TINDER™
BY GENARTS

**Tinderbox 4
for
Combustion**

CONTENTS

PREFACE

Tinderbox for Combustion is heavily based on the Tinderbox for After Effects release. Indeed they are both written to the same After Effects plug-in specification. They have the same number of plug-ins and the plug-in parameters are almost identical. However, there are some important differences.

In short, you should install this release on Combustion and the "Tinderbox for After Effects" on After Effects.

Changes from the After Effects version

This section describes the differences from the After Effects version.

Parameters that work only on After Effects are greyed out in this version built for Combustion. For example, the use of After Effects' lights and cameras are prohibited in Combustion. The built-in plug-in lights and cameras must be used instead.

There are no on-screen tools used to edit the plug-in parameter values.

Keyframing on the colour gradients cannot be switched off in Combustion.

You should also note that your software license key for Tinderbox on Combustion will also enable you to run Tinderbox on After Effects should you have both installed on your computer.

Most of the following chapters in this user guide have been taken directly from the Tinderbox for After Effects user guide and you should read on with that in mind. Screen shots come from After Effects and the download names for Combustion will be different to those for After Effects.

INTRODUCTION

Welcome to Tinderbox 4 for Combustion. 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.

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.

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

GenArts is a leading developer of visual effects software for film and video post production. For a list of products and supported platforms see http://www.genarts.com.

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 lmhostid (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. lmhostid.

Reset

Reset reverts all parameters in the plug-in to their default values.
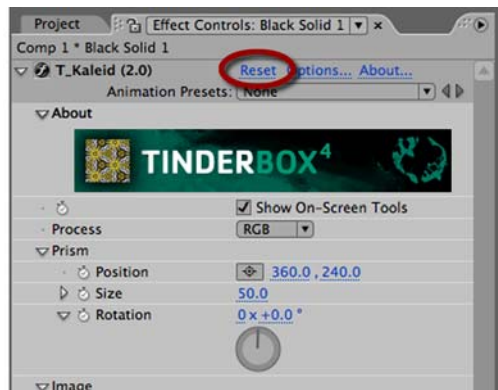
Figure 5. Reset.

Options...

Options will launch a web browser to get a license key for the plug-ins.
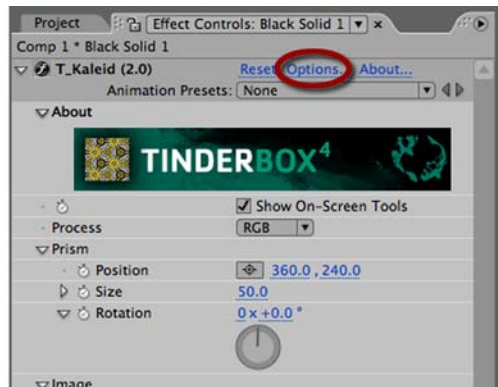
Figure 6. Options.

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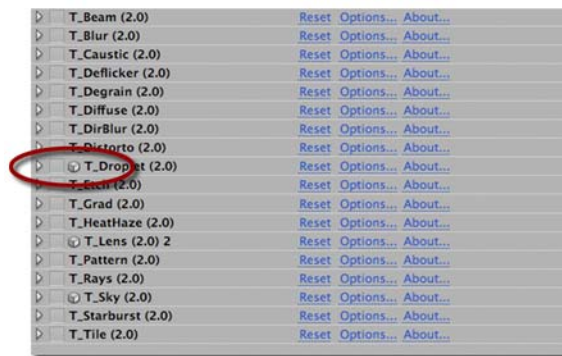
Figure 7. T_Droplet can use the composition's lights.

