

## 11.10 Compositing - Distort nodes

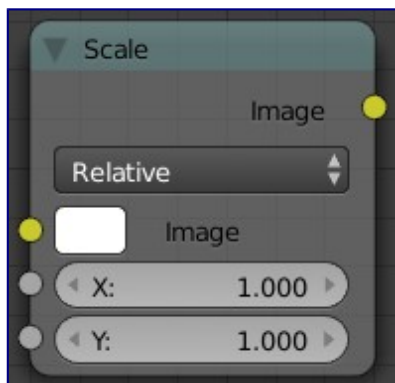
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### Distort Nodes

These nodes distort the image in some fashion, operating either uniformly on the image, or by using a mask to vary the effect over the image.

- Scale Node
- Lens Distortion Node
- Movie Distortion Node
- Translate Node
- Rotate Node
- Flip Node
- Crop Node
- Displace Node
- Map UV Node
- Transform Node
- Stabilize 2D
- Plane Track Deform Node
- Corner Pin Node

### Scale Node



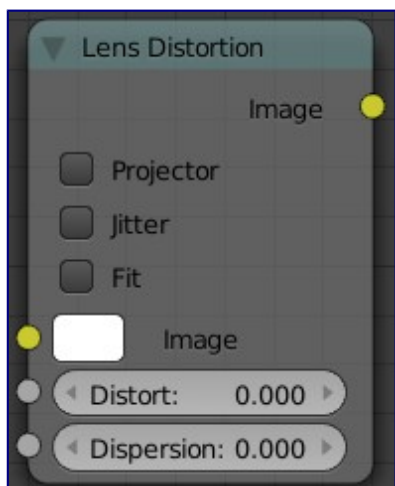
#### Scale Node

This node scales the size of an image. Scaling can be either absolute or relative. If Absolute toggle is on, you can define the size of an image by using real pixel values. In relative mode percents are used.

For instance X: 0.5 and Y: 0.5 would produce image which width and height would be half of what they used to be. When expanding an image greatly, you might want to blur it somewhat to remove the square corners that might result. Unless of course you want that effect; in which case, ignore what I just said.

Use this node to match image sizes. Most nodes produce an image that is the same size as the image input into their top image socket. So, if you want to uniformly combine two images of different size, you must scale the second to match the resolution of the first.

## Lens Distortion Node



Lens Distortion Node

Use this node to simulate distortions that real camera lenses produce.

### Distort

This creates a bulging or pinching effect from the center of the image.

### Dispersion

This simulates chromatic aberration, where different wavelengths of light refract slightly differently, creating a rainbow colored fringe.

### Projector

Enable or disable slider projection mode. When on, distortion is only applied horizontally. Disables *Jitter* and *Fit*.

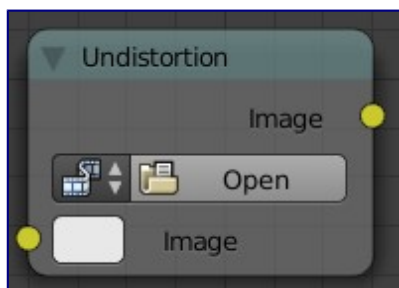
### Jitter

Adds jitter to the distortion. Faster, but noisier.

### Fit

Scales image so black areas are not visible. Only works for positive distortion.

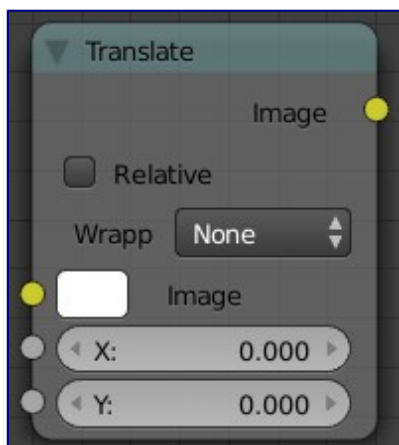
## Movie Distortion Node



Movie Distortion Node

TODO - see: <https://developer.blender.org/T43469>

## Translate Node



Transform Node

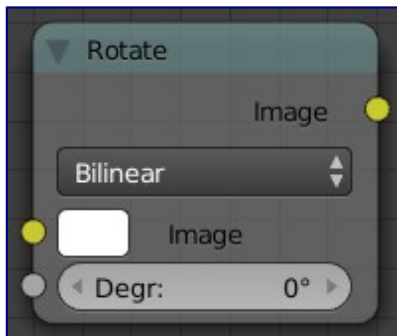
The translate node translates (moves) an image by the specified amounts in the X and Y directions. X and Y are in pixels, and can be positive or negative. To shift an image up and to the left, for example, you would specify a negative X offset and a positive Y.

