**Tinderbox 1
for
Adobe After Effects**

Rev: February 2010

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INTRODUCTION

Welcome to Tinderbox 1 for After Effects. Our plug-ins have been developed for the most demanding professionals in the post production industry. We are delighted to bring these tools to digital artists using After Effects.

About this User Guide

This User Guide gives you information on each of the plug-ins in this set with hints and tips at the end of most plug-ins to suggest creative or practical uses of the effect.

Controls common to many of the Tinderbox plug-ins are described in the chapter Tinderbox Controls and referenced from the plug-ins.

System Requirements

Tinderbox 1 plugs into Adobe After Effects CS4 running on Mac OS X or Windows XP. It will also work in CS3/AE7. It does not work in After Effects 6.5, 6.0 or earlier versions. A version of Tinderbox is available for Combustion.

Installation

Tinderbox is distributed as a software download from our web site. You will find installation and licensing instructions there as well. (http://www.genarts.com)

Can I install Tinderbox on more than one computer?

You can install Tinderbox on as many machines as you like, but a watermark will be drawn over the image if there isn't a valid license key for that machine.

If you wish to render Tinderbox plug-ins on a network of render-only versions of After Effects you will need to purchase Tinderbox render licenses.

Background Rendering

In After Effects Pro, you can render on a network of computers using watch folders. If you want to do this for compositions that use Tinderbox plug-ins, you will need:

1. The Tinderbox plug-ins installed on the networked computers.
2. A valid Tinderbox license key for each networked computer.

You may need to purchase additional license keys from GenArts.

Without these, the After Effects Render Engine will render Tinderbox plug-ins with a watermark on the image. Render license keys will allow you to render Tinderbox using After Effects Render Engine, but not the full After Effects program.

About Tinderbox Plug-ins

All Tinderbox plug-ins integrate seamlessly into After Effects. They are applied to your clips as you would any other filter and they can all be animated using the standard After Effects animation tools from simple keyframing to full blown expressions.

For users with the Adobe After Effects Professional, the Motion Tracker can be used to input data into any positional controls of the Tinderbox plug-ins.

Other GenArts Products

Visit GenArts's web site at http://www.genarts.com for further details on other GenArts products.

TINDERBOX CONTROLS

This chapter describes the controls that are common to many Tinderbox plug-ins.

About...

To display the on-line help either click on "About..." as shown in Figure 1. To hide the help dialog, just click on it after it has

Figure 1. About.

appeared. The help gives a short description of the plug-in, the exact version number of Tinderbox (Figure 3) and the System ID (Figure 4). This online help is designed to give you a brief description of the plug-in and a quick start if required. More detailed information on the plug-in is contained in this User Guide.

Figure 2. Help.

Figure 3. Version.

Figure 4. System ID.

Reset

Reset reverts all parameters in the plug-in to their default values.

Figure 5. Reset.

Options...

Options will launch a web browser to get a license key for the plug-ins.

Figure 6. Options.

Type

Each of the plug-ins listed in the next chapter has a type description of blur, effect, tool, generator or warper. This is to help you quickly understand the general nature of the filter.

If there are any optional layers that can be used in the effect, these are also declared.

Some Tinderbox plug-ins can use a composition's camera and lights. These are labelled as 3D in the Type definition and the plug-ins themselves appear with a cube symbol (Figure 7) in the Effect Controls panel.

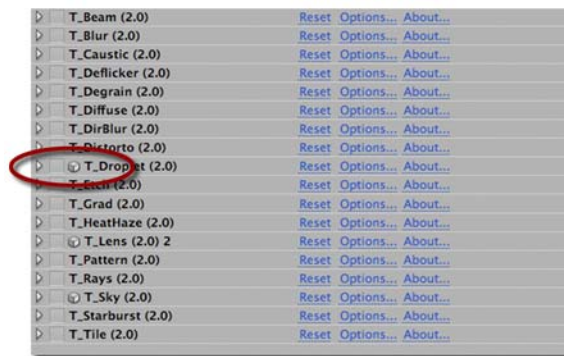|			
▷	T_Beam (2.0)	Reset Options... About...
▷	T_Blur (2.0)	Reset Options... About...
▷	T_Caustic (2.0)	Reset Options... About...
▷	T_Deflicker (2.0)	Reset Options... About...
▷	T_Degrain (2.0)	Reset Options... About...
▷	T_Diffuse (2.0)	Reset Options... About...
▷	T_DirBlur (2.0)	Reset Options... About...
▷	T_Distorto (2.0)	Reset Options... About...
▷	T_Droplet (2.0)	Reset Options... About...
▷	T_Etch (2.0)	Reset Options... About...
▷	T_Grad (2.0)	Reset Options... About...
▷	T_HeatHaze (2.0)	Reset Options... About...
▷	T_Lens (2.0) 2	Reset Options... About...
▷	T_Pattern (2.0)	Reset Options... About...
▷	T_Rays (2.0)	Reset Options... About...
▷	T_Sky (2.0)	Reset Options... About...
▷	T_Starburst (2.0)	Reset Options... About...
▷	T_Tile (2.0)	Reset Options... About...

Figure 7. T_Droplet can use the composition's lights.

Aspect

Controls the proportion of the effect in x, horizontal, and y, vertical. The default value of 0 will apply the effect equally in x and y. A value of 100 will only apply the effect in x. A value of -100 will only apply the effect in y. Figure 8 and Figure 9 shows the output of
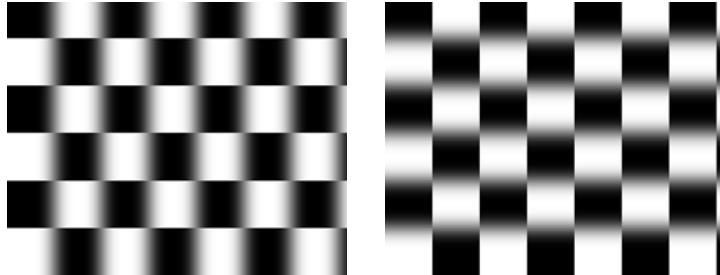

Figure 8. T_Blur Aspect = 100.   Figure 9. T_Blur Aspect = -100.

T_Blur on a checker pattern with two values for the Aspect. The Aspect controls can be used to fake perspective. Figure 10 shows

Figure 10. T_Droplet.

Aspect in T_Droplet being used to sit the ripples on the water.

Pixel Aspect Ratio

Tinderbox plug-ins will automatically compensate for the Pixel Aspect Ratio set under Composition Settings and in the Viewer Options.

Process

Controls which of the colour channels will be affected by the effect. The options can be a subset or all of the following. The most common are at the top of the list. Figure 11 shows a two layer composite of a polar bear with triangular alpha channel composited over a flower. T_Blur has then been applied with the most common processing options shown in Figure 12 to Figure 14.

- **RGBA** - the red, green, blue and alpha channels are processed Figure 12.

Figure 11. Two layer composite.   Figure 12. RGBA.

- **RGB** - only the red, green and blue channels are processed. Figure 13.
- **Alpha** - only the alpha channel is processed. Figure 14.

Figure 13. RGB.   Figure 14. Alpha.

- **Grey** - this affects the result of (R+G+B)/3.
- **Red** - only the red channel will be affected.
- **Green** - only the green channel will be affected.
- **Blue** - only the blue channel will be affected.
- **Luminance** - the luminance of the image will be affected.
- **U** - only the U video signal will be affected.
- **V** - only the V video signal will be affected.
- **Chroma** - the U and V channels will be affected.

You should note that some plug-ins operate on the alpha channel of the source image, like T_Blur in the example above, and other plug-ins generate their own alpha replacing any alpha that was part of the source image. You can see this in Figure 15 where T_Caustic has been applied to the polar bear layer and the triangular alpha channel is ignored.

Figure 15. RGBA processing with T_Caustic.

Ignore Transparent Pixels

If you're wondering what this handy switch does then read on.

Consider this picture of a polar bear with a triangular matte. Figure 16 shows the RGB Straight pixels. Figure 17 shows the

Figure 16. RGB Straight.

Figure 17. Alpha.

triangular matte. Compositing this picture over a background will only show the polar bear and the background. You're never going to see the green pixels.

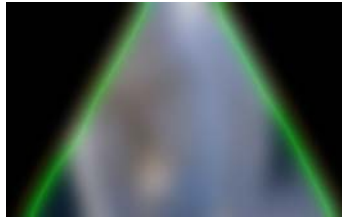If we apply T_Blur to the polar bear, let's consider what happens to

Figure 18. Ignore Transparent
Pixels Off.

Figure 19. Ignore Transparent
Pixels On.

pixels at the edge of the triangular matte. Figure 18 shows green
pixels being dragged into the picture as a result of the blur. This is
usually unwanted. Switching Ignore Transparent Pixels on means
that the source image will be composited on transparent black before
the effect is applied. Figure 19 shows the result you're after.

Gradient

Several of the Tinderbox plug-ins require the colours to be set in a gradient or ramp. These plug-ins will have a Gradient control. The coloured area at the top is used to create, delete and position the individual colours in the gradient by manipulating the small triangular colour tags.

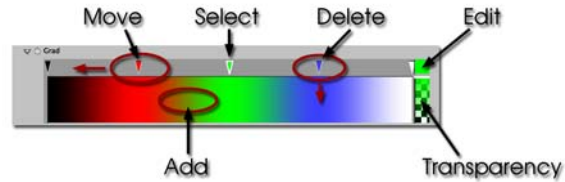Note *The tags on the extreme left and right cannot be moved or deleted but their colours can be modified.*

Figure 20. Gradient Controls.

Changing a Colour

Select a tag by clicking on it. Click on the colour box (labelled Edit in Figure 20) to launch the After Effects colour dialog.

Moving a Colour

Select a tag and drag it left or right.

Note *The tags on the extreme left and right cannot be moved.*

Adding a Colour

Click in the colour gradient to add a colour.

Deleting a Colour

Click and drag a tag into the colour gradient.

Lighting

Some plug-ins include controls for adding lighting. There are two types of lighting models that can be used in these plug-ins:

1. GenArts lighting models.
2. After Effects lighting models.

GenArts Model

Has two light types, local and infinite.

After Effects Model

Has four light types, parallel, point, spot, ambient.

Ambient, diffuse and specular lighting models are included for some plug-ins and point, infinite or After Effects lights can be used.

Figure 21. Lighting Off.   Figure 22. Lighting On.

Light   **Host Light** - this checkbox appears only when there is a host light available in the current composition. If the control is switched on, the internal lighting model will be disabled.

Light Layer - the host light to use in the calculations. This is specified by a number. The host lights are numbered from the bottom light in the composition (Light Layer =1), upwards to the top light (Light Layer = 2)
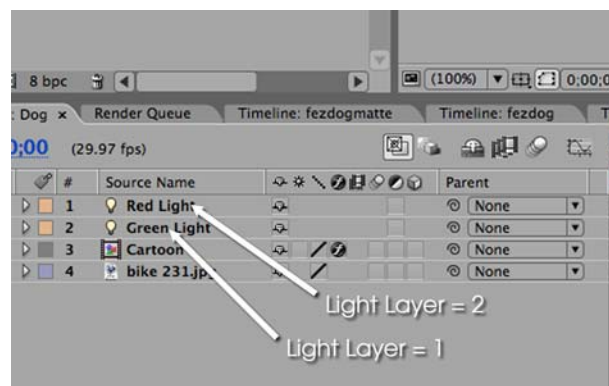

Figure 23. To pick the Red Light set Light Layer to 2.