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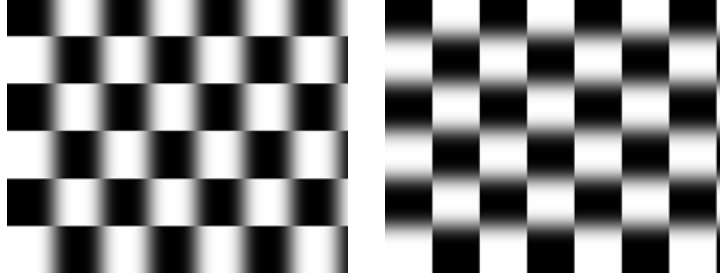
Figure 8. T_Blur Aspect = 100.   Figure 9. T_Blur Aspect = -100.

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.

Pixel Aspect Ratio

Aspect in T_Droplet being used to sit the ripples on the water. 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 11. Two layer composite.   Figure 12. RGBA.

Figure 12.

- **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.

Figure 16. RGB Straight.   Figure 17. Alpha.

Consider this picture of a polar bear with a triangular matte. Figure 16 shows the RGB Straight pixels. Figure 17 shows the 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 pixels at the edge of the triangular matte. Figure 18 shows green

Figure 18. Ignore Transparent Pixels Off.   Figure 19. Ignore Transparent Pixels On.

pixels being dragged into the picture as a result of the blur. This is usually unwanted. switching Ignore Transparent Pixels on will 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.*
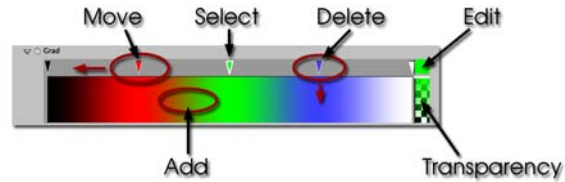
Figure 20. Gradient Controls.

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)
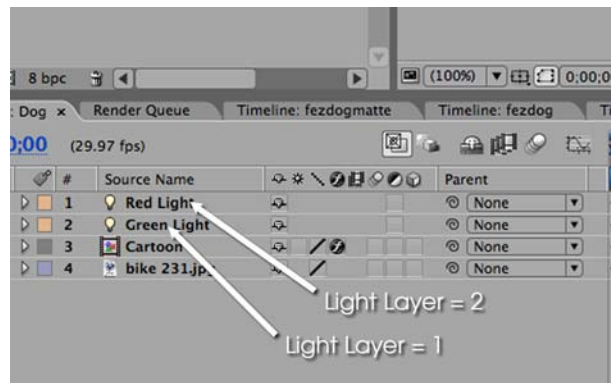

Figure 23. To pick the Red Light set Light Layer to 2.

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.
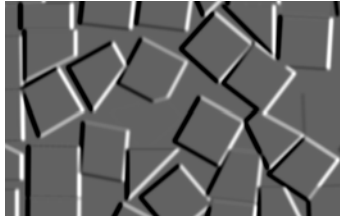
Figure 27. Direction = 90.
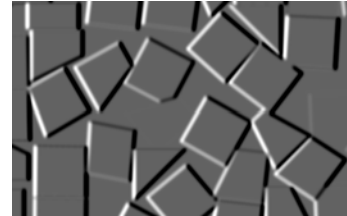
Figure 28. Direction = 270.

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 light source to the image centre.

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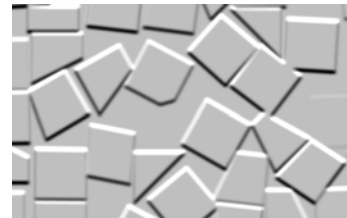
Figure 30. Elevation = 30.

Position - the position of the light.

Ambient Lighting

Distance - sets the distance between the local light source and the image plane. As distance increases more of the image is illuminated. 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 18.
- **Source** - switches on diffuse lighting and uses the source image colours in the diffuse colour calculations, Figure 32.
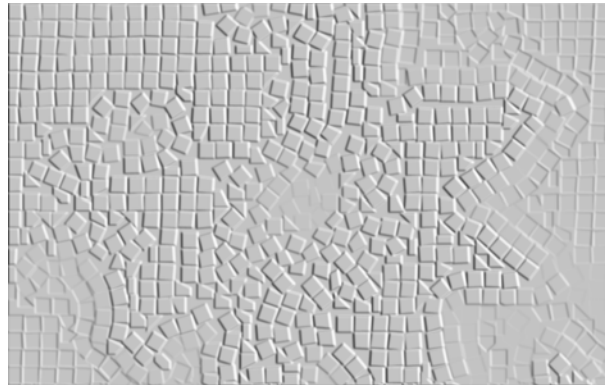
Figure 31. Diffuse Colour.

