rotation to 90. The rotation value simply rotates the bokeh shape.

Final Node Setup



Finished Result



With depth of field, the unimportant elements are blurred leaving the viewer to focus on the exploding light bulb.

Chromatic Aberration

What is it?

Chromatic aberration is the ugly blue and red burn that you can sometimes see in photos taken with a cheap camera.

If you look at a visual color spectrum, you'll notice that every color operates on a different wavelength. And if you look at a camera lens you'll notice that it's curved. Unfortunately, when the light passes through the lens and into the camera, the colors can sometimes misalign and create an ugly color fringe. This effect is similar to when your science teacher showed you how to separate a white light into separate colors with a glass prism.

Did I lose you? Don't worry, knowing this isn't crucial, but it helps to have an understanding. But in a nutshell, chromatic aberration occurs in cheap camera lenses when photographing bright objects.



Photo: Stan Zurek

When to use it

Aberration is most visible in cheap cameras. You aren't likely to find chromatic aberration in feature films, so if you're trying to create the look of a movie, don't use it. An appropriate use would be when matching live action footage taken with a cheap camera.

The effect is most prevalent in high contrast areas, such as when the camera is pointed at the sky.



Photo: Eric 'e-magic'

Important!

Chromatic aberration is one of the most overused effects today. It's even been referred to by some professionals as the new lens flare. When it became readily available around 2007, the internet became awash with poorly made 3d art that were using chromatic aberration as an umbrella to hide the artist's incompetencies.

Using this filter can be addictive, but you need to exercise restraint.

Chromatic aberration has its uses, you just need to know what they are and not fall into the habit of adding this effect to your renders when there's no reason to.

Chromatic Aberration Tutorial

Before:



For this tutorial I will be demonstrating chromatic aberration on a render of a pile of nails.

For the sake of this tutorial the effect has been exaggerated so you can see it more clearly.

This tutorial will learn you how to:

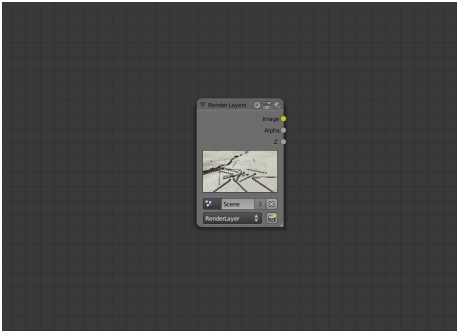
- Apply a red/cyan color fringe
- Use the correct amount of chromatic aberration.

Time to complete: 3 minutes

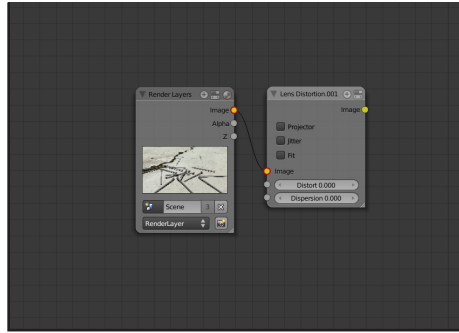
After:



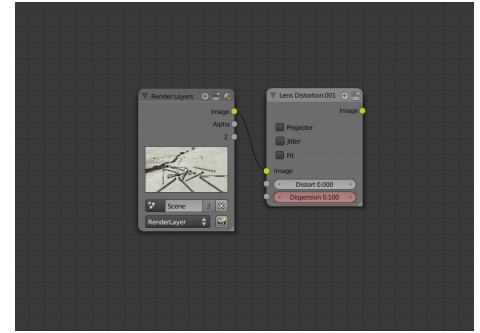
► Tutorial Chromatic Aberration



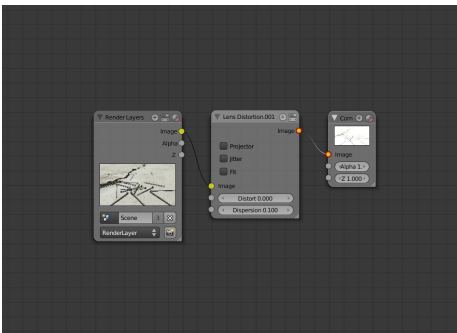
01 Start with your scene loaded in the compositor.



02 Add a Lens Distortion node (Add>Distort>Lens Distortion) and connect it to the render layer.

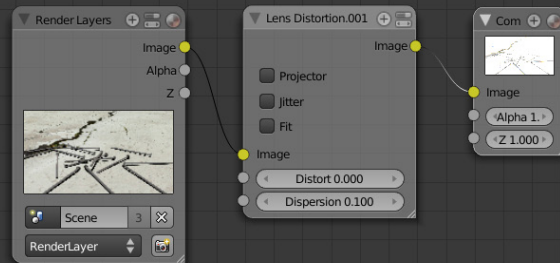


03 The dispersion value controls the amount of aberration to apply. As a rule of thumb it's best not to push this further than **0.1**



04 Connect the lens distortion node to the composite node.

Final Node Setup



Finished Result



* The effect has been exaggerated to make it more obvious for the tutorial. Chromatic aberration should never look this strong! *

Vignette

aka. Pin hole effect, Tunnel Vision

What is it?

Vignetting is the darkening of the edges of a photo. It is often an unintended effect caused by camera limitations, but has also been introduced as an artistic method to draw the viewer's attention to the center of the frame (also known as the 'hot spot'). In fact, some cinematographers throughout history have even been known to smear vaseline on the camera lens as a quick way to mimic the effects of vignetting.

Vignetting is traditionally black or dark in appearance, however desaturation and blurring are also used. The main idea is to draw the viewers attention away from distracting elements and focus on the main subject.

On a side note, many people who claim to have had a near death experience in their life describe a strange 'tunnel vision' where their peripheral view turns dark and blurry. This is why you will sometimes see vignetting in movies or video games to illustrate a character under stress.

When to use it

Vignetting should be used whenever you want to direct the viewers attention to the center of the frame. This can make the image more pleasing to look at, as it relaxes the viewer and shows them where to look.

A bonus of using vignetting is that the general public usually associate it with feature films or professional photography, so it can give your image a high-end look.

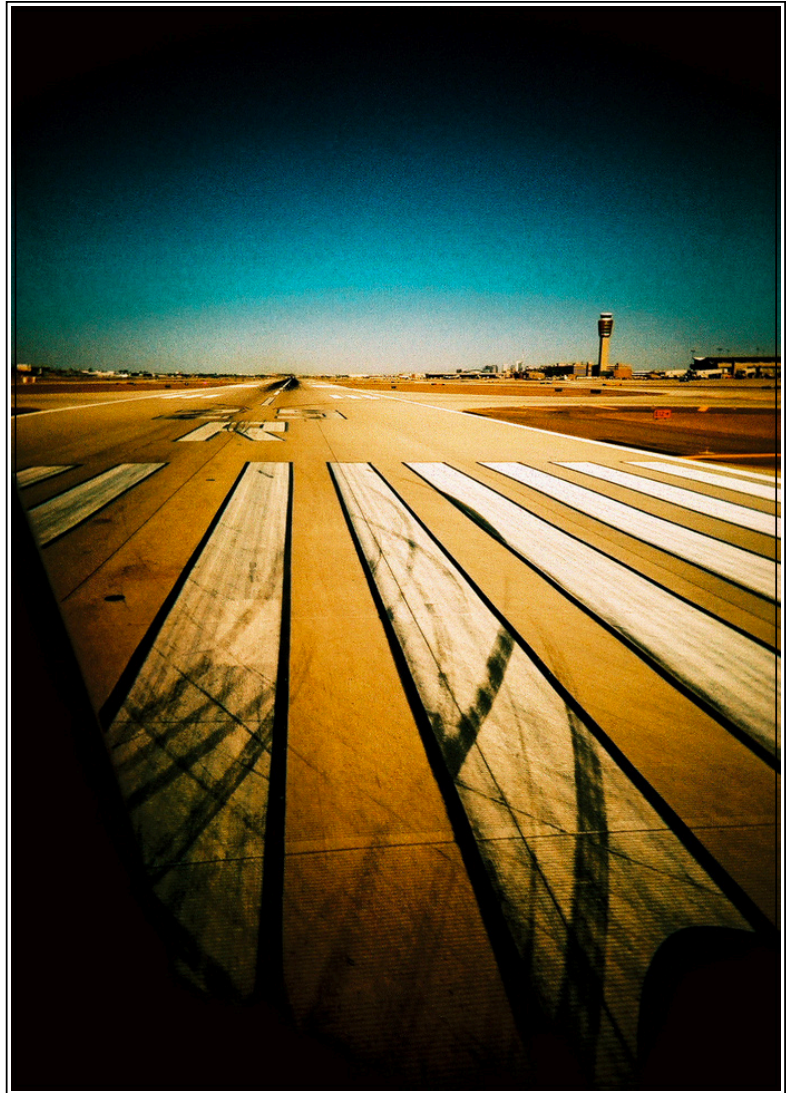


Photo: Kevin Dooley

Vignette Tutorial

Original:



Finished Result:



For this tutorial I will be demonstrating a vignette on this render of a cloudscape.

At the center of the image is a sun that is the brightest point and should be the center of attention. So by using a mixture of dark, desaturated and blurry vignettes we can direct the viewers attention to the center of the image.

In this tutorial you will learn how to:

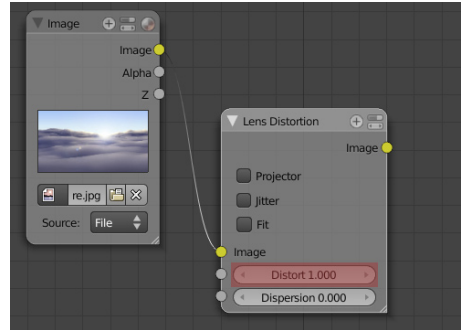
- Create a dark vignette
- Create a blurry vignette
- Create a desaturated vignette
- Combine all three vignettes

Time to complete: 16 minutes

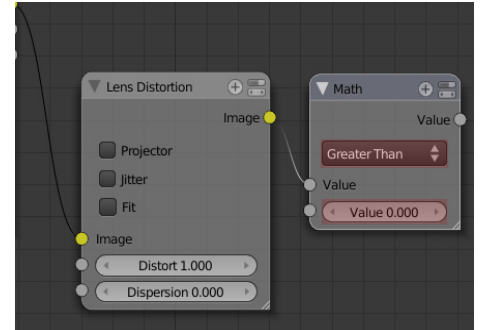
PART ONE

Traditional vignette

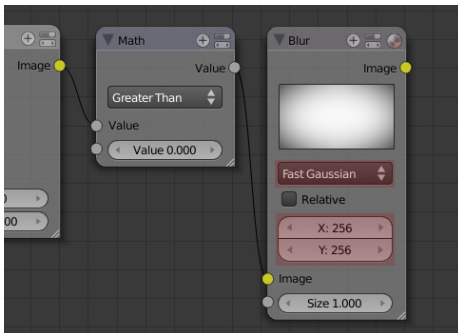
This will cover how to setup a basic dark edged vignette.



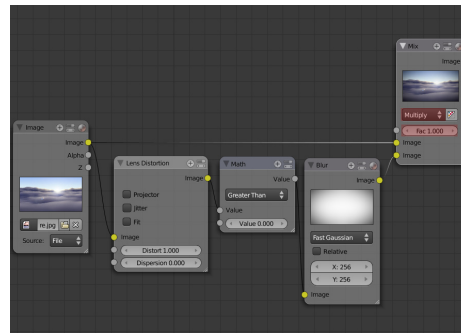
01 Add a Lens Distortion node (Add>Distort>Lens Distortion), set the Distortion value to **1.00** and connect it to your image or scene node.