Type
- **None** - no lights are used. Lighting parameters are switched off.

Figure 24. None.

- **Infinite** - simulates the parallel rays from a distant light source, like the sun.

Figure 25. Infinite.

- **Local** - simulates the light rays from a light source close to the surface of the image.

Figure 26. Local.

- **Host** - uses the After Effects light. If more than one light is in the composition, the top layer light is used.

Direction - the direction of the light source. If set to 90 the light appears to come from the right. If set to 180 the light appears to come from the bottom of the screen.
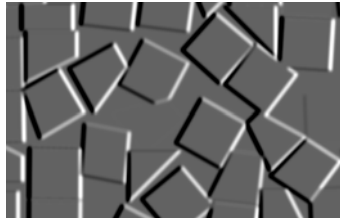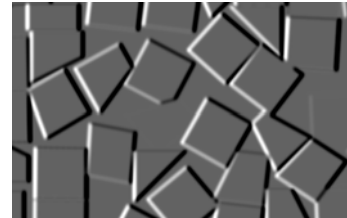
Figure 27. Direction = 90.	Figure 28. Direction = 270.

Elevation - effectively controls the height of the light source above the image plane. Elevation changes the angle between the image plane and a line from the light source to the image centre.

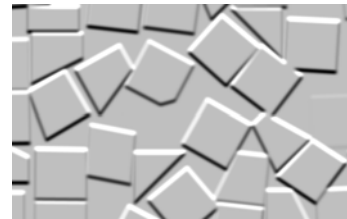|	
Figure 29. Elevation = 5.	Figure 30. Elevation = 30.

Position - the position of the light.

Distance - sets the distance between the local light source and the image plane. As distance increases more of the image is illuminated.

Ambient Lighting Ambient light produces a constant illumination on all surfaces regardless of their orientation. Ambient light is an approximation of the light generated from the multiple reflections from every surface in a scene.

Ambient Method - controls how to apply the ambient lighting.
- **None** - switches off ambient lighting.
- **Colour** - switches on ambient lighting and uses the ambient colour in the ambient colour calculations.
- **Source** - switches on ambient lighting and uses the source image colours in the ambient colour calculations.

Colour - the colour used in the ambient light calculations.

Strength - the amount of ambient light.

Diffuse Lighting   Dull surfaces scatter light equally in all directions so that the surfaces appear to have the same brightness from all viewing angles. These surfaces exhibit diffuse reflection.

Lighting - controls how to apply the diffuse lighting.

- **None** - switches off diffuse lighting.
- **Colour** - switches on diffuse lighting and uses the diffuse colour in the diffuse colour calculations, Figure 31 on page 14.
- **Source** - switches on diffuse lighting and uses the source image colours in the diffuse colour calculations, Figure 32.

Figure 31. Diffuse Colour.

Figure 32. Diffuse Source.

Colour - the colour used in the diffuse light calculations.

Strength - the amount of reflected diffuse light.

Specular Lighting   Specular or highlight reflection is observed on any shiny surface. Illuminate a shiny metal sphere and the highlight is caused by specular reflection while the light reflected from the rest of the sphere is caused by diffuse reflection.

Lighting - how to apply the specular lighting.

- **None** - switches off specular lighting.
- **Colour** - switches on specular lighting and uses the colour in the specular colour calculations, Figure 33.
- **Source** - switches on specular lighting and uses the source image colours in the specular colour calculations, Figure 34 on page 15.
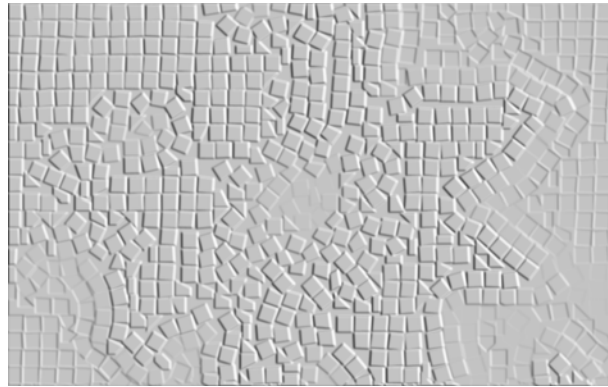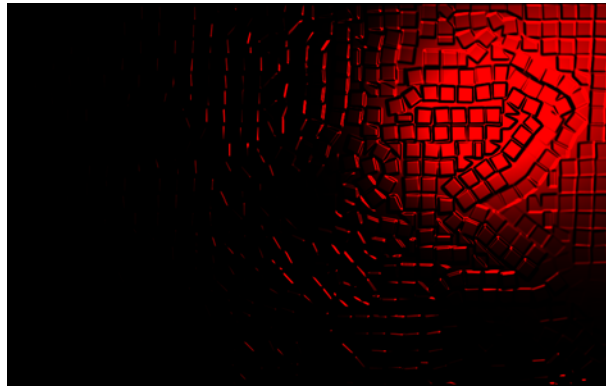
Figure 33. Specular Colour.

Figure 34. Specular Source.

Colour - the colour of the specular highlights.

Strength - the amount of reflected specular light.

Fall-off - controls how tight (Figure 36) or diffuse (Figure 35) the highlights are on the surface. This equates to the apparent shininess of the surface.
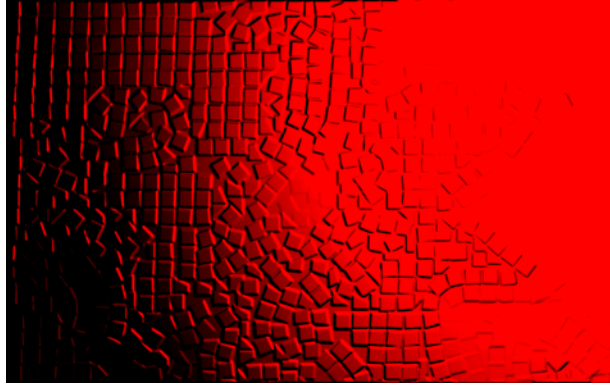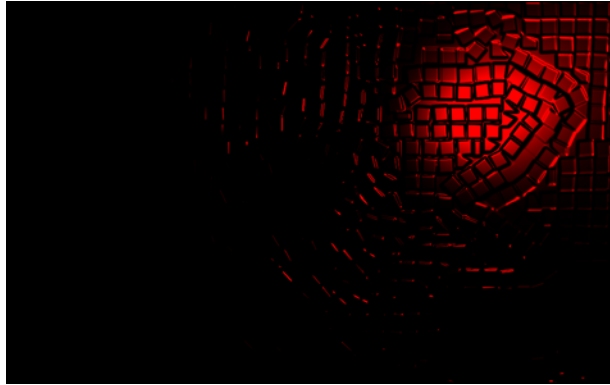
Figure 35. Low Fall-off.

Figure 36. High Fall-off.

Camera

Some plug-ins include camera controls allowing you to move around the generated effect. To ease animation synchronisation these can also be slaved to an After Effects camera (if one is present) in the same manner as the lights. The camera model used depends on the plug-in. For example, Tinderbox 1 T_Sky employs a camera which only allows for rotations in 3 degrees of freedom, since the sky is of a sufficient distance from the camera in question that no parallax should be observed in any kind of tracking movement. However, in a plug-in such as Tinderbox 3 T_Particles, the camera model allows for movement as well as rotation in 3 planes.

In our internal camera parameters, ("Controls" on page 17), only the controls relevant to the current plug-in are enabled and displayed, whilst, if host camera slaving is selected, only the relevant parameters from the host camera are employed.

Our plug-ins employ a two point camera model with an origin target point, and the coordinate system mimics the left handed camera model employed natively by After Effects.

Controls

Host Camera - this checkbox appears only when there is a host camera available in the composition you are working in, so if you want to slave to the host camera first of all ensure that you have created one in the current comp. If the control is switched on, the internal camera controls described subsequently will be disabled.

Angle of View - equivalent to the After Effects camera parameter of the same name this governs the width (as a degree) of the scene visible.

X Rotation - the rotation around the X axis of the camera head

Y Rotation - the rotation around the Y axis of the camera head

Z Rotation - the rotation around the Z axis of the camera head

X Position - the translation along the x axis

Y Position - the translation along the y axis

Z Position - the translation along the z axis

Clip Near & **Clip Far** - to aid rendering on generator plug-ins we employ a pair of planes which specify the limits of interest in terms of an axis through the camera and lens. Objects moving in front of the Clip Near or behind the Clip Far are determined as out of the area of interest and are thus not rendered.

Filtering

Filtering is used to control the quality of your processed images by reducing the jagged lines characteristic of pixel devices. For high quality images you should switch filtering on. As with all image processing you have a trade off between quality and time. Filtering will increase the quality of your image but will also increase the time it takes to process the image.

Filtering quality is chosen from a popup menu. The options given in the popup menu are:

- **Low** - highly distorted images may show jaggies. This is the fastest option.
- **Medium** - uses a bilinear filter.
- **High** - uses a MIP bilinear filter. This is the slowest option.
- **Global Default** - this uses the quality setting in After Effects to determine the filtering method used in the plug-in.

Figure 37. Low, Medium and High Filtering.

Depending on the effect being filtered, the High filtering option may over-soften the image. To combat this, the Filter Sharpness control can be used to compensate. The default value of 100% is normal sharpness, increasing it will sharpen up the result, decreasing it will soften further.

Note   *Filter Sharpness only has an effect when using the High filtering option.*

Blending

Many of the Tinderbox plug-ins have blending controls which allow you to specify how to mix between the output image and the source image. Controls are also available to affect the gain on the output image and source image. In our examples, we have applied T_Grad to a source image (Figure 38) to get the output image as shown in Figure 39.

Figure 38. Source Image.

Figure 39. Output Image.

Although the same results could be achieved using the layer modes and Adjust processes provided in After Effects, it would require the use of many more layers and effects in the composition.

Method - sets how to blend the output image effect with its original source image by the amount set in the blend control.

- **None** - no blending is applied, only the output image is returned as in Figure 39. Blend, Effect Gain and Source Gain have no affect when in this mode.
- **Mix** - blends the source and output images.
- **Add** - adds the source and output image pixel values.
- **Difference** - the absolute value of the source image minus the output image. Similar colours will return black pixels.
- **Subtract Source** - output image minus the source image.
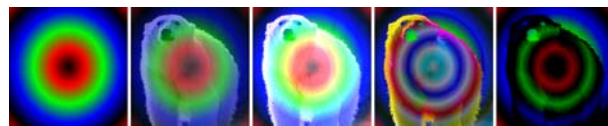
Figure 40. None, Mix, Add, Difference, Subtract Source.