## Usage

This node can be used for:

- Movie credits.
- Moving a matte.
- Camera shake.

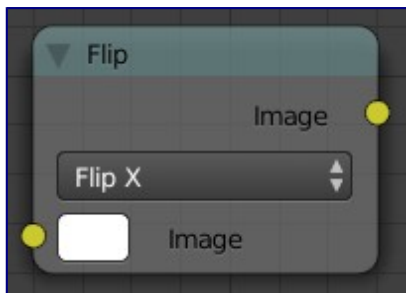
## Rotate Node



Rotate Node

This node rotates an image. Positive values rotate clockwise and negative ones counterclockwise.

## Flip Node

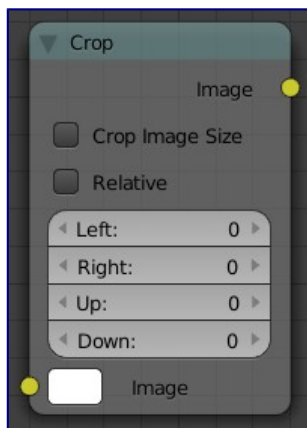


Flip Node

This node flips an image at defined axis that can be either X or Y. Also flipping can be done on both X and Y axis' simultaneously.

You can use this node to just flip or use it as a part of mirror setting. Mix half of the image to be mirrored with its flipped version to produce mirrored image.

## Crop Node



Crop Node

The Crop Node takes an input image and crops it to a selected region.

### Crop Image Size

When enabled, the image size is cropped to the specified region. When disabled, image remains the same size, and uncropped areas become transparent pixels.

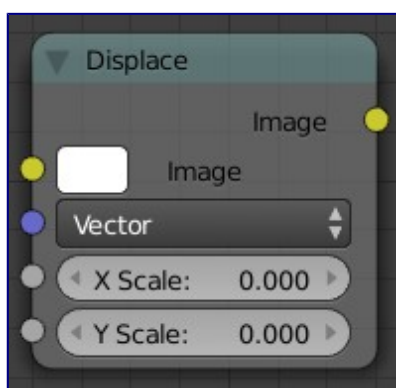
### Relative

When enabled, crop dimensions are a percentage of the image's width and height. When disabled, the range of the sliders are the width and height of the image in pixels.

### Crop Region Values

These sliders define the lower, upper, left, and right borders if the crop region.

## Displace Node



Displace Node

Ever look down the road on a hot summer day? See how the image is distorted by the hot air? That's because the light is being bent by the air; the air itself is acting like a lens. This fancy little node does the same thing; it moves an input image's pixels based on an input vector mask (the vector mask mimics the effect of the hot air).

This can be useful for a lot of things, like hot air distortion, quick-and-dirty refraction, compositing live footage behind refracting objects like looking through bent glass or glass blocks, and more! Remember what HAL saw in 2001:Space Odyssey; that distorted wide-angle lens? Yup, this node can take a flat image and apply a mask to produce that image.

The amount of displacement in the X and Y directions is determined by

- The value of the mask's channels:

- The scaling of the mask's channels

The (red) channel 1's value determines displacement along the positive or negative X axis. The (green) channel 2's value determines displacement along the positive or negative Y axis.

If both the channels' values are equal (i.e. a greyscale image), the input image will be displaced equally in both X and Y directions, and also according to the X scale and Y scale buttons. These scale buttons act as multipliers to increase or decrease the strength of the displacement along their respective axes. They need to be set to non-zero values for the node to have any effect.