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 19.
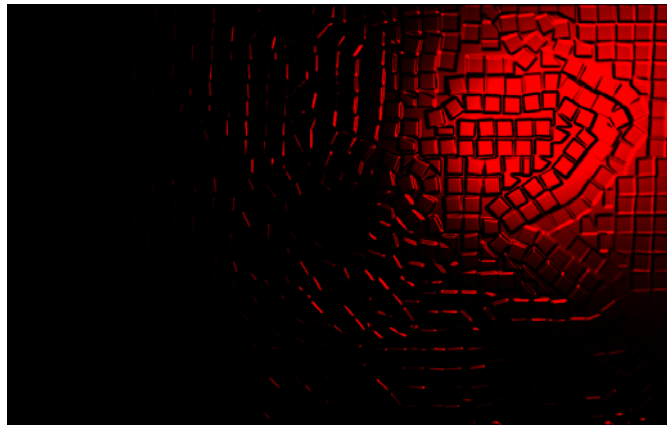

Figure 33. Specular Colour.

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.
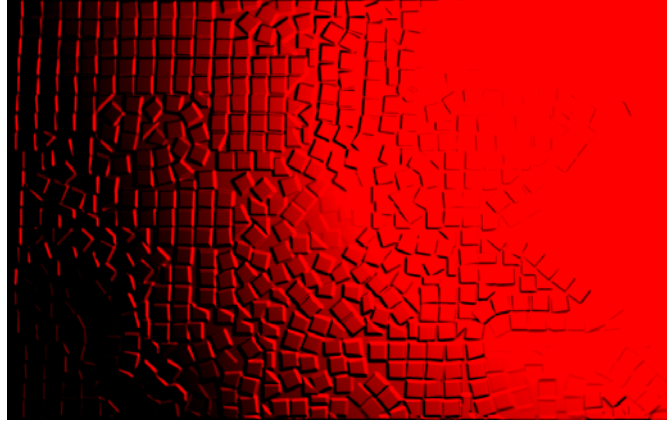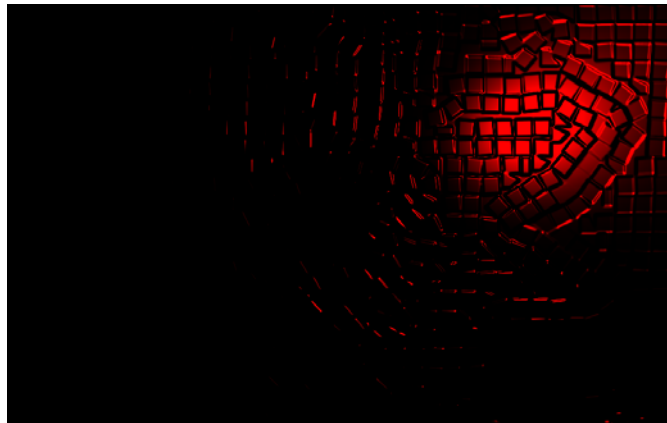

Figure 35. Low Fall-off.

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 21), 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.
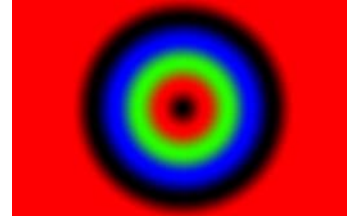
Figure 39. Output Image.

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.
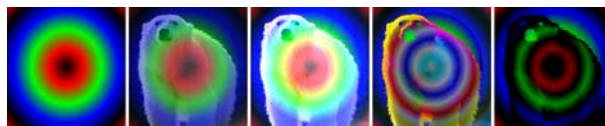
Figure 40. None, Mix, Add, Difference, Subtract Source.