Negative values are set to black.

- **Subtract Effect** - source image minus the output image. Negative values are set to black.
- **Darken** - returns the darker of either the output image or the source image.
- **Lighten** - returns the brighter of either the output image or the source image.
- **Colour** - returns the hue and saturation of the output image and the luminance of the source image.

- **Luminosity** - returns the hue and saturation of the source image and the luminance of the output image.
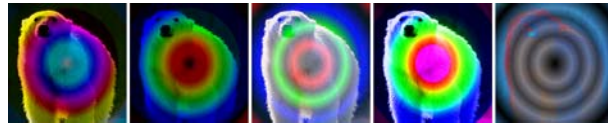

Figure 41. Subtract Effect, Darken, Lighten, Colour, Luminosity.

- **Hue** - returns the hue of the output image and the saturation and luminance of the source image.
- **Saturation** - returns the hue and luminance of the source image and the saturation of the output image.
- **Screen** - is a soft add making everything brighter but ramping off the whites. Light colours have more of an effect than dark colours. The result is always a lighter colour. Blending with black leaves the pixel unchanged, blending with white always returns white. The result is similar to projecting multiple slides on top of each other.
- **Multiply** - source image multiplied by the output image. The result is always darker. Blending with black gives black and with white returns the colour unchanged.
- **Overlay** - mixes colours while preserving the highlights and shadows.
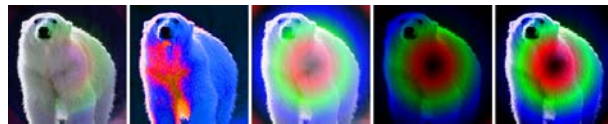
Figure 42. Hue, Saturation, Screen, Multiply, Overlay.

- **Exclusion** - creates a result similar to the Difference mode but lower in contrast. Blending with white inverts the colour, blending with black produces no change.
- **ColourBurn** - darkens the underlying colour to reflect the blend colour by increasing the contrast.
- **ColourDodge** - brightens the underlying colour to reflect the blend colour by decreasing the contrast.
- **HardLight** - lightens highlights and darkens shadows. If the pixel value in the source image is lighter than 50% grey, the result lightens as if it were screened. If the pixel value in the source image is darker than 50% grey, the result is darkened as if it were multiplied.

- **LinearBurn** - darkens the underlying color to reflect the blend

Figure 43. Exclusion, ColourBurn, ColourDodge, HardLight, LinearBurn.

color by decreasing the brightness. Blending with white produces no change.

- **LinearDodge** - same as Add.
- **LinearLight** - is a mix in which the brightness depends on the output image. If the output image pixel is brighter than mid grey, the source image is lightened by mixing in a brighter output image. If the output image is darker than mid grey the source image is darkened by mixing in a darker output image. If blending with a mid grey output image, the source image is returned.
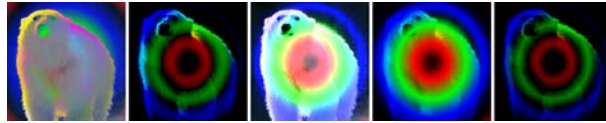- **SoftLight** - similar to LinearLight but more subtle. Unlike LinearLight, blending with white will lighten the source image but not return white.
- **Composite Effect** - if the plug-in generates an alpha then this will composite the plug-in effect over the source image. This saves you having to set Blending to none and add another layer to your composition.
- **Composite Source** - layers the source image over the output

Figure 44. Linear Dodge, Linear Light, SoftLight, Composite Effect, Composite Source.

image taking into account any alpha channel on the source image.

Blend - when blending, sets the percentage mix between the output image and the source image. A value of 100% will show just the output image effect. A value of 0% will show just the source image. The inputs to this Blend are affected by the values set for Effect Gain and Source Gain.

Effect Gain - when blending, sets the gain of the image effect. The result of this is used in the Blend. The Effect Gain also affects the alpha of the image. Setting Effect Gain to 50% will half the brightness of the effect image and will also half the value of its

alpha. This will result in the underlying layers, or black if there are none, appearing through the effect image.

Source Gain - when blending, sets the gain of the original source. The result of this is used in the Blend. The Source Gain also affects the alpha of the image. Setting Source Gain to 50% will half the brightness of the original source and will also half the value of its alpha. This will result in the underlying layers, or black if there are none, appearing through the original source.

Clamp 0-1 (32bpc) - switch this on to clamp out-of-range pixels so that the blending methods give expected results. Many blending operations (like screen) rely on the pixels to be in the range 0 to 1 to get a sensible result. In 32 bpc projects some images may have pixel values much greater than 1. These over-range values are called over-whites or superwhites and will give incorrect and unexpected results for these blending methods. Switching this clamp on will cut off any pixel values greater than 1 (and less than 0) so that the blend looks right. Without clamping you will get unexpected results, for example, negative pixels when you ought to be getting very bright pixels.

Matte

The way the Matte and Matte Layer parameters work are common to many plug-ins and are described here.

Matte - the image and channels used to control the effect.
- **None** - no matte is used.
- **Source Luminance** - the luminance of the current layer, with any effects applied to it, is used.
- **Source Inverse Luminance** - the inverted luminance of the current layer, with any effects applied to it, is used.
- **Source Alpha** - the alpha of the current layer, with any effects applied to it, is used.
- **Source Inverse Alpha** - the inverted alpha of the current layer, with any effects applied to it, is used.
- **Matte Layer Luminance** - the luminance of the raw image specified in the Matte Layer parameter below is used.
- **Matte Layer Inverse Luminance** - the inverted luminance of the raw image specified in the Matte Layer parameter below is used.
- **Matte Layer Alpha** - the alpha of the raw image specified in the Matte Layer parameter below is used.
- **Matte Layer Inverse Alpha** - the inverted alpha of the raw image specified in the Matte Layer parameter below is used.

So the <u>important bit</u> is that if you pick **Source** you get the current layer with any effects applied, and if you pick **Matte Layer** you get the image specified below with no effects applied.

Matte Layer

Matte Layer - the layer used if Matte is set to Matte Layer Luminance, Matte Layer Inverse Luminance, Matte Layer Alpha or Matte Layer Inverse Alpha.
- **None** - no layer is specified and none used.
- **1. Layer** - this layer is used as the Matte Layer.
- **2. Layer** - his layer is used as the Matte Layer.

The Matte Layer is the layer without any effects applied.

Attenuation

Often the matte is used to attenuate the strength of the effect. By this we mean that pixel values in a matte are used to vary a parameter in the plug-in. You should note that this is not the same as applying the effect to only a portion of the image using masks or a track matte.

Let's consider the plug-in T_Tile that takes an image like Figure 45 and scales and repeats it as shown in Figure 46.

If we attenuate this effect with the matte should in Figure 47 then where the matte is black on the left, none of the effect will be applied. Where the matte is white the full scaling factor in T_Tile will be applied. Values in between are scaled accordingly as shown in Figure 48.

Figure 45. Source Image.

Figure 46. Tile.

Figure 47. Matte.

Figure 48. Attenuating Scale.

Source Crops

Many Tinderbox plug-ins require access to pixels that lie off the edge of the source image. For example, T_Blur needs to use pixels off the sides when blurring at the edges. Figure 49 shows black

Figure 49. Look at the border. Here the Edge Method = Colour.

Figure 50. Edge Methods = Reflect.

pixels being dragged in from the sides which happens if the edge methods are set to "Colour". By setting the edge method to "Reflect" you can overcome this problem, as shown in Figure 53.

In addition, there are controls to crop the image.

Edge Methods

The edge methods control the behaviour of the image at the crop boundaries. This is usually at the edge of the composition but can be brought into the picture with the Left, Right, Top and Bottom crop tools. The left and right edges can have a different edge method from the top and bottom.

X Method - how to treat the left and right edges.
• **Colour** - see Figure 51.

• **Repeat** - repeats the last line of pixels. Figure 52.
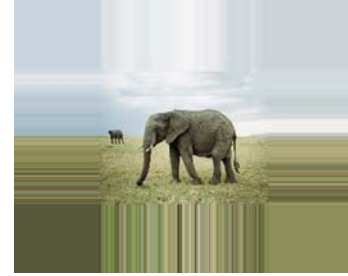
Figure 51. Colour.   Figure 52. Repeat.

• **Reflect** - mirrors the image at the crop line. Figure 53
• **Wrap** - tiles the image at the crop line. Figure 54.
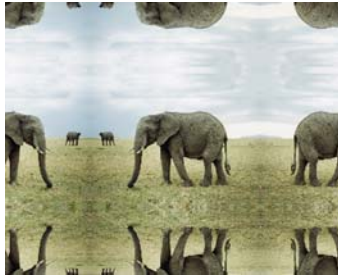
Figure 53. Reflect.   Figure 54. Wrap.

Y Method - how to treat the top and bottom edges.

Edge Colour - the colour used at the crop boundary if the edge method is set to Colour. In Figure 51 the edge colour is black.

Edge Colour Alpha - the transparency of this colour is set using the Edge Colour Alpha.

Left - the left crop position.

Right - the right crop position.

Bottom - the bottom crop position.

Top - the top crop line.

Matte Layer Crops

This is only available where there is the option of selecting a Matte within a Tinderbox plug-in. Matte Crops work in exactly the same way as Source Crops but apply to the Matte.

TINDERBOX 1

T_Beam

Introduction   T_Beam draws a spotlight in 3D space. The position of the light
source can be animated and the beam can be rotated in all directions.
The beam can either be composited over the underlying layers,
blended with its source image or used to generate a new image.

Figure 55. St. Paul's Cathedral.   Figure 56. St.Paul's lit up.

Type   Generator.

Controls

About   Click the picture to display the on-line help, Tinderbox version
number and lmhostid. See "About..." on page 3.

Show On-Screen Tools - switch this off to remove the yellow
rotation and translation tool.
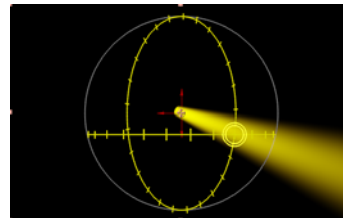
Figure 57. Position, Rotation and Elevation tool.

Process - sets which channels to process.

Position - the screen position of the light emitting disc.

Rotation - the direction of the beam. With a value of 0 the beam

points right. With a value of 180 the beam points left. With a value of 270 the beam points away from the camera. With a value of 90 the beam points towards the camera.

Elevation - the vertical pitch of the beam. With a value of 0 the beam will be horizontal. 90 points down and -90 point up.

Form   This groups the properties of the light beam.

Cone Angle - the spread of light from the emitting disc. Small values produce narrow focussed beams. Large values produce wide spread out beams.

Figure 58. Cone Angle = 15.   Figure 59. Cone Angle = 50.
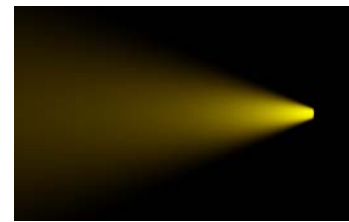
Radius - the size of the light emitting disc producing the beam.