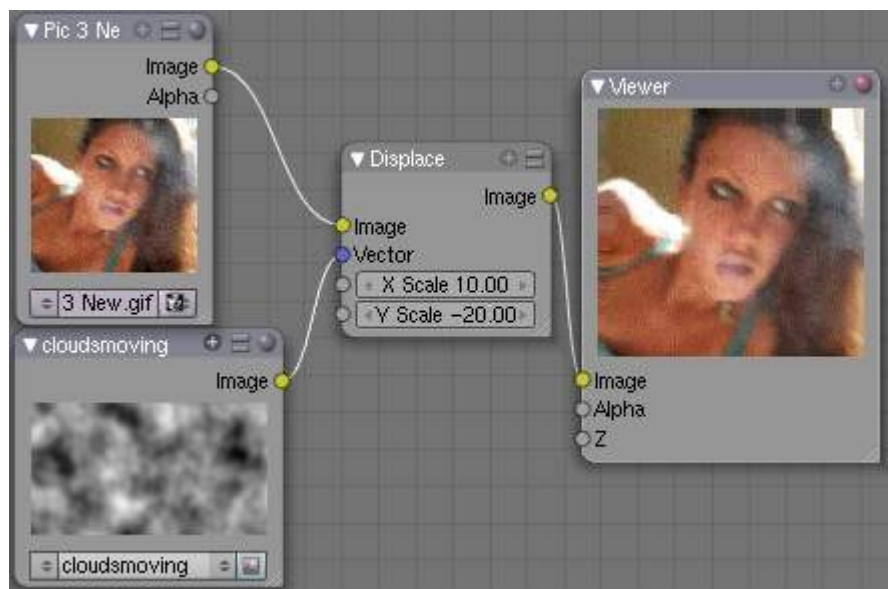
Because of this, you can use the displace node in two ways, with a greyscale mask (easy to paint, or take from a procedural texture), or with a vector channel or RGB image, such as a normal pass, which will displace the pixels based on the normal direction.

## Example

In this example, she's singing about dreams of the future. So, to represent this, we use a moving clouds texture (shot just by rendering the cloud texture on a moving plane) as the displacement map. Now, the colors in a black and white image go from zero (black) to one (white), which, if fed directly without scaling would only shift the pixels one position. So, we scale their effect in the X and Y direction.

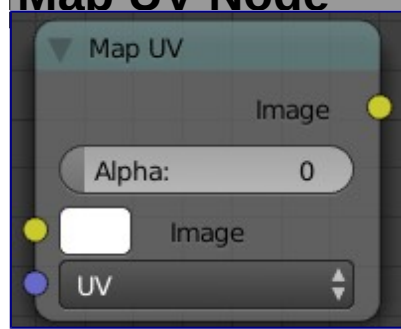
Upon reviewing it, sometimes stretching in both the X and Y direction made her face look fat, and we all can guess her reaction to looking fat on camera. SO, we scale it only half as much in the X so her face looks longer and thinner. Now, a single image does not do justice to the animation effect as the cloud moves, and this simple noodle does not reflect using blur and overlays to enhance (and complicate) the effect, but this is the core.

Photos courtesy of Becca, no rights reserved. See also some movies of this node in action, made by the wizard programmer himself, by following this external link



Music Video Distortion Example Using Displace

## Map UV Node



## Map UV Node

So, I think we all agree that the problem is...we just don't know what we want. The same is true for directors. Despite our best job texturing our models, in post-production, inevitably the director changes their mind. "Man, I really wish he looked more ragged. Who did makeup, anyway?" comes the remark. While you can do quite a bit of coloring in post-production, there are limits. Well, now this little node comes along and you have the power to **re-texture your objects** *after they have been rendered*. Yes, you read that right; it's not a typo and I'm not crazy. At least, not today.