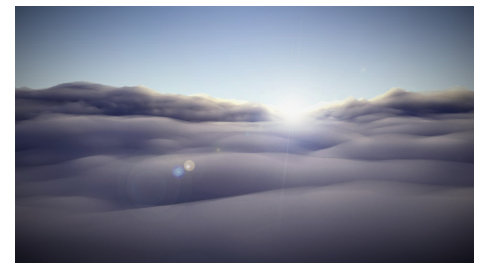
02 Add a Math node (Add>Converter>Math), set the type to **Greater Than** and the the **Value** to **0**. The math node will provide extreme contrast by making everything that isn't greater than 0, a harsh white. Placing it after the lens distortion node makes the curved edges completely black.



03 Add a Blur node (Add>Filter>Blur) and connect it to the output of the Math node. Set the type to **Fast Gaussian** and the X and Y value to **256** (maximum). This will soften the harsh black and white vignette created previously.



04 To combine the effect with the original image, add a mix node (Add>Color>Mix) and set the blend type to **Multiply** and the Fac value to **1**.

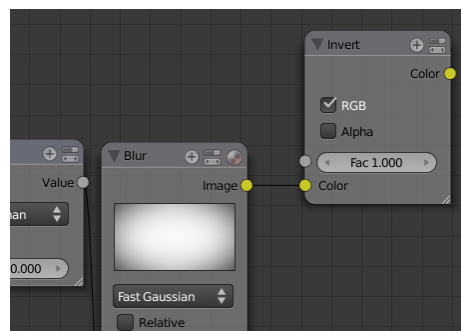


05 The traditional vignette is now complete!

PART TWO

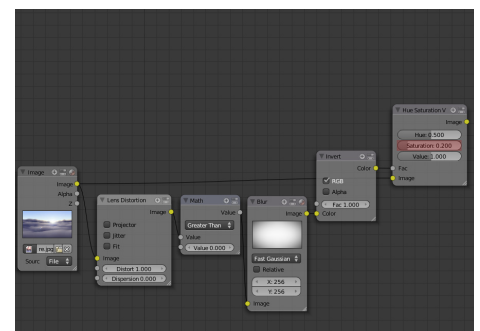
Desaturated vignette

Some cameras have been known to desaturate the edges of the frame. Applying this to your renders will get you one step closer to film realism.

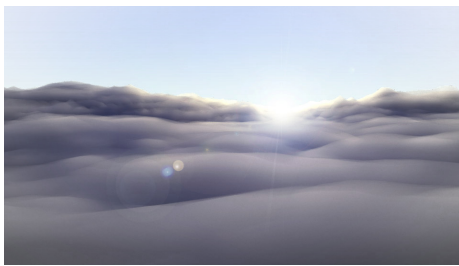


06 Keeping the node setup we created earlier, add an invert node (Add>Color>Invert) and connect it to the output of the blur node (as pictured).

We are using the invert node so that we can apply effects to the areas within the vignette, not outside it.



07 Add a Hue Saturation node (Add>Color>Hue Saturation Value). Connect the output from the invert node to the Fac input. Connect the original image to the input. Set the Saturation value to **0.2**.

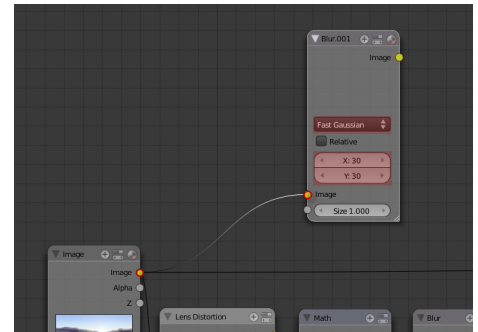


08 The desaturated vignette is now complete! It's subtle but it visibly sucks the color out of the edges, making bringing the attention to the more vivid center.

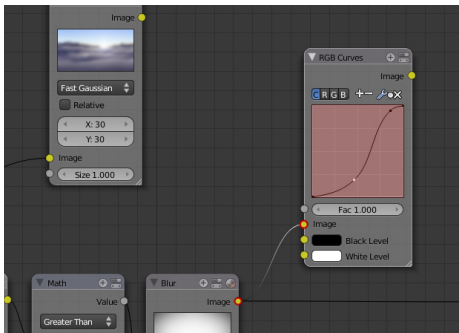
PART THREE

Blurry vignette

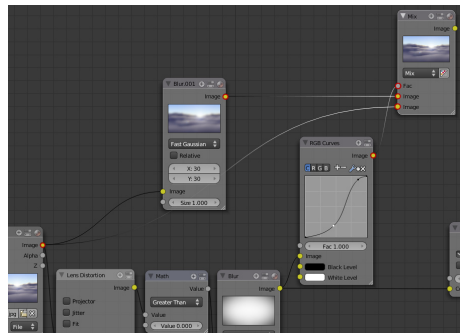
As seen in way too many weddings photos, the blurry vignette blurs the edges of the image, drawing the attention to the center. This is similar to the vaseline smearing trick that cinematographers have used in the past.



09 Add a Blur node (Add>Filter>Blur) and connect it directly to the original image.



10 Add an RGB curve and connect it the output of the traditional vignette that we previously created. Make a steep S curve to darken the mask. This will in turn exaggerate the blur effect.



11 Add a mix node (Add>Color>Mix) and connect the output from the RGB curve to the Fac value. Connect the output from the blur mask to the original render.

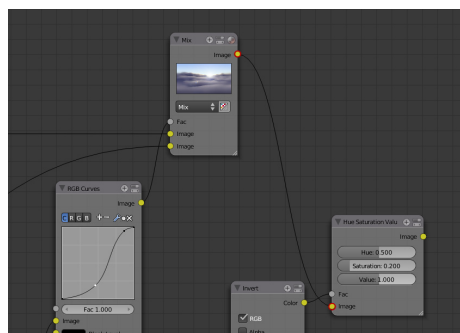


12 The blurry vignette is now complete!

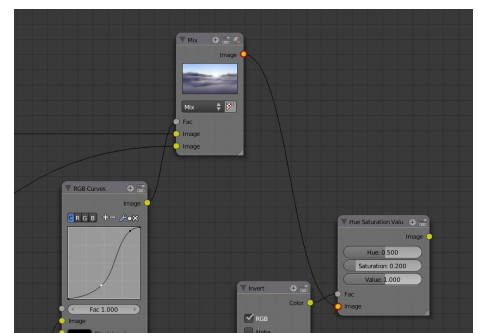
PART FOUR

Combining all three vignettes

Uses all three vignettes can give a powerful focal effect.

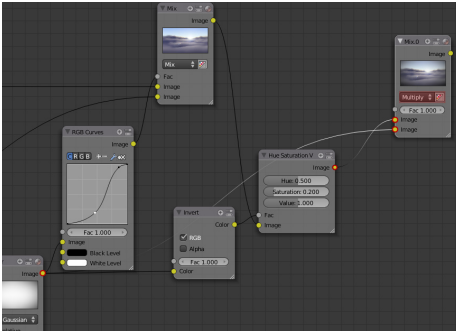


13 Add a mix node (Add>Color>Mix) and connect the output from the RGB curve to the Fac value. Connect the output from the blur mask to the original render.

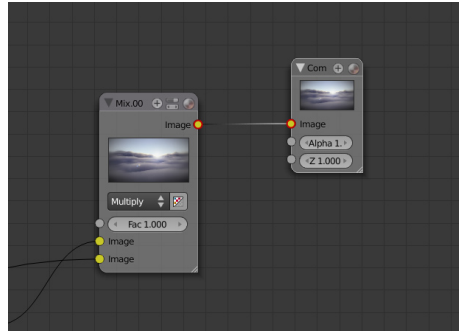


14 Connect the output from the Mix node we created for the Blurry vignette to the input of the Hue Saturation node.

► Tutorial Vignetting

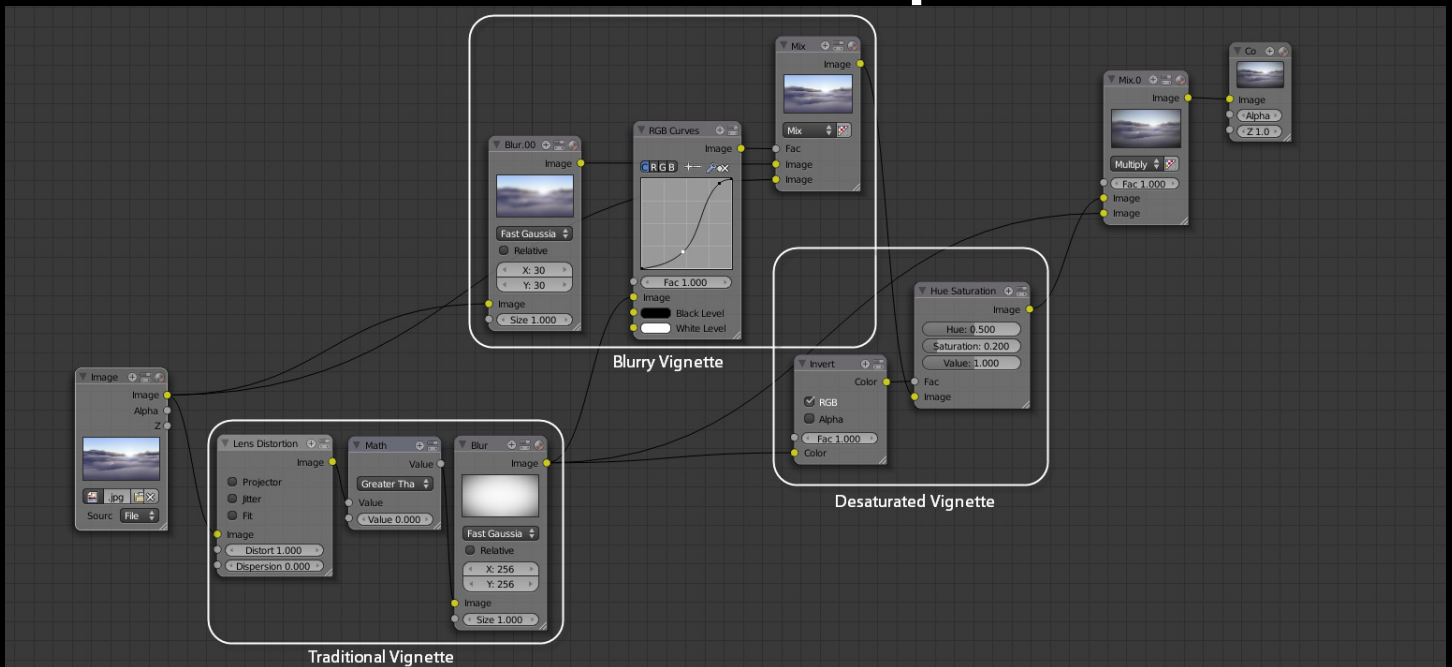


15 Add a Mix node (**Add>Color>Mix**) and set the type to multiply. Connect the outputs from the Hue Saturation node and the Traditional Vignette to the inputs.



16 Connect the output from this mix node to the composite node. Finished!

Final Node Setup



Finished Result



By applying all three vignette techniques we now have a much more focused render, that draws the viewers attention to the sun on the horizon instead of the clouds surrounding it.

Motion Blur

aka. Vector Blur, Speed Blur

What is it?

Motion blur occurs when a photographer takes a photo of a moving object but leaves the shutter open for longer than necessary. As a result, the moving object appears as a stretched blur. Motion blur can also appear in video footage, when the video was recorded at a low frame rate.

This can become a problem at night or in low lit areas, as shutters need to remain open for longer than usual in order to let in more light. This is why photos taken at night are more prone to motion blur.