Softness - blurs the edges of the beam. A value of 0 will produced a hard edged cone. The default value of 100 gives a soft edge to the beam.
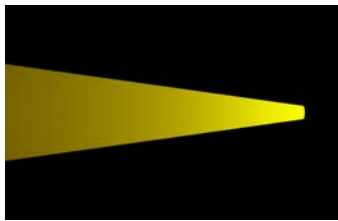
Figure 60. Softness = 0.   Figure 61. Softness = 100.
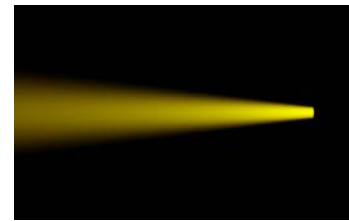
Fall-off - increasing the fall-off reduces the light penetration in the direction of the beam.

Figure 62. Fall-off = 50.   Figure 63. Fall-off = 90.

Intensity - the brightness of the beam. Large values produce brighter beams.

Beam Colour - the colour of the centre of the beam.

Corona Colour - the colour of the outer part of the beam.

Remove Light Emitting Disc - removes the disc of light used to generate the beam. Removing this is most noticeable when the beam is pointing directly towards the camera.

Filtering - the quality of the anti-aliasing used when processing the effect. Most noticeable when Softness is 0. See "Filtering" on page 18.

Blending   How to mix between the source image and the effect. See "Blending" on page 19.

T_Blur

Description   T_Blur is a time constant, sub-pixel, gaussian blur. T_Blur can operate on the whole image, individual colour channels or just the chroma. It can be used to defocus or sharpen an image. It's fast even

Figure 64. Source Image.   Figure 65. Blur.

for very large blurs.

Type   Blur.

Controls

    About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Process - sets which channels to process.

Ignore Transparent Pixels - switch this on to remove unwanted pixels creeping into your image at the edges of the alpha.

Mode - sets whether to blur or sharpen the image.
- **Blur** - softens the image.
- **Sharpen** - emphasizes the edges within the image.

Figure 66. Source Image.   Figure 67. Sharpen.

Radius - the strength of the blur. Increase this value to increase the blur effect.

Aspect - the horizontal and vertical weighting of the effect. An

Aspect of 100 will only blur horizontally.

Figure 68. Aspect = -100.

Figure 69. Aspect = 100.

Blending   How to mix between the source image and the effect. See "Blending" on page 19.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 25.

Expand Output - grows the size of the layer to prevent clipping of the effect at the layer boundary. Figure 70 show a white text layer

Figure 70. Text Layer.

smaller than the composition size. When T_Blur is applied we get the clipped result shown in Figure 71. Switching on Expand Output gives us Figure 72 without having to pre-compose layers.

Figure 71. Expand Output Off.

Figure 72. Expand Output On.

Hints & Tips   Sharpening the chroma enhances the chroma in areas of the image with strong colour variations whilst leaving flat areas relatively unchanged. This can be useful in sharpening the edges of the subject before key pulling.

See also Tinderbox 2 T_LensBlur for defocussing with highlight blooming. Tinderbox 1 T_DirBlur for a directional blur, Tinderbox 2 T_RadialBlur to smear pixels out from a centre and Tinderbox 3 T_GradientBlur to soften along gradient vectors.

T_Caustic

Description   T_Caustic simulates the patterns created when light rays are reflected or refracted by a curved surface. Caustics can often be seen at the bottom of a swimming pool in bright sunlight or on objects viewed underwater.
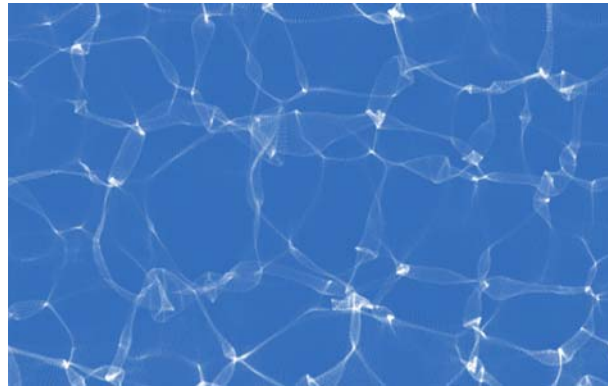

Figure 73. T_Caustic.

Type   Generator.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Process - sets which channels to process.

Size - zooms into or away from the caustics.
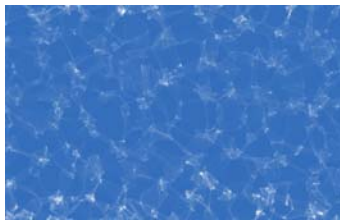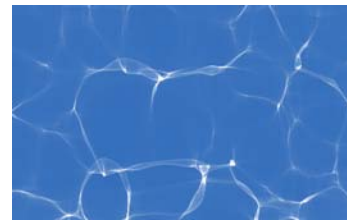
Figure 74. Size = 15.   Figure 75. Size = 50.

Fractals - the detail in the caustic lines.

Focus - alter this to bring the caustic lines into focus.

Figure 76. Focus = 50.   Figure 77. Focus = 250.

Seed - this number generates a number sequence that is used to randomly vary the caustics pattern.

Speed - the rate at which the caustics move.

Samples - increasing this value will increase the quality of the caustic lines.

Background - the colour of the background.

Foreground - the colour of the caustics.

Foreground Brightness - the amount of reflected light emitted from the caustics. The higher this value, the brighter the caustic lines.

Height Map   Rather than generating the caustics from an algorithm, they can be sourced from an animating height matte. Here's an example showing the caustic lines following a matte. It works better if the height map is animating. In fact unless it animates the caustics won't animate. Try pre-composing After Effects's Fractal Noise (make
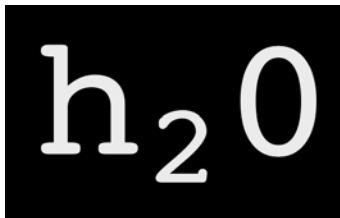
Figure 78. Height Map.   Figure 79. Caustics.

sure it animates) and use that as the height map.

> **Height Map** - the image used to create caustics. This parameter is explained more fully in an example. See "Example" on page 34.

- **None** - no height map is used and the caustics are generated by the algorithm.

- **Source** - the height map is taken from the current layer with any effects that may have been applied.
- **Height Map** - the height map is taken from the image set in the Height Layer below.

> **Height Layer** - the raw image used as the height map if Height Map is set to Height Map Luminance/Alpha.

> **Softness** - the blur applied to the height map.

Blending   How to mix between the source image and the effect. See "Blending" on page 19.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 25.

Example   Let's explain the Height Map parameter with an example. In this composition we have a picture of a koi carp (Figure 80) that has the effect T_Bars applied (Figure 81).

Figure 80. Koi Carp.
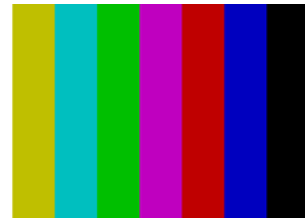
Figure 81. T_Bars.

Now add another effect, T_Caustics, and you'll get the image shown in Figure 82. Now we'll specify the Height Map. Set this to Source Luminance and you'll get the image shown in Figure 83. As you can see the Source Luminance is the source layer (koi carp) with any effects applied (T_Bars). If you wish to use the raw layer with no effects applied set the Height Map to Height Layer Luminance and choose the koi carp from the Height Layer parameter. Do that and you'll get Figure 84.
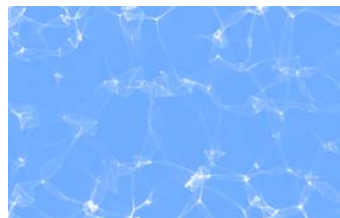
Figure 82. T_Caustics.
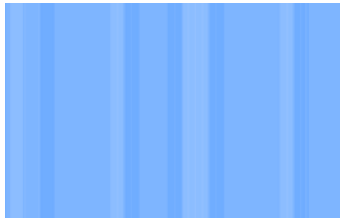
Figure 83. Height Map = Source
Luminance.
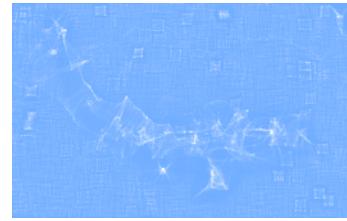
Figure 84. Height Map = Height
Layer Luminance.

Hints & Tips   T_Caustic can be used to generate mattes for use with other plug-
ins. Try using a caustics matte with Tinderbox 1 T_Distorto.

T_Deflicker

Description

T_Deflicker is designed to reduce spatially variable flicker from a sequence. Most current flicker reduction tools are global, that is, they try to reduce the same amount of flicker from the whole of the image. If only parts of an image are flickering this technique will fail as it will reduce the flicker from one part but introduce it in another. The difficulty in automatically correcting for spatial variable flicker is differentiating between flicker and motion. It is worth repeating that this plug-in will reduce flicker in most cases, but it is unlikely to remove all traces of flicker.

In this plug-in we divide the image up into blocks and adjust the contrast and brightness in these regions to correct complex localised flicker. We also analyse motion vectors between the current and reference frames and use a global luminance change for blocks that have significant motion.

Quick Start

The only decision that's worth making at the start is whether to deflicker relative to the previous frame of the sequence or to a specified frame. To decide this you'll need to look carefully at the flickering clip. If the flicker is in a part of the image that is not moving much, then choose **Specified** as the Reference method. For example, you may have a locked off shot with action in the foreground, but the flicker is only in one of the corners in the static background. For most other circumstances, choose **Previous.** For example, if the camera is panning then everything is moving.

If you have chosen to deflicker to the previous frame render using the defaults. With this method you may see a drift in the mean luminance value during the render. You can correct for this by increasing the **feedback**, however, this will reduce the amount of flicker removed.

If you have chosen to deflicker to a single frame, switch **Reference** to **Specified**, select a **Reference Frame** and render.

Tuning

If the sequence still flickers there are one or two changes you can make to try to improve the result. To put this in context it's worth explaining a little more about the algorithm. Our deflicker fits a block based model to the image. We split the source and reference images into multiple blocks of size **Block Size** measured in pixels. We then try and modify the brightness and contrast (the flicker parameters) of the source block to make it equal to the brightness and contrast of the reference block. In practise, if there is motion in

the sequence the pixels in the two blocks will not be the same which will result in incorrect flicker parameters. To minimise this effect, when the image is divided into blocks they are overlapped by a small region. To this region we apply the flicker parameters calculated for both adjacent blocks. If the results from these two calculations are not consistent we assume that the parameters have been calculated incorrectly due to motion and we discard them both, replacing them with the global brightness and contrast parameters for the whole image. The criterion for discarding parameters is set by **Motion Threshold**. So, if you think the flicker is only in parts of the image that are static, it is quite safe to increase this value.

It's worth repeating this. Where there is motion, only global deflickering takes place. You can view areas that are considered moving by turning on the **Motion Matte**. Movement is shown in white as shown in Figure 86.