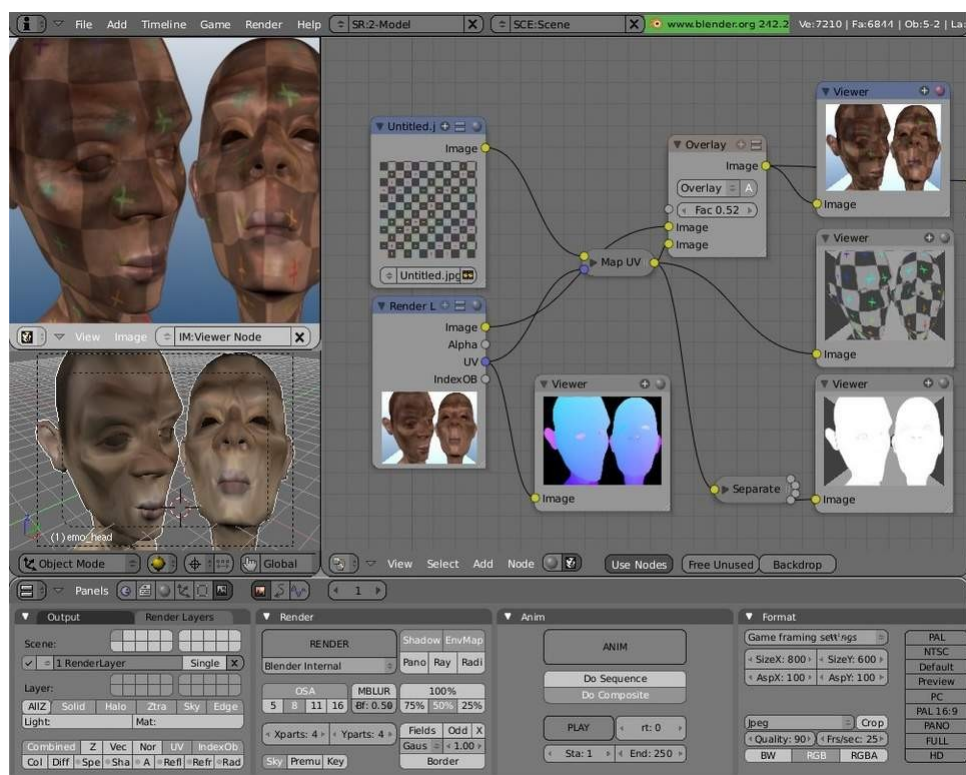
Using this node (and having saved the UV map in a multilayer OpenEXR format image sequence), you can apply new flat image textures to all objects (or individual objects if you used the very cool *ID Mask Node* to enumerate your objects) in the scene.

Thread the new UV Texture to the Image socket, and the UV Map from the rendered scene to the UV input socket. The resulting image is the input image texture distorted to match the UV coordinates. That image can then be overlay mixed with the original image to paint the texture on top of the original. Adjust alpha and the mix factor to control how much the new texture overlays the old.

Of course, when painting the new texture, it helps to have the UV maps for the original objects in the scene, so keep those UV texture outlines around even after all shooting is done.

## Examples

In the example below, we have overlaid a grid pattern on top of the two Emo heads after they have been rendered. During rendering, we enabled the UV layer in the RenderLayer tab (Buttons window, Render Context, RenderLayer tab). Using a mix node, we mix that new UV Texture over the original face. We can use this grid texture to help in any motion tracking that we need to do.