Recently developments in the gaming industry have allowed studios to apply motion blur effects to real time game play. This gives the game a realistic edge and immerses the player.



Photo: Emanuele



Photo: Frank Monnerjahn

When to use it

Motion blur can be used to effectively portray speed or fast motion. An example could be a character sprinting or a car driving past. Another great use for motion blur is on the camera itself, as it affects the motion of the scene as well.

Typically scenes that are recorded in low light will have more motion blur than scenes recorded in daylight, so you will need to adjust the settings for your renders accordingly.

Motion Blur Tutorial

Original:



For this tutorial I will be demonstrating motion blur on this scene from my short: *The Ballad of the M4 Carbine*.

In this shot, a tracer round is being fired at a shooting target, but currently the motion of the object is not obvious. By adding motion blur the view will become aware of the objects fast movement.

This tutorial will teach you how to:

- Calculate speed
- Adjust the amount of blurring
- Eliminate the 'comet tail' problem

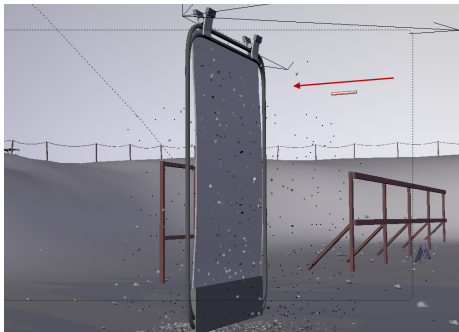
NOTE: Before starting this tutorial, please make sure that your scene has at least one moving object. Without it you will not see any blurring.

Time to complete: 10 minutes

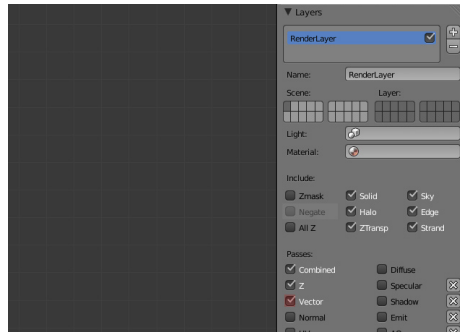
Finished Result:



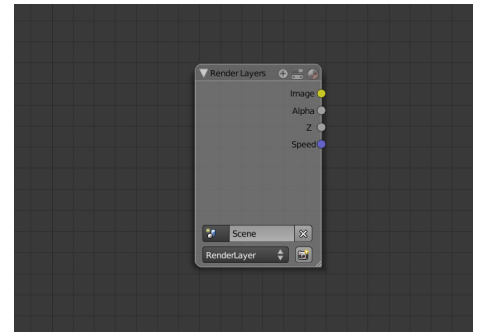
► Tutorial Motion Blur



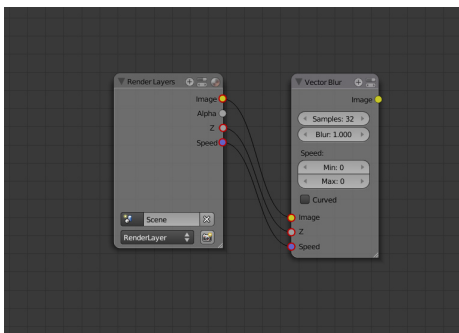
01 The first thing you need to do is ensure that you have a moving object in your scene. The speed of the object will greatly influence the amount of blurring. In this example a simple cylinder object has been fired from a particle system at great speed.



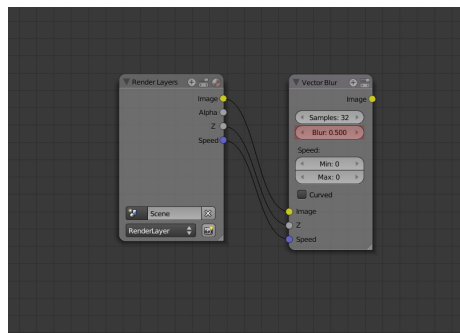
02 Before we go to the compositor, we need to change our render settings. In the render panel, expand the layers options, and check the **Vector** box. This will tell blender to calculate the speed. You will need to re-render your image before this change will take effect.



03 We can now switch to the compositor (Ctrl+Left Arrow) and will notice a blue 'Speed' output underneath the render layer node. This output is used exclusively for vector blur.



04 Connect the image, Z and speed outputs from your original render layer to the appropriate inputs on the Vector blur node. All three inputs are required for the motion blur to work.

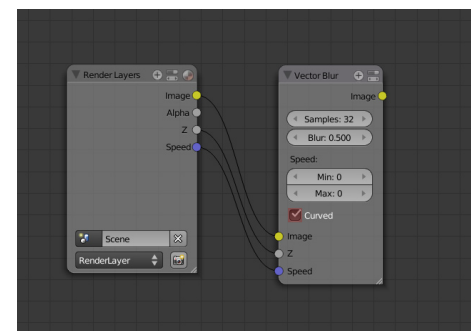


05 The blur setting defines the maximum amount of blur to apply. You may wish to experiment with what looks best to you, but I will be using 0.5 for my scene.

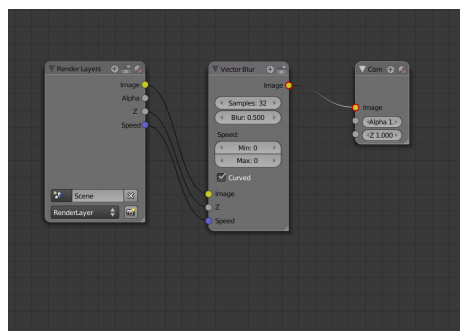
The higher you make it, the longer the streaks of blur will be.



If we were to finish now, we would get a result similar to this, and whilst it looks okay, it is suffering from the 'comet tail' effect which is not realistic as real photos have as much blur before the moving object as after it. Let's fix this.



06 Check the Curved box. This will enable bezier blurring, which will blur both sides of the object.



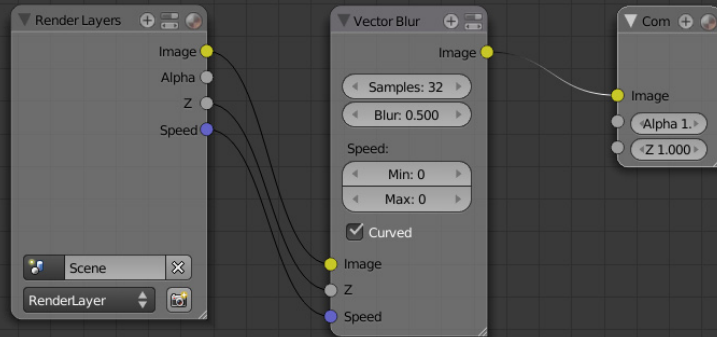
07 To finalize your setup, connect the vector blur node to the compositor.



Finished!

TIP: If you encounter artifacts in the blur, try increasing the number of samples in the vector blur node.

Final Node Setup



Finished Result



With motion blur it is now obvious to the viewer that the tracer is moving. This effect is especially useful in stills, as motion is not otherwise visible to the viewer.

Lens Distortion

aka. Barrel Distortion

What is it?

Although you may not have noticed it, every single photo you've seen in your life is warped in some form. The cause of this is the curvature of camera lenses.

When light passes through the lens, the light is bent which makes it appear that the edges of the photo are pushed in and bent.

The fish-eye lens produces an exaggerated example of the lens distortion, but the fundamental effect remains the same in all cameras.

3d software on the other hand, will always spit out a perfectly proportionate render every time. Which is why it is important to add lens distortion to 3d renders.



Photo: Ville Miettinen

Original Render



Maximum Lens Distortion



When to use it

Lens distortion should be used whenever you are faking a real camera lens.

Lens distortion goes unnoticed in most photos, and the same should go for your renders.



Photo: Chris Morgan

Lens Distortion Tutorial

Before:



After:



For this tutorial I will be applying lens distortion to a scene of a Japanese garden.

Currently the render is very uniform. All the edges are perfectly straight and unrealistic.

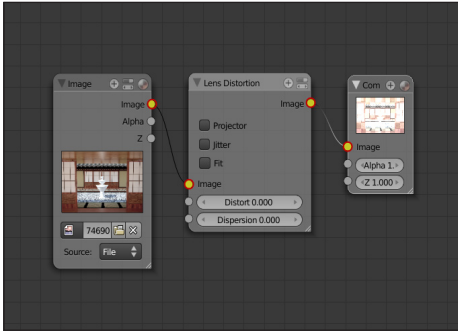
This tutorial will teach you how to:

- Quickly apply lens distortion to an image or scene.

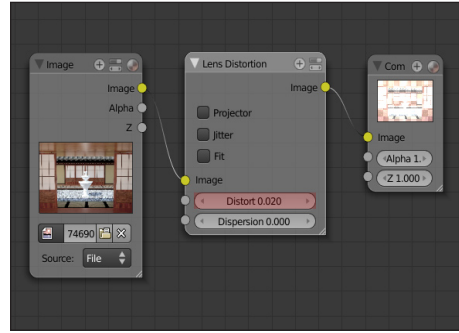
Time to complete: 2 minutes



► Tutorial Lens Distortion



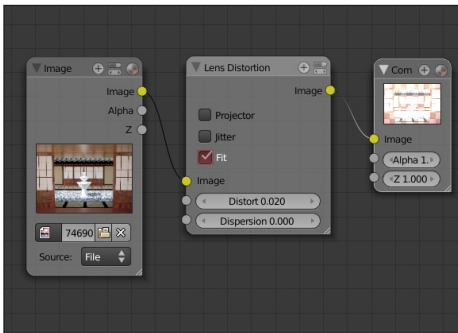
01 Add a Distortion node
(Add>Distort>Lens Distortion) and
connect it to the input and compositor.



02 Change the Distort value to **0.02**.



If you rendered the picture now you'd get an image similar to this. The image does have distortion but the corners have a visible black border. This is because the image has been curved inwards so part of the frame is now exposed.



03 To correct this, check the **Fit** box.
This will zoom the camera inwards
slightly to hide those unsightly black
edges.



Finished!

Final Node Setup



Finished Result



With lens distortion, all parallel lines are now slightly bent, making the scene appear to have been taken with a real camera. The effect is very subtle, but it adds significant realism.

Dirty Lens

What is it?

When photographers fail to clean the lens, their photos suffer. Things like dust, grime, scratches, and finger prints all have adverse effects on the final outcome of the image.

One important thing to note however, is that even with visible grime on the outside of the lens, it won't always be obvious in the photo. The reason for this is that cameras are nearly always focusing further away and so the depth of field blurs it out. For added realism you may try blurring the scene or the dirt effect, as technically they cannot both be in focus.



Photo: stvcr / Steve



An extremely dirty lens, in this case caused by a fire extinguisher.

Photo: Hector Alejandro

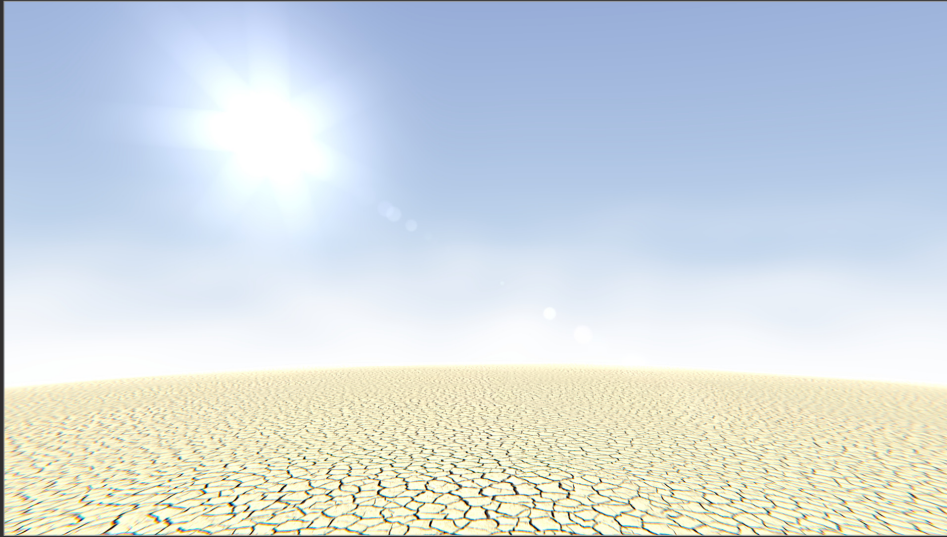
When to use it

File this effect under: Improves realism. Computer generated imagery will never suffer from any of these flaws on their own, so adding it can effectively add realism to your renders.