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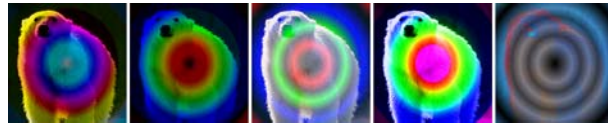
Figure 41. Subtract Effect, Darken, Lighten, Colour, Luminosity.

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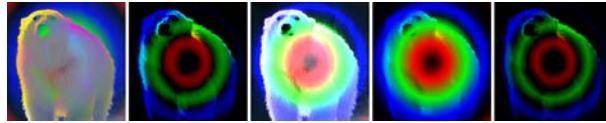
Figure 43. Exclusion, ColourBurn, ColourDodge, HardLight,
LinearBurn.

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 important bit 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.
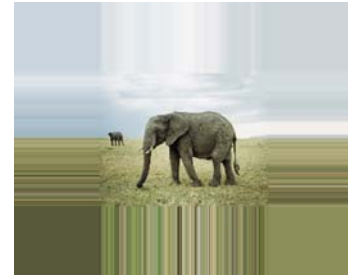
Figure 51. Colour.   Figure 52. Repeat.

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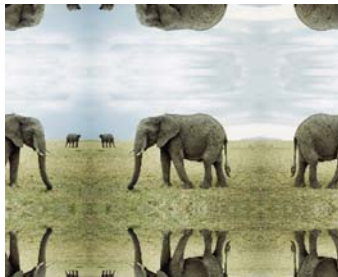
Figure 53. Reflect.   Figure 54. Wrap.

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 4

T_Bars

Description

T_Bars generates colour bars and colour ramps.

Figure 55. SMPTE Bars.

Figure 56. Grey Ramp.

Type

Generator.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Process - sets which channels to process. Selecting RGBA will render full screen alpha writing over any alpha channel in the source image.

Pattern - the pattern to generate.
- EBU Bars
- 75% Colour Bars
- 100% Colour Bars
- EIA Colour Bars
- SMPTE Colour Bars
- RGB Ramp
- Grey Ramp
- RGB Crossed Ramp
- Grey Crossed Ramp

Direction - applicable to ramps.
- **Horizontal** - left to right ramps.
- **Vertical** - top to bottom ramps.

Blending How to mix between the source image and the effect. See "Blending" on page 23.

Source Crops Cropping tools and edge methods. See "Source Crops" on page 29.

T_BleachBypass

Description   T_BleachBypass exactly mimics a film lab bleach bypass process
where the silver in the negative is retained giving a very stylized
look.

Figure 57. Source Image.   Figure 58. Bleach Bypass.

Type   Effect.

Controls

About   Click the picture to display the on-line help, Tinderbox version
number and lmhostid. See "About..." on page 8.

Strength - the amount of bleach bypassing.

Blending   How to mix between the source image and the effect. See
"Blending" on page 23.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 29.

Examples   Here are two more images showing the look you get with
T_BleachBypass.

Figure 59. Source Image.   Figure 60. Bleach Bypass.

T_Cartoon

Description

T_Cartoon flattens colour and adds edge lines to give a hand drawn cartoon-look to images. The algorithm takes each pixel, looks in the

Figure 61. Source Image.   Figure 62. T_Cartoon.

region around this and gathers together similarly coloured pixels. These regions are then further combined together using the Segment Merge parameter.

Type

Effect.

Controls

About

Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Process - sets which channels to process.

Min Region Size - removes spots of colour. Increase this value to remove isolated spots as shown in Figure 64.

Figure 63. Min. Region Size = 1.   Figure 64. Min. Region Size = 10.

Search Radius - the size of the circular area searched for similar pixels.

Colour Range - the range of colours that are considered to be the

same. Increase this parameter to flatten out the image.