Figure 85. Bus moving left to right.   Figure 86. Motion Matte.
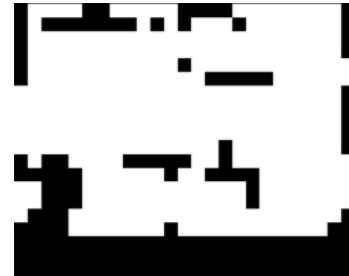
If there is little information in the block, for example in a plain area (a region of constant colour), it is difficult to obtain reliable estimates for the local flicker parameters. We check for this by discarding the parameters for any blocks with a variance below **Variance Thresh**. The discarded areas are shown as non-black channels in the **Variance Matte** as shown in Figure 88. For information on what the colours mean see Variance Matte on page 38. Having obtained a reliable set of flicker parameters for
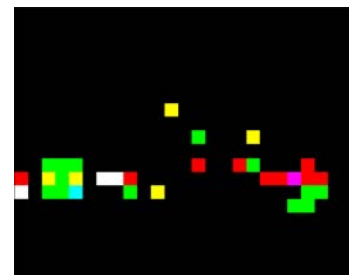
Figure 87. Bus.   Figure 88. Variance Matte.

each block these are then smoothed using a combing technique. The number of smoothing iterations is set by **Smoothness**.

Type   Tool.

Controls

About   Click the picture to display the on-line help, Tinderbox version
number and lmhostid. See "About..." on page 3.

Output - the image to display.
- **Result** - the deflickered sequence.
- **Variance Matte** - renders a picture showing areas that are
discarded due to lack of detail and hence reliable local deflicker
parameters. These areas are colour coded by red, green and blue
channel. A white area will have unreliable data in all three
channels. A yellow area will have unreliable data in the red and
green channel, but the blue channel will undergo localised
deflickering (as long as the motion matte there is also black). A
red area will have unreliable data in the red channel but the green
and blue channels will be locally deflicker (subject to the motion
matte). See Figure 88 on page 37.
- **Motion Matte** - renders a picture showing movement. This can
be useful when fine tuning the Motion Thresh. White areas are
considered to be moving and will only have global deflickering
applied. Black areas are considered static and may have localised
deflickering applied. See Figure 86 on page 37.

Mask - a mask can be used to define an area that should be ignored
in the deflicker calculations. White parts of the matte are used and
black areas ignored.

Mask Layer - the image used as a mask.

Reference – the comparison frame to deflicker against.
- **Previous** - removes flicker from the current frame by comparing
it with the previous frame's deflickered output. Note, this won't
work for distributed renders as it relies on the previous frame
result being in memory.
- **Specified** - removes flicker from the current frame by comparing
it with a specified frame.

Reference Frame - the frame used as a comparison if Reference is
set to Specified.

Tuning Parameters   If the deflicker fails on the default parameter values you can adjust
some of these parameters.

Block Size – the size of the blocks in pixels that are analysed

for flicker. Smaller blocks will allow more complex flicker to be modelled but will produce less accurate and robust results and will take longer to render.

Feedback – when the reference method is set to previous, feedback trades off the colour drift against the amount of flicker removed. You should try and keep this value as low as possible to remove as much flicker as possible. If you're getting colour drift, increase this parameter although doing this will remove less flicker. If the reference method is Specified, this parameter has no effect.

Variance Threshold – the threshold value for plain areas above which blocks are discarded due to the lack of reliable flicker data. If your results are poor, it's worth decreasing this value.

Motion Threshold – the threshold value below which localised deflicker is abandoned in favour of a global deflicker because of motion in the frame. The algorithm has difficulty distinguishing between luma flicker on an area of the image that has no movement and on areas that have movement but no flicker. This threshold determines at what point we force the deflicker to be global because there's too much movement.

Setting the Motion Threshold to 0 will turn off localised deflicker for all moving objects and apply global luminance changes to reduce the flicker.

If you're getting errors (colour changes) around areas that are moving then you should lower the Motion Threshold. If parts of the frame that are static are not being deflickered then you should increase the Motion Threshold.

Smoothness – the number of times the flicker parameters are smoothed between blocks.

Blending	How to mix between the source image and the effect. See "Blending" on page 19.
Source Crops	Cropping tools and edge methods. See "Source Crops" on page 25.
Mask Layer Crops	Cropping tools and edge methods.

Hints & Tips   It's worth bearing in mind that T_Deflicker is unlikely to remove all traces of flicker, but it should be able to reduce the flicker on most shots.

Tinderbox 4 T_Colourist can also be used to deflicker sequences. It can't deal with localised flicker though.

T_Degrain

Description

This plug-in is used to remove grain from an image. The aim is to remove as much grain as possible whilst doing as little damage to the image as possible. It uses spatial filtering to average pixels

Figure 89. Test Image showing close-up of the Grain Structure.

within the same frame. This can lead to the blurring of the image and so, to keep this to a minimum, a wavelet based technique is used that decomposes the image into a number of different frequencies and scales before attempting to remove the grain.

It does not use any temporal information to reduce grain.

Type

Tool.

Quick Start

Position the sample region over a plain area of the image as shown in Figure 91.
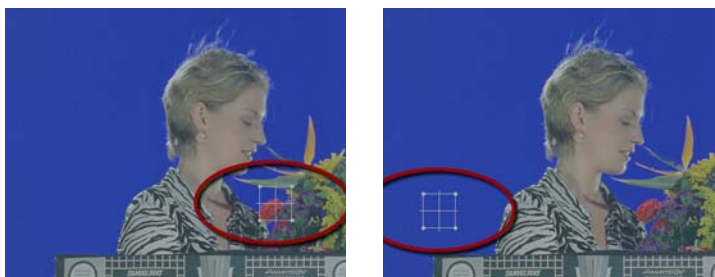

Figure 90. Bad Sample Region.   Figure 91. Good Sample Region.

Warning!   *It is very important to position the selection box over a region with little image detail. Failure to do this will give poor results as the algorithm will think the image detail is grain and remove it.*

Warning!   *Do not use T_Degrain in proxy (Half, Third, Quarter) mode. You should always set the resolution to Full when using this plug-in.*

If either not enough grain has been removed or the picture has been soften by removing too much grain it will be necessary to tune the parameters. Increasing **Tune** will remove more grain, reducing it will remove less. You may find it useful to view the grain using the Output parameter. This will display the grain that is being subtracted from the image. It is scaled by **Exaggerate Grain** to make it more obvious. Only grain should be visible in this image. If you can see a lot of picture detail it means the degrainer is working too hard and removing too much image which will lead to a soft result.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Show On-Screen Tools - switch this off to remove the yellow rectangle defining the Sample Region.

Output - sets what to display.
- **Preview** - degrains just the region inside the sample box. This is quicker than degraining the whole image and should be used when tuning the grain. Do remember to switch it back to Result before you render a sequence.
- **Result** - shows the degrained image.
- **Grain** - shows the grain that is being removed. It is multiplied by the Exaggerate Grain value to make it more visible.

Exaggerate Grain - scales the grain before it is displayed by Output - Grain. This is just to make any artifacts more visible.

Analysis Frame - the frame analysed for grain.

Sample Position - the position of the rectangle used to define the area sampled for grain.

Sample Width - the width of the rectangular sample region.

Sample Height - the height of the rectangular sample region.

Tune - the amount of grain removed or retained. Increasing this parameter will remove more grain and decreasing it will leave more in.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 25.

Hints & Tips

See also Tinderbox 2 T_Grain to add grain to images.

T_Diffuse

Description   T_Diffuse randomly scatters pixels around in an image. It gives a frosted glass look.

Figure 92. Source Image.   Figure 93. T_Diffuse.

Type   Effect. It has an optional matte layer that attenuates the pixel scattering.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Process - sets which channels to process.

Ignore Transparent Pixels - switch this on to remove unwanted pixels creeping into your image at the edges of the alpha.

Radius - the amount of scattering. The higher the value, the further the pixels will scatter.

Aspect - the horizontal and vertical weighting of the effect.

Freeze Diffusion - switch this on to keep the same diffusion pattern from frame to frame. This gives you a frosted glass look.

Matte - the image and channels used to control the attenuation of scattering.

Matte Layer - the layer used if Matte is set to Matte Layer Luminance/Alpha.

Blending   How to mix between the source image and the effect. See "Blending" on page 19.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 25.

Matte Layer Crops   Cropping tools and edge methods.

Expand Output - grows the size of the layer to prevent clipping of the effect at the layer boundary.

Hints & Tips   Freeze the diffusion to give the effect of viewing through frosted glass.

T_DirBlur

Description

T_DirBlur smears an image in a given direction.

Figure 94. Source Image.   Figure 95. T_DirBlur.

Type

Blur. It has an optional second input which can be used as a matte to attenuate the blurring.

Controls

About Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Process - sets which channels to process.

Ignore Transparent Pixels - switch this on to remove unwanted pixels creeping into your image at the edges of the alpha.

Mode
- **Directional Blur** - in this mode the direction of the blur is explicitly set by the Rotation angle of the Directional Blur properties.
- **Track Blur** - in this mode the direction of the blur is taken from the Position data of the Track Blur properties. This mode is useful if you wish to track the movement of an object and use that motion vector to set the direction and strength of the directional blur.

Directional Blur

These settings are used when Mode is set to Directional Blur.

Rotation - sets the direction of the blur calibrated in degrees.

Length - controls the amount of blur applied.

Bias - weights the smearing forward or backward along the blur vector. Using the bias you can get the blur to trail behind

a moving object rather than being centered on it.

Track Blur

These settings are used when Track Blur mode is selected. This method sets the amount and direction of blurring from a cursor position animating in time and space. Only if the Position value is animating will blur be visible.

Set up the track data as follows:

1. Activate the stopwatch for Position.
2. Move the timeslider to the start of the clip.
3. Select Position and move the cross hairs to a point in the image. You may want to follow an object, for example.
4. Move the timeslider and position the cross hairs again.
5. Repeat this to the end of the clip.

The position of the track will interpolate across the clip following the motion of the object and the directional blur will be applied in the direction of the motion. You should note that to see any blurring in Track Mode, the track points position has to be animated and moving.

Position - the position of the track point on the screen.

Scale - the amount of blur applied.

Bias - weights the smearing forward or backward along the blur vector. Using the bias you can get the blur to trail behind a moving object rather than being centered on it.

Blur Profile - defines the weighting of the pixels that are blended together in each blur line.
- **Box** - weighs each pixel equally. Faster than Gaussian.
- **Gaussian** - weighs each pixel using a gaussian distribution. Pixels at the end of the line have less effect than pixels in the middle of the line. Slower than Box.

Filtering - switching this on improves the quality of the effect, but will slow down the rendering time. See "Filtering" on page 18.

Dither - switch this on to add noise to reduce colour banding.

Matte - the image and channels used to control the blurring.

Matte Layer - the layer used if Matte is set to Matte Layer Luminance/Alpha.

Blending	How to mix between the source image and the effect. See "Blending" on page 19.
Source Crops	Cropping tools and edge methods. See "Source Crops" on page 25.
Matte Layer Crops	Cropping tools and edge methods.