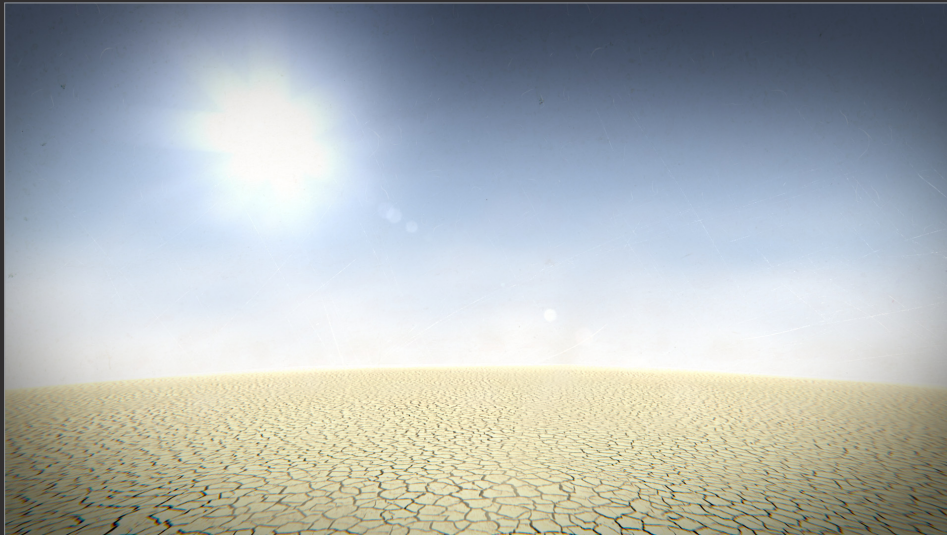
Because the dirt is on the outside of the camera, it should be added before any chromatic aberration or other internal camera flaws are applied to the compositor.

Dirty Lens Tutorial

Before:



After:



Welcome to amateur hour! In this tutorial I'll be recreating the look of an poorly treated camera lens.

I will be demonstrating this on a render of a desert scene. These effects are appropriate for this scene as it outdoors and in a place where dust and grime buildup are likely to occur.

This tutorial will teach you how to apply:

- Scratches
- Grime
- Dust and hair

Time to complete: 25 minutes

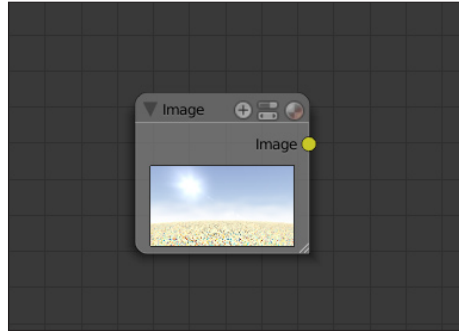


PART ONE

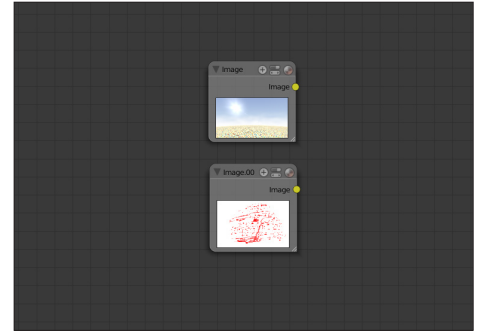
Butter fingers

We will start with the mother of all camera mess ups: Smudges.

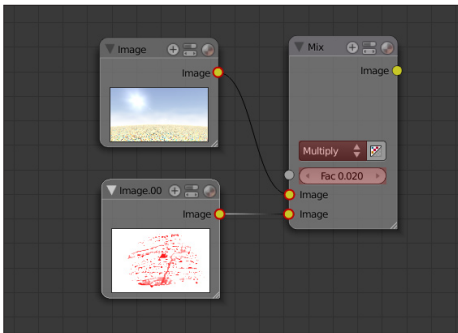
This effect can easily be achieved in blender by using an image as a blur mask.



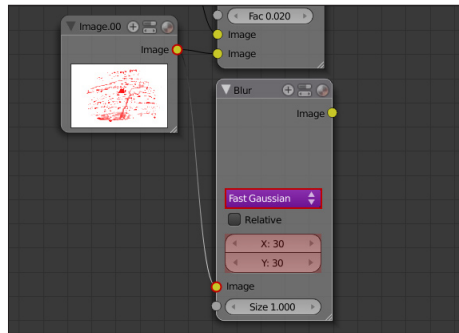
01 Start by opening the compositor, and locating your render layer.



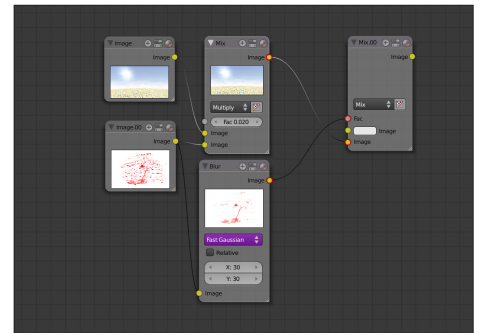
02 Find a texture with an alpha channel that looks like smudged finger marks. I am using this paint texture (from cgtextures.com) which you can find included in the tutorial files.



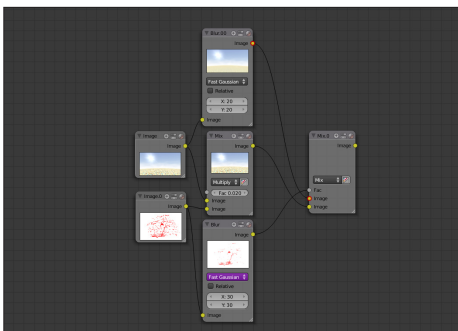
03 To give the smudge a darker look, I'm going to make it lightly overlay the original image. To do this add a Mix node (**Add>Color>Mix**) and apply a Fac value of something very low. I used **0.02**. Set the blending type to **Multiply**.



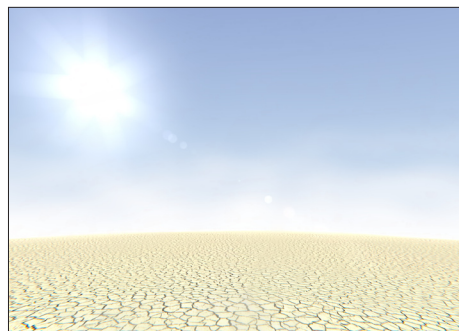
04 Currently the smudge pattern is too sharp to be believable, so we need to blur it. Add a blur node (**Add>Filter>Blur**) and set the type to **Fast Gaussian**. Choose a relatively low value for the X and Y. I have chosen **30**.



05 Add a mix node and connect the output from the blur node to the Fac input. Connect the output from the other mix node into the bottom input. This will create a mask for our smudge effect. Now all we need to do now is make the scene blurry and connect it to the other mix input.



06 Connect the output from the blur node into the spare slot of the mix node. The other of these inputs are important, so make sure they match the screenshot.



Your render should now look like this. Notice the smudges near the bottom of the frame.

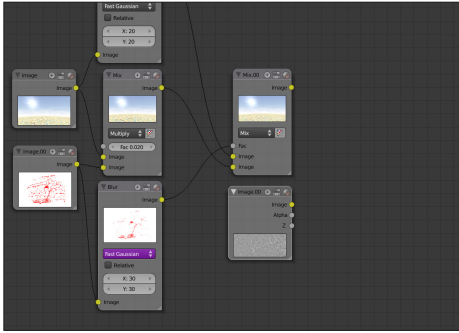
PART TWO

Don't scratch!

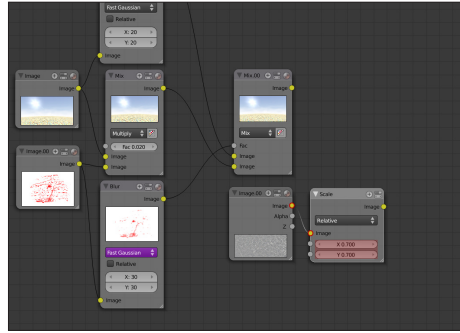
Scratches on the camera lens can add a very authentic, realistic look to your render.

This effect is very easily added in blender with the right texture.

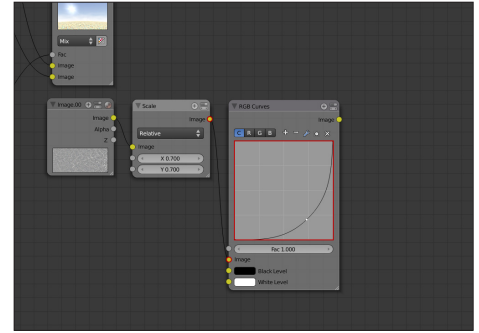
► Tutorial Dirty Lens



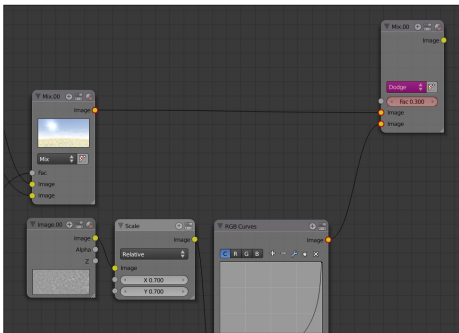
07 Add an image (**Add>Input>Image**), and load an image that looks like light scratches. I have used this texture of a close up of metal (you can find this in the tutorial files).



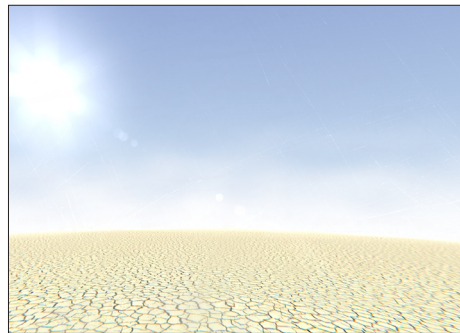
08 Depending on your texture you may need to shrink it to fit the dimensions of your render. To do this, add a scale node (**Add>Distort>Scale**) and change the X and Y value till it fits. In this case I have set mine to **0.7**.



09 Currently the texture is too bright and will dominate the scene too much. So to lower the contrast, add an RGB Curve (**Add>Color>RGB Curve**) and create a heavy downward slope as pictured. The higher you make the anchor point the more scratches you will see.



10 To combine the scratch effect with your main scene, add a mix node and connect it to the outputs from your RGB curve and the previous mix node. Set the type to dodge so the scratches only appear in lighter areas of your render. Change the Fac value if necessary. I've set mine to **0.4** to make it less obvious.