Search Type - the shape of the search area.
- **Box** - uses a rectangular search area.
- **Circular** - uses a circular search area.
- **Gaussian** - uses a weighted circular region where the central pixels are more likely to be included in the amalgamated region that outlying pixels.

Segment Merge - takes adjacent regions calculated from the first pass and merges them together. Increase this value to merge more regions as shown in Figure 65 and Figure 66.

Figure 65. Segment Merge=10.   Figure 66. Segment Merge=35.

Saturation - the colour strength (saturation) of the image.

Brightness - the luminance (brightness) of the image.

Softening - blurs the image before applying the effect.

Lines   This group controls the drawing of lines around the segmented areas.

Draw Lines - switch this on to draw the lines.

Line Probability - increase this to make it more likely that a line is drawn.

Line Strength - increase this for stronger more visible lines.

Line Width - the thickness of the lines.

Line Colour - the colour of the lines.

Blending   How to mix between the source image and the effect. See "Blending" on page 23.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 29.

Hints & Tips

Applying cartooning algorithms to sequences will give flickery results, although T_Cartoon is better than many. If you've ever seen a motion picture with this effect applied, like A Scanner Darkly, the smooth results achieved there will be due to an awful lot of rotoscoping to isolate, paint and then interpolate rotoshapes and colour.

However, you can eliminate some of the flicker by post processing the sequence with a motion interpolation plug-in. T_Channels.

Description

T_Channels is a versatile tool for floating point channel and image manipulation. It provides a range of functionality including image based arithmetic, clamping, clipping, channel rewiring and colour space conversion. It replaces and improves upon a number of AE native effects which as yet are not floating point compliant.

Type

Tool.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Note that many of the parameters described only appear for certain combinations of parameter settings.

Process - sets which channels to process.

Function - the operation applied to the clips.
- **Arithmetic** - allows you to perform a range of common mathematical functions on the source image, using either a second layer, a set colour or a set value as the secondary function input, as defined by the **Mode** drop down menu. Notable on the **Operation** menu is the **Divide** function, which is not achieveable elsewhere in After Effects.
- **Clamp** - allows you to clamp the source image, limiting information outside of the range specified to the limits of the range.
- **Clip** - clamps the image and then rescales the resultant range to fit the full range.

- **Colour Space** - converts the image from one colour space to another, where the colour space can be RGB, HLS, HSV or YUV.
- **Rewire Channels** - allows you to simultaneously swap the source image's channels (including both the standard R G & B and derivative options such as luminance) into the output image's RGBA channels.
- **Set Channels** - similar to rewire channels, but allows you to use channels from separate input images.

Arithmetic Controls

Mode - allows you to choose whether to apply the mathematical operations on a layer, a colour or a number.

- **Layer** - uses pixel values in the composition layer in the calculations.
- **Colour** - uses a colour in the calculations.
- **Constant** - uses a number in the calculations.

Operation - this menu allows you to select an arithmetic operation. Choose from...

- Copy
- Add
- Subtract
- Multiply
- Divide
- Difference
- And
- Or
- Xor
- Lighter
- Darker
- Minimum
- Maximum
- Screen
- Overlay
- Hard Light

Second Source - the layer used when the arithmetic operator is applied to a layer. This option is only available when Function is set to Arithmetic and Mode is Layer.

Colour - colour picker revealed when colour is picked for the arithmetic mode. An alpha slider will also be present, however, will only be unlocked when the plug-in is set to RGBA processing.

Value - numerical input revealed when constant is picked for the

arithmetic mode.

Clamp Controls

Channels - allows you to specify which channels of the image you wish to clamp.

Min - the lower bound of the channel range to which all image data should be clamped.

Max - the upper bound of the channel range to which all image data should be clamped.

Clip Controls

Channels - allows you to specify which channels of the image you wish to clip.

Min - the lower bound of the channel range to which all image data should be clipped.

Max - the upper bound of the channel range to which all image data should be clipped.