Expand Output - grows the size of the layer to prevent clipping of the effect at the layer boundary.

Hints & Tips	T_DirBlur can be used to simulate motion blur on a moving object. If you have the Adobe After Effects Production Bundle, you can use the Motion Tracker to track a point on the image and apply it to the T_DirBlur Position.

T_Distorto

Description   T_Distorto distorts an image using a matte. The amount of distortion corresponds to the brightness of the matte, and the distortion takes the form of a scale, translation or rotation of the image. Where the matte is black there is no distortion. Where the matte is white the full distortion is applied. A matte with smooth changes in luminance will gently ramp in the distortion to give fluid like effects.

Figure 96. Source Image.   Figure 97. T_Distorto.

Type   Warper.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Process - sets which channels to process.

Ignore Transparent Pixels - switch this on to remove unwanted pixels creeping into your image at the edges of the alpha.

Distortion Source   Sets which image to use as the distortion matte and controls its position. The behaviour at the edges of the image is controlled by the Matte Crops.

Matte - the image and channels used to control the distortion.

Matte Layer - the layer used if Matte is set to Matte Layer Luminance/Alpha.

Position - the centre of the matte.

Rotation - the rotation of the matte.

Scale - the size of the matte.

X Scale - the horizontal size.

Y Scale - the vertical size.

Softness - blurs the matte before applying the distortion. Use this to gradually ramp in the distortion.

Aspect - the horizontal and vertical weighting of the effect.

Strength - the amount of distortion applied based on the settings under Deformation Controls.

Deformation Controls   Sets the type of distortion applied to the image.

Position - the deformation offset.

Rotation - the deformation rotation.

Scale - the overall deformation scale.

X Scale - the deformation scale horizontally.

Y Scale - the deformation scale vertically.

Source   Controls the position of the source image. The behaviour at the edges of the image is controlled by the Source Crops.

Position - the centre of the source image.

Rotation - the rotation of the source image.

Scale - the overall scale factor.

X Scale - the horizontal scale.

Y Scale - the vertical scale.

Display
- **Source** - shows the transformations of the source image.
- **Distortion Source** - shows the transformations of the distorting source (matte).
- **Result** - shows the result of the deformations.

Filtering - the quality of the anti-aliasing used when processing the

effect. (See "Filtering" on page 18.)

Filter Sharpness - sharpens the image when Filtering is set to High. (See "Filtering" on page 18.)

Blending   How to mix between the source image and the effect. See "Blending" on page 19.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 25.

Matte Layer Crops   Cropping tools and edge methods.

Hints & Tips   T_Distorto is used extensively in post production to fake and control reflections in curved surfaces. Computer generated 3D objects need to interact with their surroundings to give the impression the scene has been filmed and not created from separate elements. T_Distorto enables compositors to control reflections at the compositing stage rather than taking the video footage and using it as environment maps in 3D.

Figure 98. Still.   Figure 99. T_Distorto.

T_Droplet

Description

T_Droplet is a distorting plug-in that creates a ring of waves simulating the effect of a droplet of water splashing into a fluid.

Figure 100. Source Image.

Figure 101. Droplet.

Type

Warper. 3D.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Process - sets which channels to process.

Ignore Transparent Pixels - switch this on to remove unwanted pixels creeping into your image at the edges of the alpha.

Position - the centre of the circular waves.

Radius - the distance of the rings from the centre position.

Amount - the strength of the distortion.

Wavelength - the distance between the peaks of each wave that are inside the ring.

Number of Waves - sets the number of waves which make up the ring.

Aspect - the horizontal and vertical weighting of the effect. See "Aspect" on page 6. This will squeeze the rings into an ellipse.

Rotation - the rotation on the droplet rings. Rotation is only visible if the Aspect is not set to 0.

Mode - how to distort the image.
- **Squeeze** - distorts by squeezing pixels in and out of the centre.
- **Shift** - distorts by pushing the pixels in a direction.
- **Zigzag** - distorts by pushing the pixels around the ring.

Shift Angle - the direction to shift the pixels in. Shift Angle is used in combination with the Shift mode.

Light   See "Light" on page 11.

Type
- **None** - no lights are used. Lighting parameters are switched off.
- **Infinite** - simulates the parallel rays from a distant light source, like the sun.
- **Host** - uses the After Effects light. If more than one light is in the composition, the top layer light is used.

Direction - the direction of the light source.

Elevation - the height of the light source above the image plane.

Specular Lighting   See "Specular Lighting" on page 14.

Colour - the light colour.

Strength - the brightness of the light source.

Fall-off - controls how quickly the light fades away with distance from the light source.

Filtering - the quality of the anti-aliasing used when processing the effect. (See "Filtering" on page 18.)

Filter Sharpness - sharpens the image when Filtering is set to High. (See "Filtering" on page 18.)

Matte - the image and channels used to control the Amount so that the distortions can be attenuated. (See "Matte" on page 23.)

Matte Layer - the layer used if Matte is set to Matte Layer Luminance/Alpha.

Blending   How to mix between the source image and the effect. See
              "Blending" on page 19.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 25.

Matte Layer Crops   Cropping tools and edge methods.

Hints & Tips   See also Tinderbox 1 T_Lens and Tinderbox 2 T_Ripple.

T_Etch

Description

T_Etch simulates a hand drawn picture using charcoal. Lines are drawn along edges and cross hatching is used to fill in regions.

Figure 102. Source Image.

Figure 103. T_Etch.

Type

Effect.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Process - sets which channels to process. Choose RGBA to draw the lines over an underlying layer.

Etch Method
- **Outline and Shade** - applies both the Outline and Shading parameters to give the complete effect.
- **Outline** - only applies the Outline parameters. The result is of a sketched outline of the objects within the image.
- **Shade** - only applies the Shading parameters. The result is of a charcoal drawing without heavily defined object edges.

Outlines   Controls for drawing along edges.

Edge Threshold - determines what is an edge and therefore whether a line is drawn. If this value is high, areas of the image with little contrast will be considered to be an edge, therefore will be outlined. If this value is low, only areas of the image with high contrast will be outlined.

Pen Pressure - controls the pressure at which the strokes are applied. The lower the value the lighter the lines. The higher the value, the darker the lines. This does not change the width of the lines.

Softness - controls the softness of the lines. When set high, this gives the impression that a fat charcoal stick was used and less lines will be shown. When set low, this gives the impression that a thin charcoal stick was used and more detail will be shown.

Stroke Length - sets the length of the straight lines that form the outlines.

Stroke Separation - controls the gap between the lines drawn. The lower this value, the more lines will be drawn, resulting in a stronger outline of objects.

Shading   Controls for filling in between the edges.

Edge Threshold - determines what is an edge and therefore whether a line is drawn. If this value is high, more of the image is considered to be an edge, therefore less of the image is shaded. If this value is low, less of the image is considered an edge, therefore more of the image is shaded.

Pen Pressure - controls the pressure at which the strokes are applied. The lower the value the lighter the lines. The higher the value, the darker the lines. This does not change the width of the lines.

Softness - controls the softness of the lines. When set high, this gives the impression that a fat charcoal stick was used and less areas of the image will be shaded. When set low, this gives the impression that a thin charcoal stick was used and more areas of the image will be shaded.

Stroke Length - sets the length of the lines that form the cross hatched shading pattern.

Stroke Separation - controls the gap between the shading lines. The lower this value, the more lines will be drawn, resulting in denser shading.

Seed - random number generator that sets the shading pattern.

Random Seed Method - determines how the seed number varies.
- **Seed with Frame** - the pattern changes with each frame.
- **Fixed Seed** - the pattern does not change.
- **Seed with Pixel** - the pattern changes according to varying pixel values.

Blank Threshold - determines whether shading is applied in areas of little variation.

Note   *The amount of the image which is considered to have little variation is affected by the Edge Threshold controls in Outlines and Shading.*

Paper - sets the background colour.

Pen - the colour of the lines and shading.

Pen Alpha - the transparency of the lines drawn by the pen.

Note   *The Pen Alpha will only take effect if Process is set to RGBA.*

Blending   How to mix between the source image and the effect. See "Blending" on page 19.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 25.

Hints & Tips   A variety of effects can be created by using T_Etch with different blending methods.

Figure 104. Source Image.

Figure 105. T_Etch with Blending Method Add.

Figure 106. Nelson's Column.

Figure 107. T_Etch with Blending Method Colour.

T_Etch can be used to accentuate the edges of objects within an image. Use T_Etch in Outline mode with a Fixed Seed and set Blending Method to Multiply.

T_Grad

Description

T_Grad creates colour gradients. Gradients are often used as mattes to control other effects. The result of T_Grad can either be composited over the underlying layers, blended with its source image or used to generate a new image or matte.
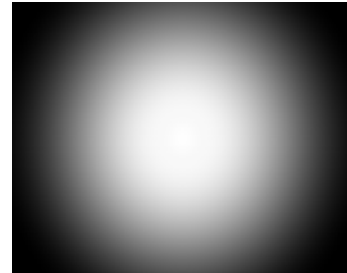
Figure 108. Directional T_Grad.   Figure 109. Circular T_Grad.

Type

Generator.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Show On-Screen Tools - switch this on to draw the overlay tools that control the position and rotation.

Process - sets which channels to process. Selecting Yes will produce an alpha based on the alpha values set under Gradient. The resulting image will be composited over the underlying layers.
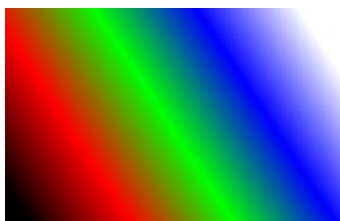
Gradient Type - sets the gradient pattern.
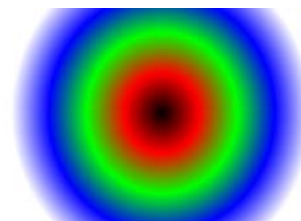
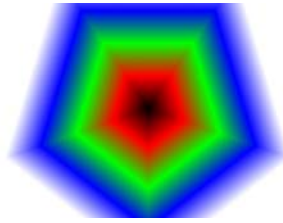Figure 110. Directional.   Figure 111. Circular.
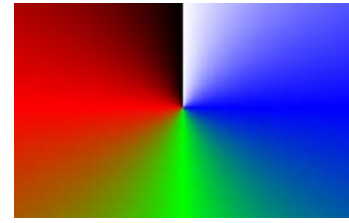
Figure 112. Polygonal.

Figure 113. Radial.

- **Directional** - Figure 110.
- **Circular** - Figure 111.
- **Radial** - Figure 113.
- **Polygonal** - Figure 112

Grad - See "Gradient" on page 10.

Grad Cyclic - repeats the colour gradient by the number defined by Copies. In this case the two end colours will be forced to be the same. Changing one will change the other. Switching this on when there are no intermediary colours set in the colour ramp will result in a single colour image.

Grad Smooth - use cubic interpolation between adjacent colours to produce a smoother ramp. When it is switched off a linear interpolation is used, which can give hard edges between colours.