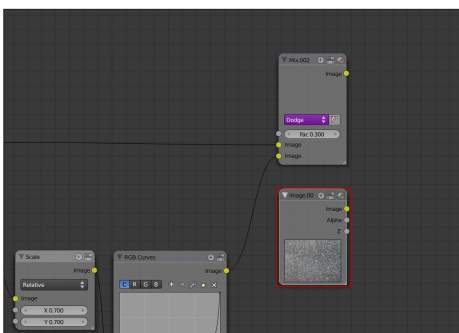


At this stage your render should look like this. Notice the light scratches on the right hand side.

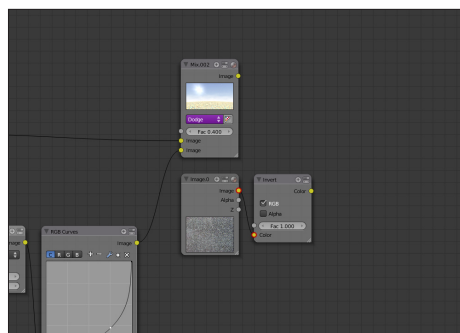
PART THREE

Getting dirty

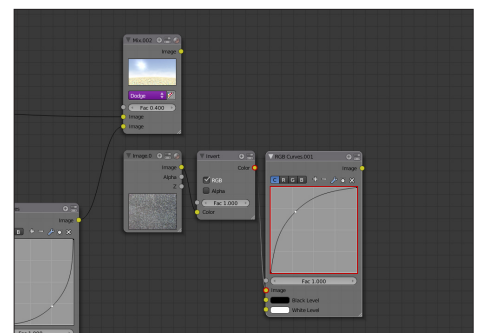
This effect is perfect for replicating the look of Burning Man festival. Dust, dirt, grime. Irreparable camera damage.



11 Start by adding (you guessed it) another image and loading your favorite grimy image texture. I'll be using an image of some dirty water residue (which you can find in the tutorial files).

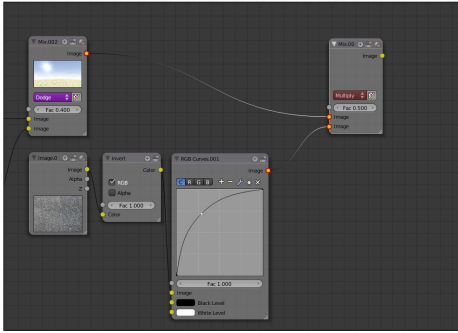


12 In the texture I am using, the droplets are white, but I want them black. So to change this, add an Invert node (**Add>Color>Invert**). This will completely flip the color channels.

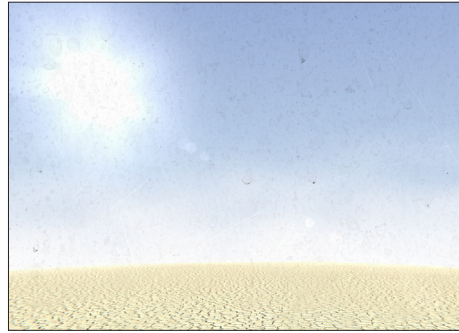


13 With the droplets now black, there is only one other problem: They are too dark. So to correct this, add an RGB Curve and create a steep bump. This will blow out the texture, making the grays and whites no longer visible.

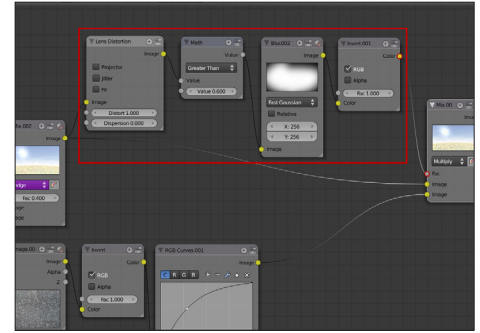
► Tutorial Dirty Lens



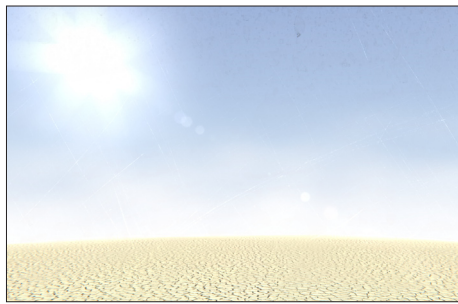
14 With the grimy texture now lighter and less noisy, we can combine it to the main scene. Add a mix node and set the type to Multiply. Connect it to the RGB curve and the mix node we created previously.



If you rendered now you would see this. And although the dirt texture is working, it's covering the entire screen which is too distracting. A way around this is to make it apply only to the edges. To do this we will use a vignette.



15 I'm going to whiz past this step as it's the same vignette that we created in a previous chapter. The only thing different is that I have added an invert node to reverse the effect. Now, simply connect the vignette to the Fac input of the mix node so it behaves as a mask.



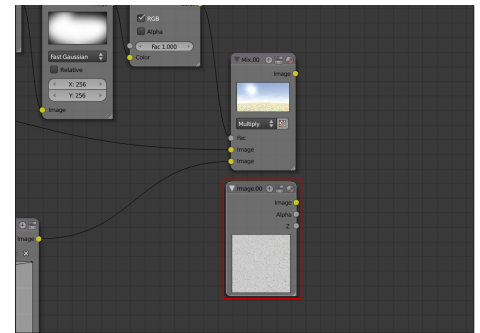
Much better! The dirty grunge map now only effects the edges, leaving the center of the image clear and more focused.

PART FOUR

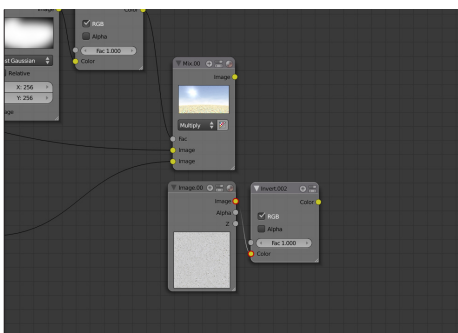
Fur up in here

This stage will cover how to create the look of hair flecks of dust stuck to the lens.

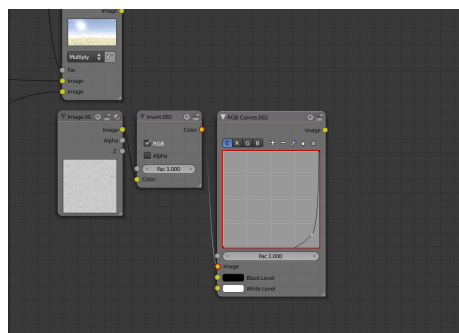
This usually happens when the photographer cleans the lens with a cloth that leaves residue.



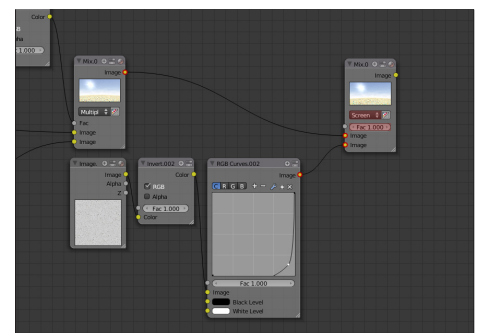
16 Add another image (I swear this will be the last one) and load an image of flecks of dust. I am using a scanned image of decorative paper (which you can find in the tutorial files).



17 The texture I have chosen has the black hairs and dust, but I want them white. To change this add an Invert node (Add>Color>Invert).

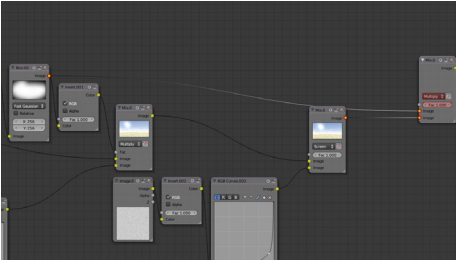


18 The next thing to do is eliminate a lot of the white areas so we are left with a few white hairs. To do this, add an RGB Curve and create a steep loop.



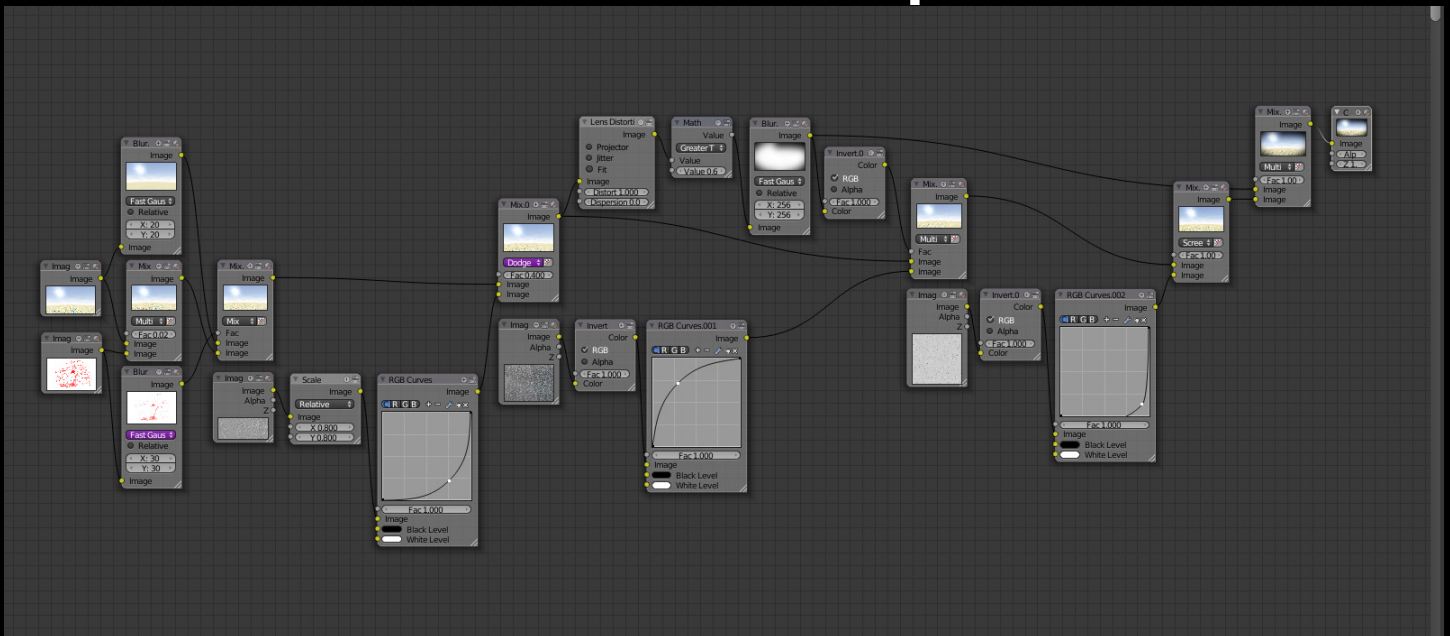
19 To connect this effect with the base render, add a mix node and connect it to the RGB Curve and the mix node we created previously. Set the Fac value to 1 and the type to Screen, so that it lightens the image.