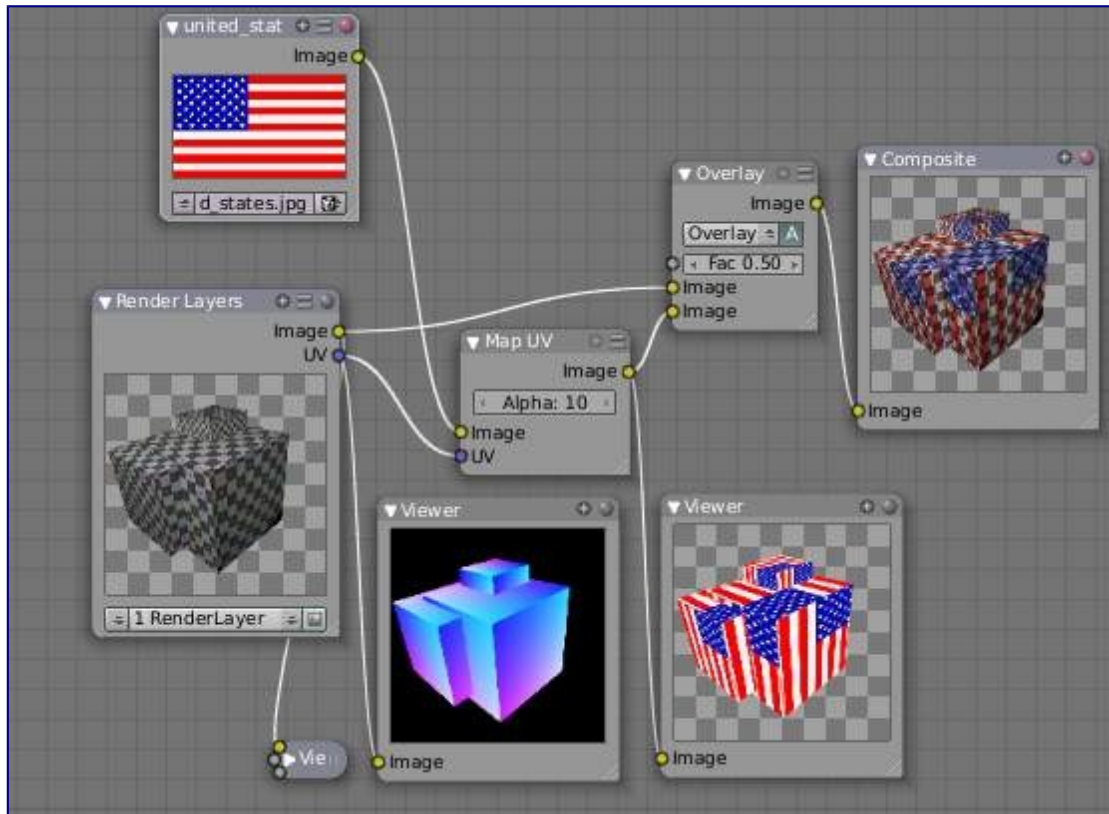




### Adding a Grid UV Textures for Motion Tracking

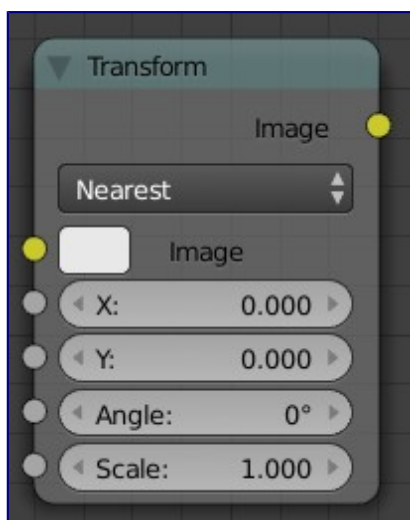
In the next example, we overlay a flag on top of a cubie-type thing, and we ensure that we Enable the Alpha pre-multiply button on the Mix node. The flag is used as additional UV Texture on top of the grid. Other examples include the possibility that we used an unauthorized product box during our initial animation, and we need to substitute in a different product sponsor after rendering.

Of course, this node does NOT give directors the power to rush pre-production rendering under the guise of “we’ll fix it later”, so maybe you don’t want to tell them about this node. Let’s keep it to ourselves for now.



Adding UV Textures in Post-Production

## Transform Node



Transform Node

This node combines the functionality of three other nodes: *Scale*, *translate*, and *rotate* nodes.



## **X, Y**

Used to move the input image horizontally and vertically.

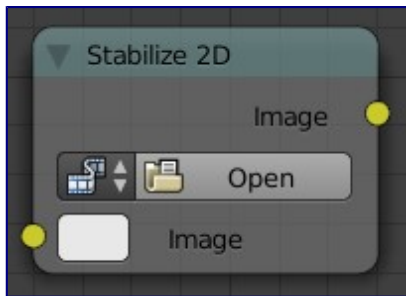
## **Angle**

Used to rotate an image around its center. Positive values rotate counter-clockwise and negative ones clockwise.

## **Scale**

Used to resize the image. The scaling is relative, meaning a value of 0.5 gives half the size and a value of 2.0 gives twice the size of the original image.

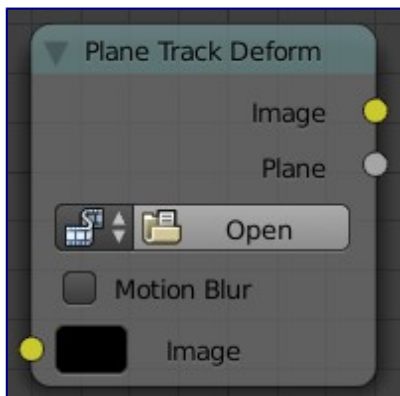
# **Stabilize 2D**



Scale Node

TODO - see: <https://developer.blender.org/T43469>

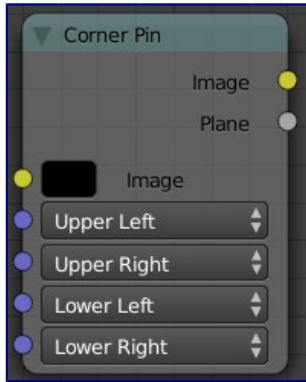
# **Plane Track Deform Node**



Plane Track Deform Node

TODO - see: <https://developer.blender.org/T43469>

# **Corner Pin Node**



Corner Pin Node

TODO - see: <https://developer.blender.org/T43469>