Phase - offsets the position of the colour ramp in the effect. Phase only has an effect when in Grad Cyclic mode.

Copies - the number of times to repeat the colour ramp in the effect. If you are repeating the colour ramp in an effect when Grad Cyclic is switched off, you will get a harsh colour transition between the cycles.

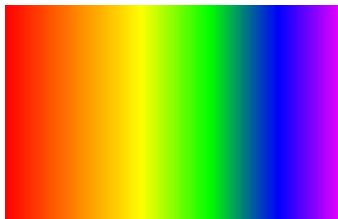Figure 114. Copies = 1.
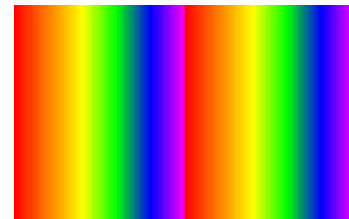
Figure 115. Copies = 2.

Dithered - adds noise to the gradient to reduce the effect of colour banding between smoothly shaded colours. Only required for 8bpc projects.

Start - one end of the Directional gradient.

Stop - the other end of the Directional gradient.

Radius - the size of the circular gradient when mode is set to Circular or Polygonal.

Aspect - the horizontal and vertical weighting of the effect. (See "Type" on page 5.)

Number of Sides - the number of sides (max 12) of the polygon when in Polygon mode.

Rotation - controls the rotation of the gradient. Rotation only works when in Circular, Radial or Polygonal mode. When in Circular mode, Rotation will only have an effect if the Aspect is not set to 0.

Blending How to mix between the source image and the effect. See "Blending" on page 19.

Source Crops Cropping tools and edge methods. See "Source Crops" on page 25.

Hints & Tips T_Grad can be used to create mattes which can then be used to control other effects such as colour correction or blurs.
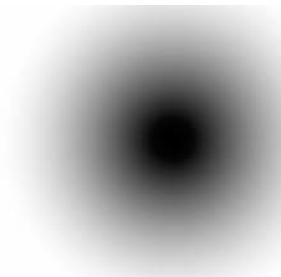
Figure 116. Circular Matte.   Figure 117. Used with T_DirBlur.

T_HeatHaze

Description   T_HeatHaze simulates the distortion of an image that is characteristic of viewing it through hot air.

Figure 118. Heat Haze - although hard to see on a static image.

Type   Effect. It has an optional second input which can be used as a matte to attenuate the Displacement.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Process - sets which channels to process.

Ignore Transparent Pixels - switch this on to remove unwanted pixels creeping into your image at the edges of the alpha.

Displacement - the amount of image warping.

Speed - how fast to move the haze in the direction of travel.

Franticness - how fast the haze will boil. The higher this value is set, the hotter it will appear.

Wavelength - the distance between wave peaks. The higher this value is set, the smoother the distortion.

Layers - the number of layers of heat haze which are blended together.

Wave Count - the number of waves used over the entire image.

Direction - the direction the heat haze will appear to travel.

Aspect - the horizontal and vertical weighting of the effect.
(See "Type" on page 5.)

Matte - the image and channels used to control the attenuation of
the Displacement parameter.

Matte Layer - the layer used if Matte is set to Matte Layer
Luminance/Alpha.

Distort Matte - switch this on to apply the effect to the matte before
using it.

Filtering - the quality of the anti-aliasing used when processing the
effect. (See "Filtering" on page 18.)

Filter Sharpness - sharpens the image when Filtering is set to High.
(See "Filtering" on page 18.)

Blending   How to mix between the source image and the effect. See
"Blending" on page 19.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 25.

Matte Layer Crops   Cropping tools and edge methods.

Expand Output - grows the size of the layer to prevent clipping of
the effect at the layer boundary.

Hints & Tips   Heat haze is usually visible in the distance and not on objects in the
foreground. To simulate realistic heat haze, create a matte of any
foreground objects and use this to only apply the effect to the
background.

T_Lens

Description   T_Lens is a distorting plug-in that creates a fish-eye lens effect. The bulge can be applied into or out of the image using the Lens parameter.

Figure 119. Source Image.   Figure 120. T_Lens.

Type   Warper. 3D.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Process - sets which channels to process.

Ignore Transparent Pixels - switch this on to remove unwanted pixels creeping into your image at the edges of the alpha.

Position - the position of the lens centre.

Radius - the width of the lens used to create the effect.

Lens - the strength of the effect. Large values bend the image more. Negative values squeeze the image instead of expanding it.

Figure 121. Lens = 80.   Figure 122. Lens = -40.

Aspect - the horizontal and vertical weighting of the effect. See "Aspect" on page 6..

Rotation - the rotation of the effect. Rotation is only visible if the Aspect is not set to 0.

Light   See "Light" on page 11.

> **Type**
> - **None** - no lights are used. Lighting parameters are switched off.
> - **Infinite** - simulates the parallel rays from a distant light source, like the sun.
> - **Host** - uses the After Effects light. If more than one light is in the composition, the top layer light is used.
>
> **Direction** - the direction of the light source.
>
> **Elevation** - the height of the light source above the image plane.

Specular Lighting   See "Specular Lighting" on page 14.

> **Colour** - the light colour.
>
> **Strength** - the brightness of the light source.
>
> **Fall-off** - controls how quickly the light fades away with distance from the light source.

Filtering - the quality of the anti-aliasing used when processing the effect. See "Filtering" on page 18.

Filter Sharpness - sharpens the image when Filtering is set to High.

Matte - the image and channels used to control the attenuation of the Lens parameter.

Matte Layer - the layer used if Matte is set to Matte Layer Luminance/Alpha.

Blending   How to mix between the source image and the effect. See "Blending" on page 19.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 25.

Matte Layer Crops   Cropping tools and edge methods.

Hint & Tips   See also Tinderbox 1 T_Droplet and Tinderbox 2 T_Ripple.

T_Pattern

Description	T_Pattern generates various patterns to wipe between the source image and the underlying layer.

Figure 123. Venetian Grid.   Figure 124. Venetian Fan.

Type	Effect and Generator. T_Pattern is a single input plug-in although the result interacts with the underlying layers. It can also be used to generate mattes.

Controls

About Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Type
- **Generator** - renders a black and white matte.
- **Wipe** - transition between source and underlying layers.

Figure 125. Generator.   Figure 126. Wipe.

Mode - controls which pattern is used.
- **Simple Wipe** - simple horizontal or vertical soft edged wipes (or any angle).
- **Stripe Top to Bottom.**
- **Stripe Left to Right** - these patterns paint a sequence of stripes across the image.
- **Venetian Top to Bottom** - Figure 127.

- **Venetian Left to Right.**
- **Snake Top to Bottom.**
- **Snake Left to Right** - like Stripe, but alternating the direction of the stripe on each pass.
- **Clock** - a clock wipe.
- **Venetian Circle** - Figure 128.
- **Venetian Square**.
- **Venetian Fan** - Figure 124.
- **Venetian Grid** - Figure 123.

Figure 127. Venetian Top to Bottom.

Figure 128. Venetian Circle.

Wipe - controls the percentage of the wipe between the source image and its underlying layers.

Rotation - rotates the pattern.

Number of Passes - for all patterns which are made up of bands, this controls the number of bands used.

Softness - softens the edge of the wipe.

Uniformity - for Venetian wipes, this will control whether the bands scale uniformly or not. At 100%, the scaling is uniform. At 50%, the bands on one edge of the effect will scale earlier, giving a "trickle venetian" effect.

Scaling   sets the scaling controls.

> **Scale** - scales the wipe effect when autoscale is off.

> **X Scale** - scales the source image horizontally.

> **Y Scale** - scales the source image vertically.

> **Autoscale** - when this is on, the effect is scaled during rotation so that it still covers the full screen dimensions, When this is off, the scale of the wipe is controlled by the user.

Blending   How to mix between the source image and the effect. See
"Blending" on page 19.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 25.

Hints & Tips   See also Tinderbox 4 T_InfiniteZoom for an interesting transition
effect.

T_Rays

Description

T_Rays creates a backlit ray effect. The rays are sourced from selected areas of the image's luminance, or a matte. The colour of the rays can come from the source image or a fixed colour.

Figure 129. Source Image.   Figure 130. Rays.

Figure 130 shows Tinderbox Rays applied to a picture of the London Eye on the south bank of the river Thames.

Type

Effect. It has an optional second input which can be used as a matte defining the source of the rays.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Process - sets which channels to process.

Ignore Transparent Pixels - switch this on to remove unwanted pixels creeping into your image at the edges of the alpha.

Source Position - where the rays come from.

Colour Method - determines the ray colour.
• **Source** - takes the colours of the rays from the source image.

- **Colouring** - takes the colours of the rays from user selected colours.

Figure 131. Source.

Figure 132. Colouring.

Gain - the brightness of the rays. Increase this for brighter rays.

Figure 133. Gain = 75.

Figure 134. Gain = 125.

Ray Length - the length of the rays. Increase this for longer rays.

Colours   This controls the colours of the rays if Colour Method is set to Colouring.

Highlight - the colour of the brightest part of the rays.

Number of Colours - the number of colours used to colour the rays when Colour Method is set to Colouring.

Colour 1

Colour 2

Colour 3

Colour 4

Colour 5

Scintillation   Controls the flickering or shimmering of the rays. This movement can be controlled in three ways.

1. Set the Scintillation Speed to give a random breakup in the rays.

2. Animate the Phase to rotate the shimmer around the Source Position.

3. Animate the Source Position and switch on Change with Position. This moves the shimmer with the ray source. The Speed setting controls the rate of movement of the shimmer pattern in relation to the source position.

Scintillation - switches the effect on and off.

Figure 135. Scintillation off.

Figure 136. Scintillation on.

Scintillation Amount - the strength of flicker.

Scintillation Speed - the rate of flicker.

Scintillation Detail - the number of lines that form the flicker.

Figure 137. Detail = 0.

Figure 138. Detail = 200.

Phase - animating the phase will rotate the shimmer around the source position.

Change with Position - switch this on to control the flicker as a function of the Source Position. You'll need to animate the Source Position.

Speed - controls the rate of shimmer if animating using the Change with Position.

By default the rays are sourced from the luminance of the source image, but you can specify another layer instead using these matte controls. When making adjustments to these controls it is useful to turn on Show Matte. Rays will emanate from white areas of the matte.

Matte - the image and channels used to control the source of the rays.

Matte Layer - the layer used if Matte is set to Matte Layer Luminance/Alpha.

Matte Clip Min - pixels at or below this luminance value are set to be black

Matte Clip Max - pixels at or above this luminance value are set to be white

Show Matte - switch this on to display the source of the rays. You should look at this when setting up the effect so that you can see clearly where the rays will come from. You need to switch Blending to None to see the matte properly.

Blending   How to mix between the source image and the effect. See "Blending" on page 19.

Figure 139. Add.

Figure 140. Composite Effect.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 25.

Matte Layer Crops   Cropping tools and edge methods.

Expand Output - grows the size of the layer to prevent clipping of the effect at the layer boundary. See "Hints & Tips" on page 72.