► Tutorial Dirty Lens

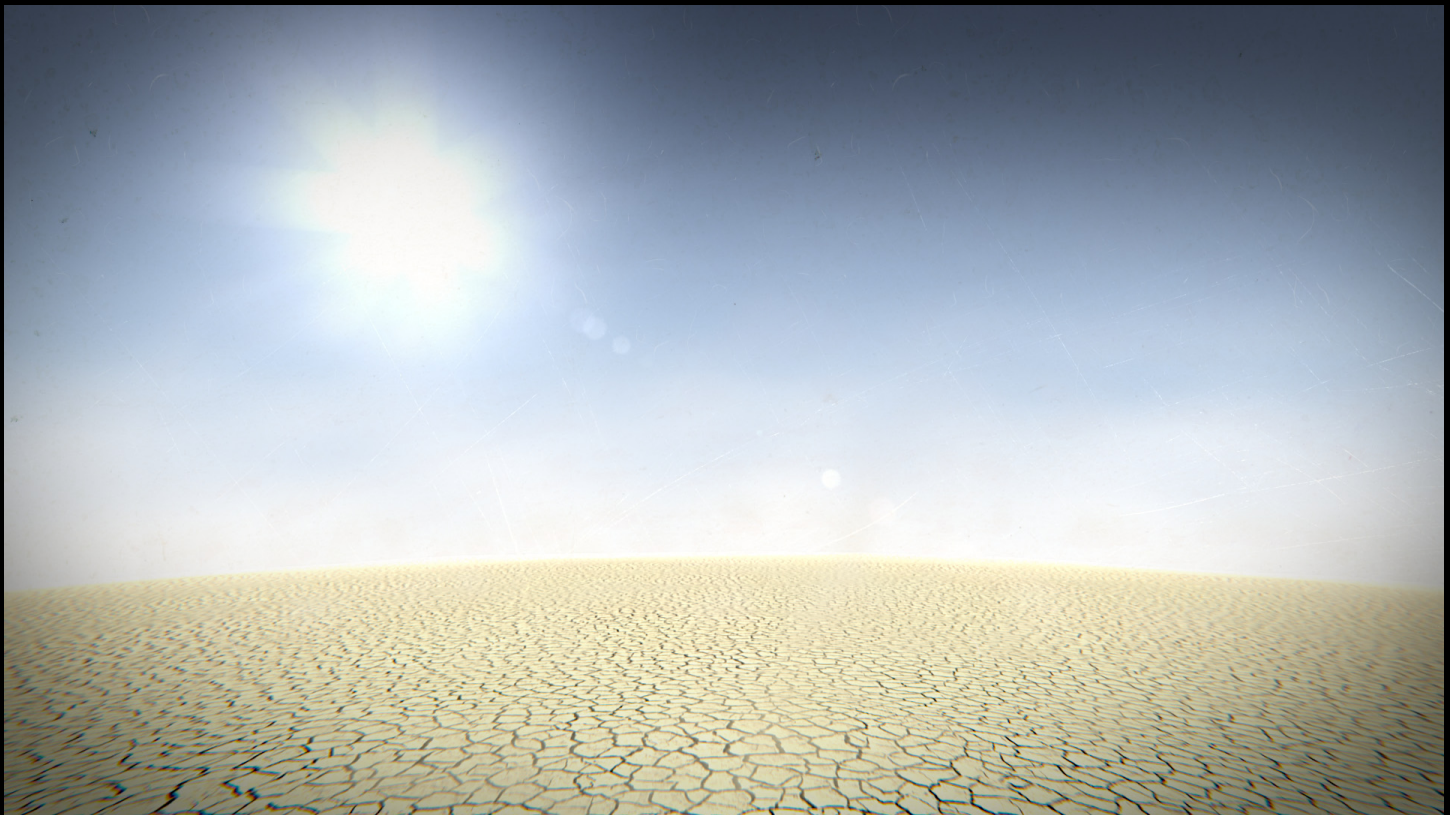


20 If you want to take this image over the edge you can add it with the vignette we created earlier. Add a mix node and connect it with the output from the blur node and the mix node we just created. Set the type to **Multiply** and the Fac value to 1.

Final Node Setup



Finished Result



With lens artifacts the scene has a more authentic and realistic feel.

Color Grading

What is it?

Color grading is used extensively in feature films to create a stylized look of the film or to match shots that have been filmed at different times of the day. This process is attractive to directors as it allows them to quickly change the mood of a scene in post production after the shooting has already finished.

A good example is *The Matrix*. At the start of the movie, we watch Neo struggle through his boring mundane office job. The colors are noticeably dull, and a green tint is applied to make the viewer feel uneasy.



Photo property of Warner Brothers

Later in the movie when Neo escapes the Matrix, the colors are more vibrant to reflect his new exciting look on the world.

This mood change was made partly available thanks to color correction.

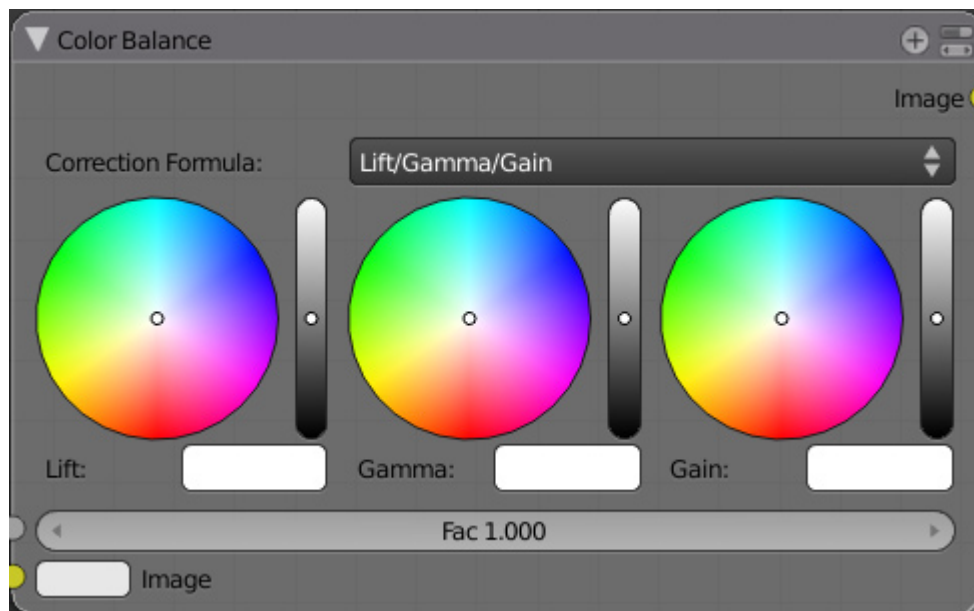
When to use it

As 3d artists, our use of color grading is slightly different to that of film directors.

Color grading is mostly used by 3d artists to fix incorrect color values. An example would be pure black or pure white as these values are damaging to the overall composition of the scene. By using color grading you can make the blacks appear lighter without re-rendering the entire image.

Another use of color grading is to make changes to the color scheme without changing the scene itself.

Introducing... The Color Balance node



Take a good look at it, because once you learn how to work this thing, you'll want to use it constantly.

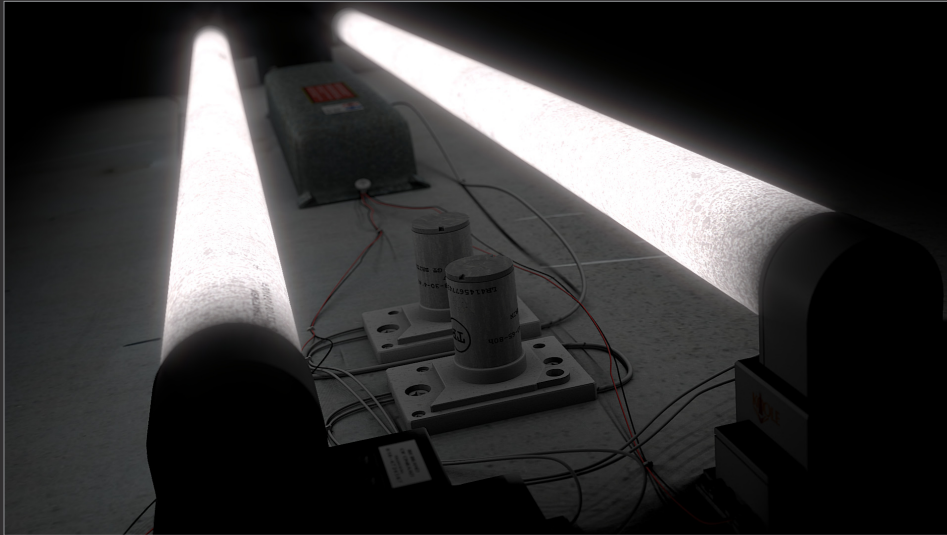
The color balance node is blender's powerful solution to color grading. The three color wheels you see above are the industry standard for color grading. The left wheel affects the lift (shadows), the middle wheel affects the gamma (mid tones) and the right wheel affects the gain (highlights).

For example, if you were to move the slider to a yellow color, then all the bright areas of your render would be yellow. The color value you assign each wheel overrides the colors in the render, so even if your image was originally black and white, the whites would become yellow.

Time for a practical example...

Color Grading Tutorial

Original:



For this tutorial I will be color grading an image of a fluorescent light.

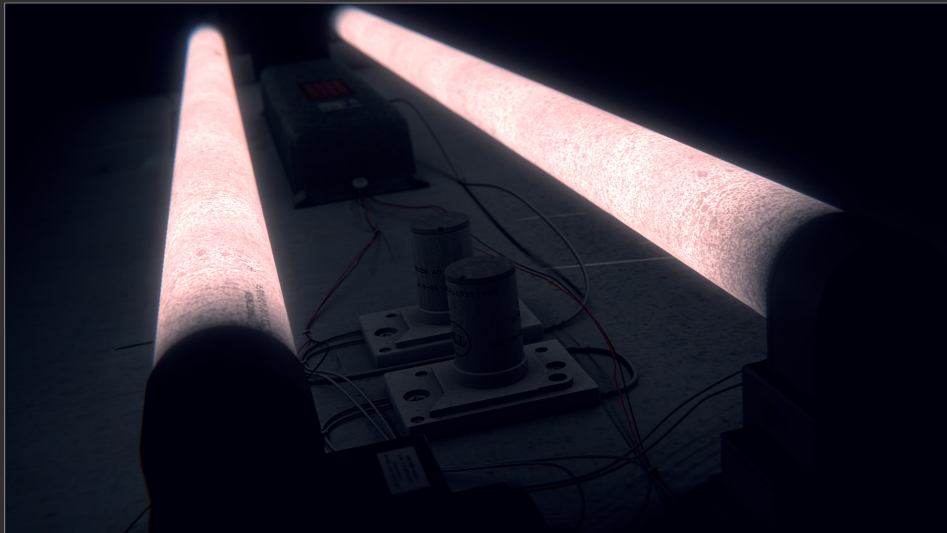
The render is almost completely black and white, but by using the color balance node we can inject color into it without changing any of the lighting or materials.

This tutorial will teach you how to:

- Apply a unique color scheme to a black and white image
- Correctly change the brightness and contrast of an image
- Destroy pure blacks

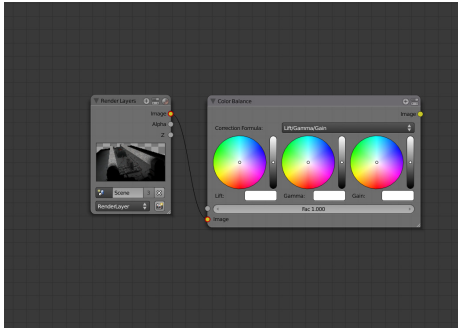
Time to complete: 10 minutes

Finished Result:

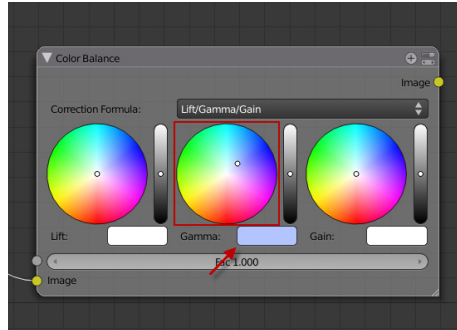


NOTE: If you are color grading an image instead of a scene, it is best to work with an OpenEXR format, as this stores color information better than jpg or png.

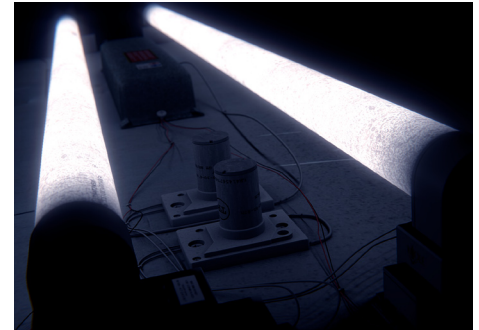
► Tutorial Color Grading



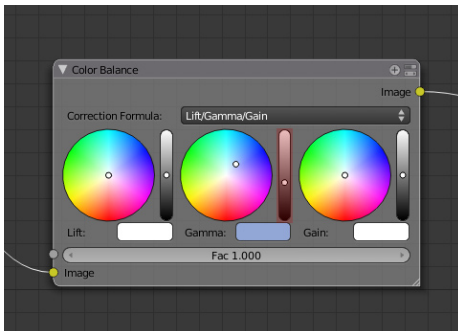
01 Add a Color Balance node (Add>Color>Color Balance) and connect it to your render layer.



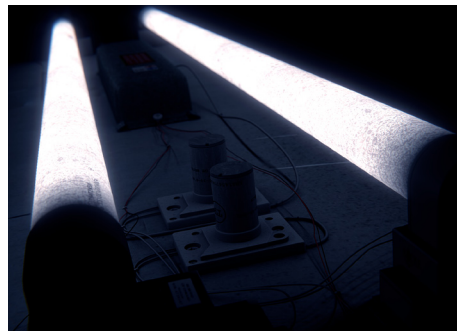
02 I want to start by give the mid tones a bluish tint. So to do this, click and drag the middle color wheel to a light blue color. If you find it easier, you can also click the box underneath the wheel to bring up an RGB slider.



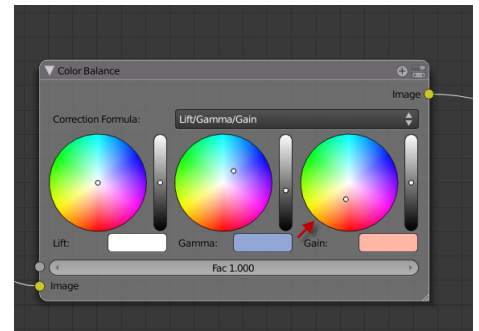
The result is looking okay, but the mid tones are slightly too bright for my liking.



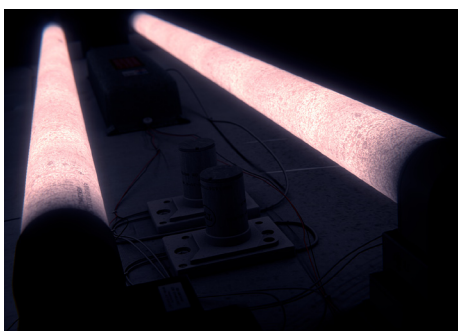
03 To fix this, find the contrast slider next to the gamma wheel and move it slightly lower than the default middle point.



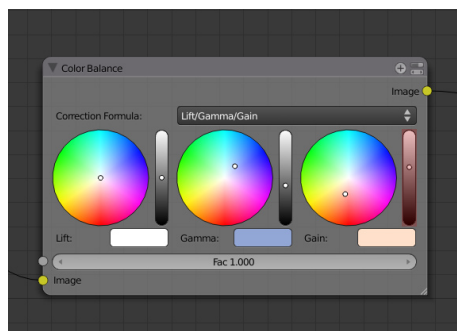
Much nicer. The mid tones are now darker which looks a lot nicer against the bright fluorescent bulbs.



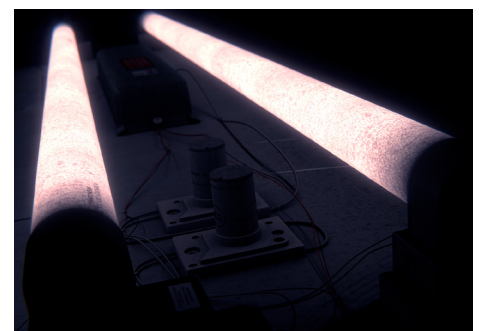
04 Next, I want to change the color of the fluorescent lights to compliment the blue mid tones. To do this, move the slider for the right color wheel to a light orange. I have used orange as it is opposite blue on the color wheel, which makes it a perfect complimentary color.



The fluorescent bulbs are now a nice orange-pink color. Unfortunately, adding the color has also made them look slightly dimmer.

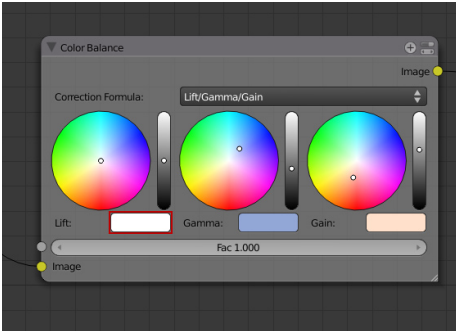


05 To fix this move the contrast of the Gain slider slightly higher.

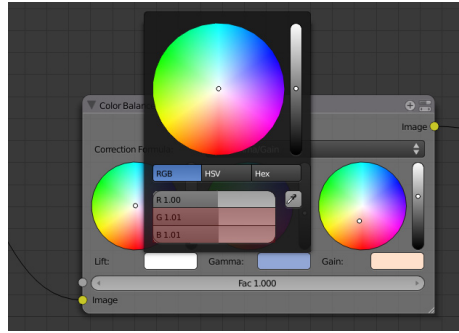


Perfect! The only thing to change now is those harsh blacks in the background and foreground.

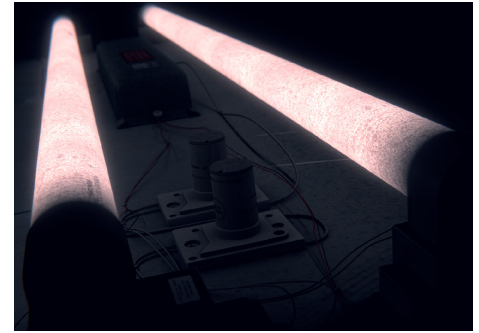
► Tutorial Color Grading



06 As we mentioned earlier, absolute blacks can damage the overall composition of the scene, so we will now make these slightly washed. Because these changes are incredibly subtle, we will click the color box underneath the lift wheel to bring up an RGB curve.

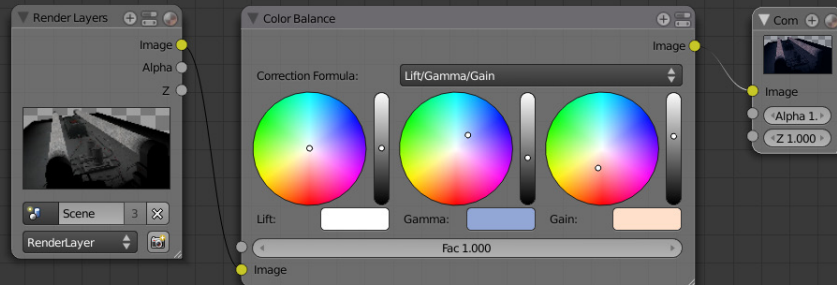


07 Change the Green and Blue channel to **1.01**, but leave the Red value as **1**. This will make the blacks slightly brighter, and blue toned.

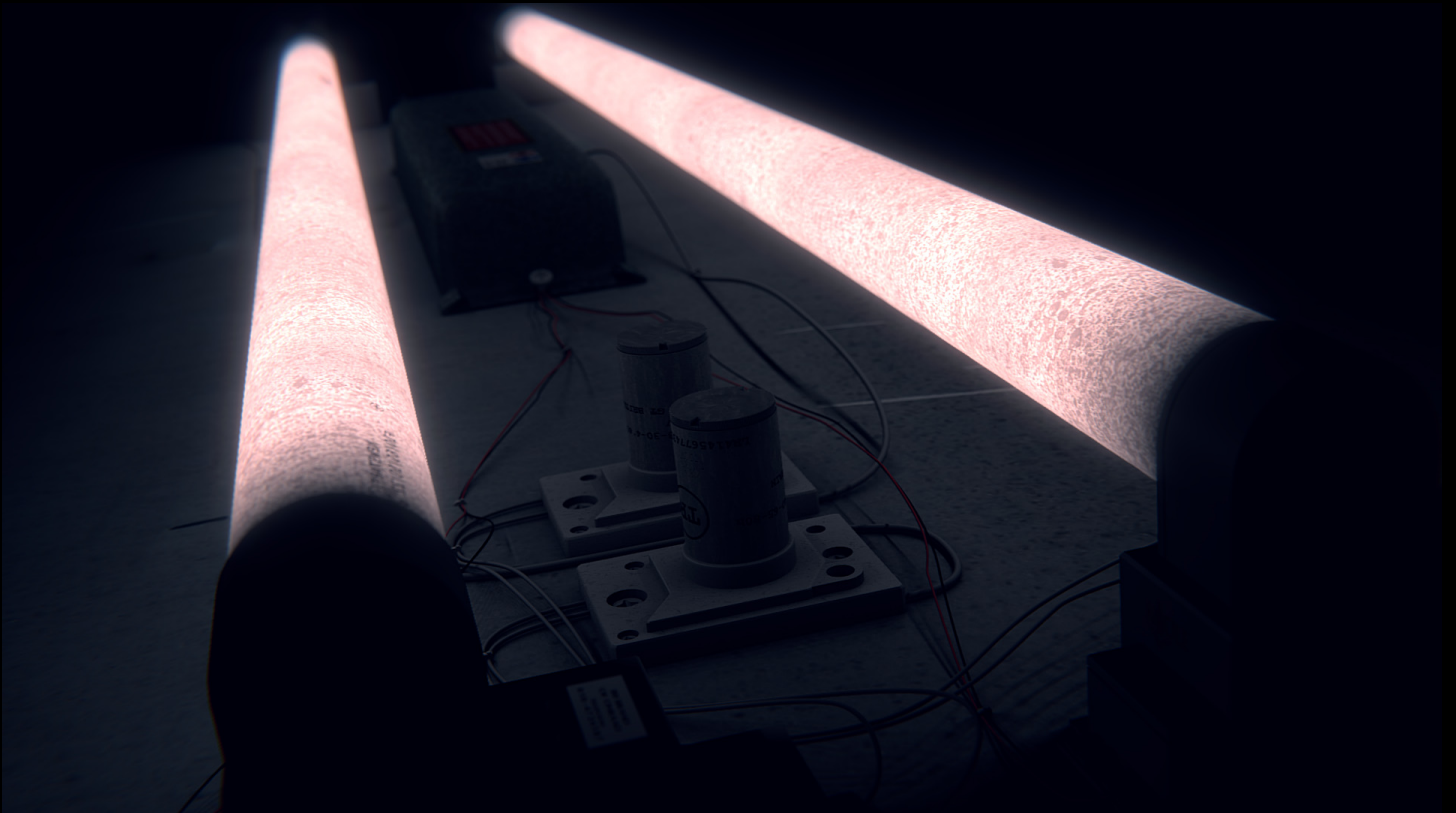


Finished!

Final Node Setup



Finished Result



With color grading, the image has improved drastically. What was previously a boring black and white image, is now a unique visually engaging render with subtle colors that compliment each other.

Image Sharpening

What is it?

Image sharpening increases the contrast in light and dark areas, giving the image a sharper more focused look.

Image sharpening was first introduced many years ago when developing film. A small piece of glass was placed between the original and negative mask that would act to exaggerate the contrast between light and dark areas. Blender and other image editing software is simply recreating this effect.