Hints & Tips

T_Rays is often used on text layers that may have a different size to that of the composition. Figure 141 shows just such clipping of the

Figure 141. With Clipping.   Figure 142. Without Clipping.

rays when applied to the text "Expand Output". There are several ways round this, using an Adjustment Layer or pre-composing the text, but by far the quickest way is to switch on Expand Output in the plug-in as shown in Figure 142.

T_Sky

Description

T_Sky generates realistic evolving sky backgrounds. This plug-in has a great number of parameters which can give a wide variety of results.

Figure 143. Preset - Moon.

Figure 144. Preset - Cirrus.

Figure 145. Preset - Sunny.

Figure 146. Preset - First Light.

Type

Generator. 3D.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Process - sets which channels to process. Selecting Yes will produce a straight (not pre multiplied) RGBA image which will be composited over the underlying layers.

Note   *There is no user control over the alpha produced.*

Presets - this provides some suggested values for different effects. These can be used as a starting point when using T_Sky.

Red Shift - the amount of red light in the atmosphere. This is useful for sky simulations at dawn or sunset.

Camera   Two camera models are provided. One is using the After Effects camera, the other a built in camera.

> **Host Camera** - switch this on to use the After Effects camera. You'll need to add one into your composition.
>
> **Angle of View** - the field of view of the camera. This affects how much of the sky is visible through the camera.
>
> **X Rotation** - rotation of the built-in camera around the x axis.
>
> **Y Rotation** - rotation of the built-in camera around the y axis.
>
> **Z Rotation** - rotation of the built-in camera around the z axis.
>
> **Exposure** - the amount of ambient light entering the camera.
>
> **Noise** - the amount of noise added to the image.

Sun   There are three components of the sun. The sun itself, the bright glow around the sun (corona) and the radial light streaks that simulate the internal reflections and refractions of bright light within the camera lens (lens flares).

> **Colour** - the colour of the sun.
>
> **Brightness** - the intensity of the light emitted from the sun.
>
> **Direction** - the location of the sun in the sky.

Note   *If the Sun Direction and the Camera Direction are the same, the sun will appear in the centre of the screen (horizontally).*

> **Elevation** - the height of the sun in the sky.
>
> **Fall-off** - the extent to which the brightness of the sun fades away with distance.

Figure 147. Fall-off = 200.   Figure 148. Fall-off = 2000.

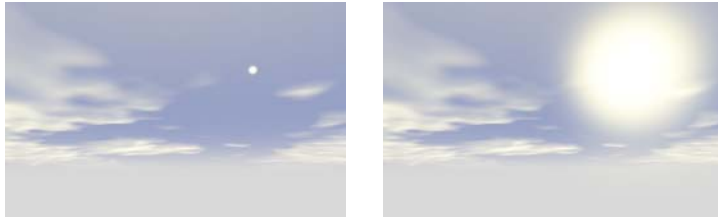> **Corona Brightness** - the intensity of the light glow around

the sun.

Figure 149. Corona Brightness = 0.   Figure 150. Corona Brightness = 500.

Corona Fall-off - the extent to which the brightness of the corona light fades away with distance.

Corona Haze - switch this on to enable the corona glow to illuminate the haze in the atmosphere. This will result in the corona lighting the foreground objects rather than being in the background.

Flare
The light flares.

Spokes - the number of flares around the sun.

Brightness - the intensity of the light flares.

Fall-off - the extent to which the brightness of the flares fade away with distance.

Rotation - the rotation of the flares around the sun.

Sharpness - the spikiness of the flares. A value of 2 will give

Figure 151. Sharpness = 0.2.   Figure 152. Sharpness = 2.

sharp spikes.

Clouds   Controls for the clouds.

Size - the size of the clouds.

Count - the number of clouds in each tile.

Note   *The size of each tile is set under Tile Scale.*

Edge Detail - the complexity of the cloud edges.

Colour - the colour of the clouds.

Brightness - the luminance of the clouds.

Sharpness - the cloud definition.

Density - the thickness of the clouds. A value of zero removes all clouds.

Direction - the direction of the cloud drift.

Speed - how fast the clouds move.

Speed Variance - the variation in speed of different clouds.

Bump Scale - the apparent depth of the clouds. Increase this for cumulus clouds.

Bump Soft - the cloud softness which affects the reflected light.

Light Edges - switch this on for under cloud lighting.

Height - the height of the clouds.

Under Lighting - the amount of light reflected from the underside of the clouds.

Tile Scale - the size of each tile repeated across the sky.

Streaky - switch this on to generate cirrus clouds.

Seed - this number generates a number sequence that is used to randomly vary the cloud pattern.

Atmosphere   The sky or atmosphere is actually a rendered dome with the camera at the centre. You may find it helpful to think of this model when you are altering parameters.

Brightness - controls the amount of light in the atmosphere.

Zenith Colour - the colour of the sky when you look directly upwards.

Horizon Colour - the colour of the sky at the horizon.

Fog   Fog parameters

Brightness - the brightness of the fog layer.

Distance - the distance between the fog layer and camera.

Fall-off - the extent to which the brightness of the fog falls away with distance. The higher this value, the shorter the distance the fog brightness will penetrate.

Source - the colour of the fog.
- **Colour** - the colour of the fog is taken from the Colour box.
- **Horizon Colour** - the colour of the fog is taken from the Atmosphere - Horizon Colour.

Colour - the colour of the fog when Source is set to Colour.

Blending   How to mix between the source image and the effect. See "Blending" on page 19.

Hints & Tips   As well as using T_Sky to create complete new skies, it can be used to add detail and contrast to an existing sky.

T_Starburst

Description

T_Starburst adds sparkles to the highlights of your image. There is

Figure 153. Source Image.　　　Figure 154. T_Starburst.

also a mode to add random sparkles regardless of the highlights in the image.

Type

Effect.

Controls

About Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Process - sets which channels to process.

Ignore Transparent Pixels - switch this on to remove unwanted pixels creeping into your image at the edges of the alpha.

Presets - activates a number of popular starburst effects.

Mode - determines where the sparkles are positioned.
- **Starburst** - adds sparkles to highlights.
- **Sparkles** - adds randomly positioned sparkles.

Radius - defines the length of the spokes of the sparkles.

Aspect - the horizontal and vertical weighting of the effect.

Threshold - defines which areas of the source are considered to be highlights. Increasing this value will restrict the sparkles only to the very brightest highlights.

Gain - the brightness of the highlights.

Rotation - the angle of the highlight spokes.

Spoke Count - the number of spokes per sparkle. Lots of spokes and a gap gives a haloed glow effect as shown in Figure 156.

Figure 155. Source Image. Figure 156. T_Starburst.

Gap - the distance between the centre of the starburst and the point at which rays are drawn. Increase this to get a gap around the sparkle centre. See Figure 156.

Chromatic Aberration - the defects in the lens surface that cause the image to display colour fringing.

Keep Spoke Brightness - switch this on to preserve the luminance of the spokes.

Sparkles   Controls the random sparkles if mode is set to Sparkle. Sparkles are

Figure 157. Random Sparkles with a Matte.

added to the image in random positions rather than on highlights.

Density - the number of sparkles. Increase this to pack more sparkles into your image.

Average Sparkle Size - the size of the sparkle core. The actual size varies.

Brightness Variation - how much the brightness of the

sparkles varies.

Sparkliness - the rate of flicker. To stop the flickering set this to zero.

Movement Speed - the rate at which the sparkles move. Set this to zero to get the sparkles to flicker in the same position, like fairy lights on a Christmas tree.

Coloured Sparkles - switch this on for coloured sparkles.

Seed - this number generates a number sequence that is used to randomly vary the sparkles.

Matte - the image and channels used to control the gain on the sparkles.

Matte Layer - the layer used if Matte is set to Matte Layer Luminance/Alpha.

Blending   How to mix between the source image and the effect. See "Blending" on page 19.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 25.

Matte Layer Crops   Cropping tools and edge methods.

Expand Output - grows the size of the layer to prevent clipping of the effect at the layer boundary.

Hints & Tips   T_Starburst can be used to add subtle highlights to moving water. Keep the Radius small and the Threshold high for a subtle effect.

T_Starburst can give some great effects when applied to car headlights on night footage.
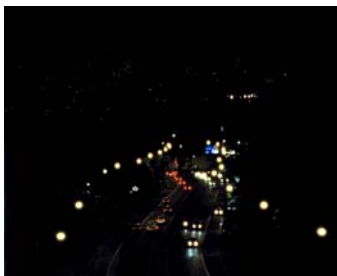

Figure 158. Car Headlights at Night.

Figure 159. Lights Enhanced with T_Starburst.

T_Tile

Description T_Tile translates, rotates, scales and shears the source image. The edge controls can then be used to repeat the pattern to form regular tiles as shown in Figure 161.

Figure 160. Source Image.   Figure 161. Tile.

Type Effect. It has an optional second input which can be used as a matte to attenuate the distortions.

Controls

About Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 3.

Process - sets which channels to process.

Ignore Transparent Pixels - switch this on to remove unwanted pixels creeping into your image at the edges of the alpha.

Tile - switch this on to tile the image.

Position - the centre position of the tile.

Rotation - the rotation of the image tile.

Scale - the overall size.

X Scale - the horizontal size of the tile.

Y Scale - the vertical size of the tile.

X Shear - the amount of horizontal shear.

Y Shear - the amount of vertical shear.

Figure 162. X Shear = 25.   Figure 163. Y Shear = 25.

Filtering - the quality of the anti-aliasing used when processing the effect. (See "Filtering" on page 18.)

Filter Sharpness - sharpens the image when Filtering is set to High. (See "Filtering" on page 18.)

Matte - the image and channels used to control the attenuation of the effect. See Figure 164 on page 82.

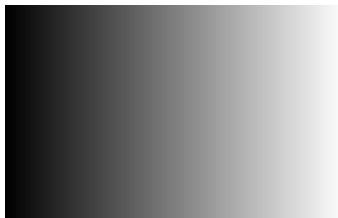**Matte Layer** - the layer used if Matte is set to Matte Layer Luminance/Alpha.

Figure 164. Matte.   Figure 165. Attenuating Scale.

Blending   How to mix between the source image and the effect. See "Blending" on page 19.

Figure 166. Blending = Mix.   Figure 167. Blending = Difference.

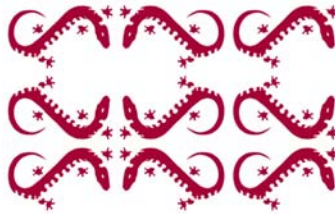**Source Crops**   Cropping tools and edge methods.

Figure 168. Reflect.   Figure 169. Wrap.

See "Source Crops" on page 25.

Matte Layer Crops - controls the behaviour of the edges of the matte image.

Hints & Tips   You can use the Source Crops to produce an interesting reveal for objects. Set the Edge Method to Repeat and animate the crops.

Figure 170. Crop and Repeat.   Figure 171. Crop and Repeat.

Appendix A

GENARTS TINDER PLUG-INS

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