Image sharpening is needed in photography, because photos are compressed in samples of the original, lowering the quality. As a result the image loses color and contrast definition and looks smoother compared to the analogue reality.

In 3d however, sharpening is needed to bring out the true value of textures as they are automatically flattened by the anti-aliasing filter to prevent flickering.

When to use it

Provided you don't go overboard with the effect, image sharpening can be used as a general filter to provide clarity and focused to an otherwise blurry looking render.

However, scenes without any image textures will not benefit from image sharpening.

Because the effect is traditionally from a post processing background, the effect should be applied after color grading, lens distortion and other lens effects.



Photo: It's Holly

Gritty Film Tutorial

Before



After:



For this tutorial I will be adding a gritty old film effect to this render of a hallway.

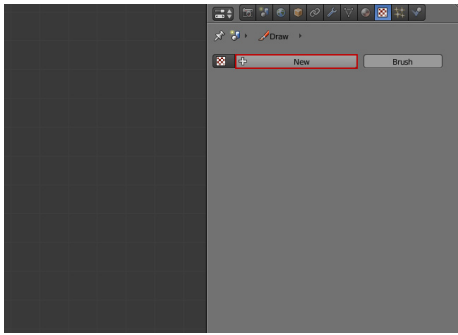
The techniques taught in this tutorial can be used for any scene.

This tutorial will teach you how to:

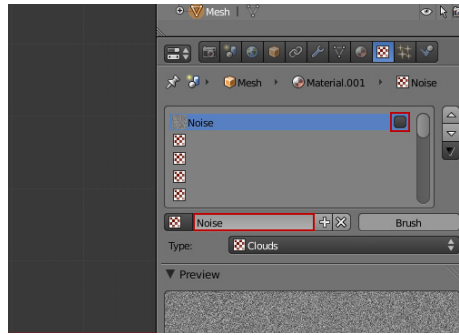
- Apply a fuzzy noise effect to your render
- Give your scene more impact with image sharpening

Time to complete: 10 minutes

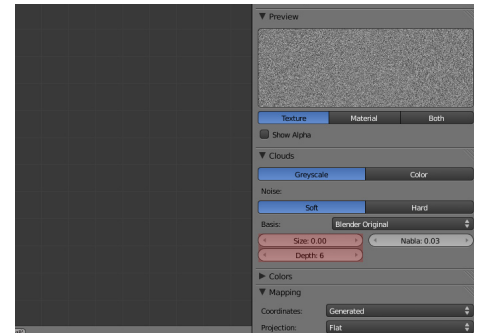
► Tutorial Gritty Film



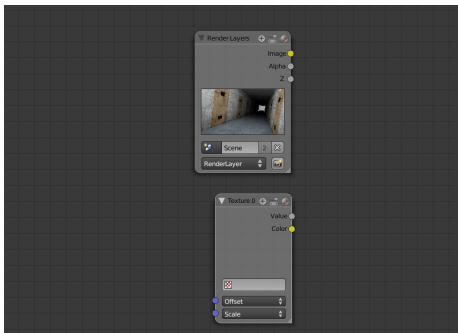
01 Before we do any compositing we need to first create our fuzzy tv noise texture. So with any object selected, add a new texture.



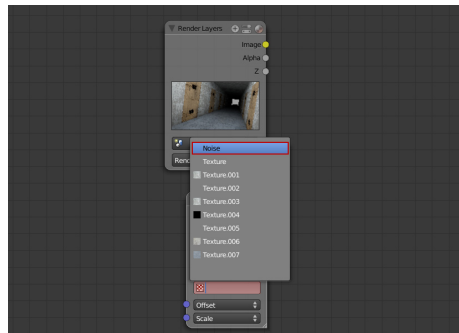
02 Leave the texture type as Clouds. Change the name of the texture to Noise and uncheck the box next to it's name so it won't be rendered to the object. The reason for this is that we only need this texture to be available for use in the compositor.



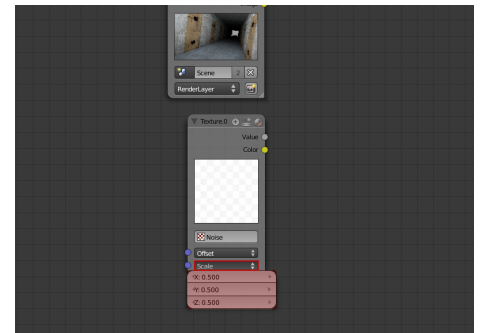
03 Change the basis size to 0, and the depth to 6.



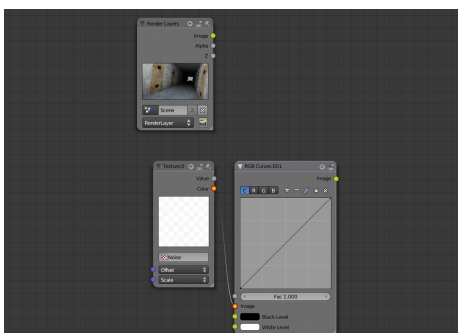
04 Flip over to the compositor now (Ctrl+Left Arrow) and add a new texture (Add>Input>Texture).



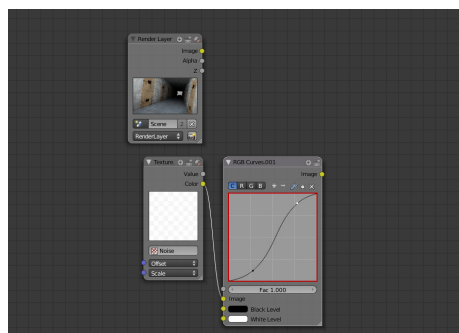
05 Click the blank box in the texture node and select the texture we just created called Noise.



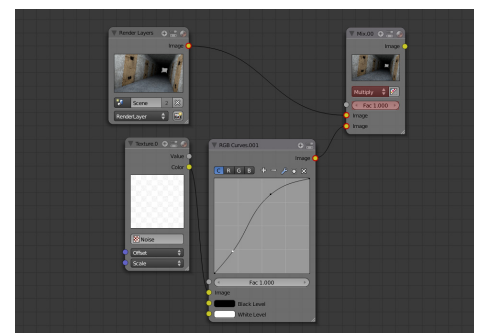
06 Click the scale button and set the X, Y, Z values to 0.5. This will give slightly smaller, finer grains.



07 Add an RGB curve (Add>Color>RGB) and connect it to the texture node.

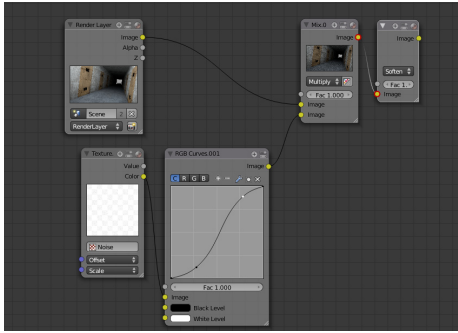


08 We want to add some slight contrast to the noise, so make a slight S bend. Later if you find the noise too overpowering, you may want to delete the bottom anchor to make it brighter.

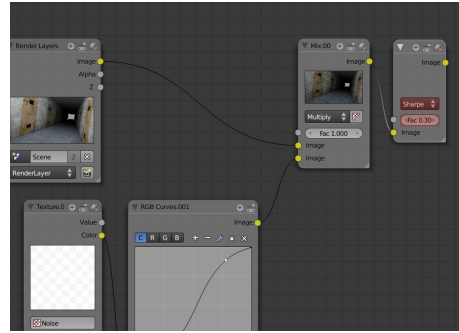


09 Add a mix node (Add>Color>Mix) and connect it to the RGB Curve and the render layer with your scene on it.

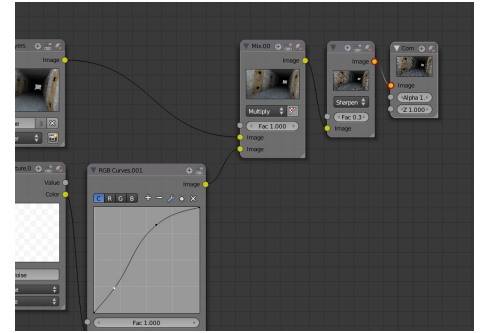
► Tutorial Gritty Film



10 Add a filter node (**Add>Filter>Filter**) and connect it to the output of the mix node.

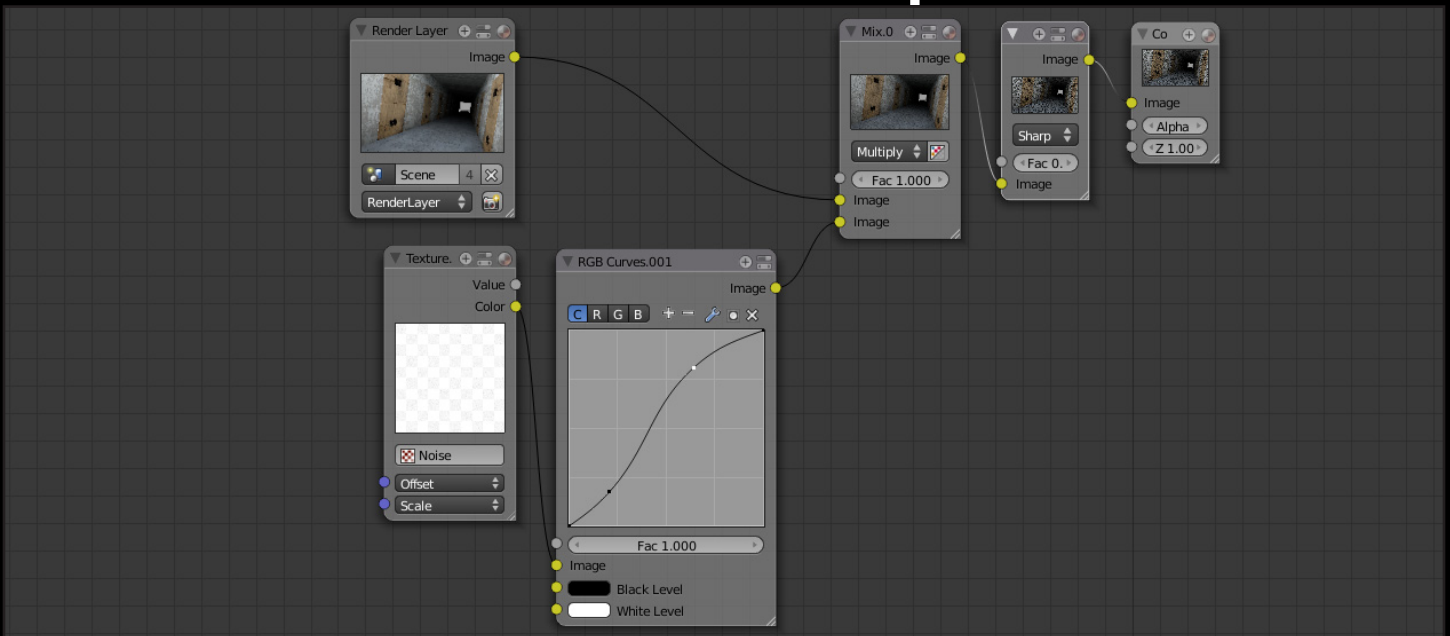


11 Set the type to **Sharpen** and the Fac value to **0.3**
The Sharpen filter raises the key lines in your image to create a more refined cut look to your render.



12 You may wish to add any combination of other effects now, but if not just connect it to the compositor and your finished!

Final Node Setup



Finished Result



With the gritty film effect the image is now more visually impacting. The textures are more prominent and the noise gives the impression of a bad quality camera.