Scale - by default the plug-in normalises the clipped image to sit between 0 and 100% white. If you wish to scale it otherwise, use this setting.

Colour Space Controls

It's worth noting that After Effects always displays the three channels natively as RGB, so the immediate look of your image may be somewhat odd. But it allows you to operate on the image in a particular colour space, then return back to RGB. For example, to desaturate an image you could apply T_Channels to convert from RGB to HSV, then decrease the value of the second (green) channel, then convert from HSV back to RGB. T_Channels can be used to decrease the value of a single channel and clamp the result. One workflow for operating in a comp of a different colour space is to apply a guide adjustment layer to the top of the comp with a colour space converter acting as a look up, bringing the image back to something understandable by the human eye!

From - drop down menu which allows you to specify which colourspace to read the data from and which to convert it to.
• RGB to HLS
• HLS to RGB
• RGB to YUV
• YUV to RGB
• RGB to HSV

• HSV to RGB

**Rewire Channels
Controls**

Set Red to Source's - drop down menu which allows you to specify
what should go into the output image's red channel from a list of
prime and derivative channels taken from the input image.

Set Green to Source's - drop down menu which allows you to
specify what should go into the output image's green channel from a
list of prime and derivative channels taken from the input image.

Set Blue to Source's - drop down menu which allows you to specify
what should go into the output image's blue channel from a list of
prime and derivative channels taken from the input image.

Set Alpha to Source's - drop down menu which allows you to
specify what should go into the output image's alpha. channel from a
list of prime and derivative channels taken from the input image.

Set Channels Controls:

Layer 1 - drop down menu to select the source for the output
image's red channel.

Set Red to Layer 1's - drop down menu to select the source channel
from the source image specified in the above layer menu.

Layer 2 - drop down menu to select the source for the output
image's green channel.

Set Green to Layer 2's - drop down menu to select the source
channel from the source image specified in the above layer menu.

Layer 3 - drop down menu to select the source for the output
image's blue channel.

Set Blue to Layer 3's - drop down menu to select the source
channel from the source image specified in the above layer menu.

Layer 4 - drop down menu to select the source for the output
image's alpha channel.

Set Alpha to Layer 4's - drop down menu to select the source
channel from the source image specified in the above layer menu.

Stretch Layers to Fit - checkbox to allow you to scale secondary
layers which do not match the resolution of the primary.

Blending How to mix between the source image and the effect. See "Blending" on page 23.

Source Crops Cropping tools and edge methods. See "Source Crops" on page 29.

Hints & Tips

T_Channels is essentially a multi-tool of floating point goodies, which replace and enhance parts of the native AE fx range. Plus you get a divide function!

HSV Colour Space

The H(ue) S(aturation) V(alue) model was described by Alvy Ray Smith in 1978 to represent colours more intuitively than by the selection of red, green and blue. It is sometimes known as HSB (Hue, Saturation and Brightness).

The **hue** is that quality by which we distinguish one colour family from another, as red from yellow or green from blue or purple.

The **saturation** (or chroma) is that quality of colour by which we distinguish a strong colour from a weak one. It's the purity of the colour.

The **value** is that quality by which we distinguish a light colour from a dark colour. You can think of it as the brightness of the colour. Strictly speaking it is defined to be the maximum of the red, green or blue values.

HLS Colour Space

This is the H(ue) L(uminance) S(aturation) model. You should note that HLS is symmetrical to lightness and darkness which is not the case with HSV.

HLS is often referred to as HSL.

YUV Colour Space

The YUV model defines a colour space using a luminance channel (Y) and two chrominance channels (UV). The luminance is formed from a weighted average of the red, green and blue components as shown in Equation 1.

$$Y = 0.299\,R + 0.587\,G + 0.114\,B \qquad \text{(EQ 1)}$$

The U component is created by subtracting the luminance from the blue channel and scaling. V is calculated by subtracting the Y from the red channel and scaling by a different value.

$$U = -0.147\,R - 0.289\,G + 0.436\,B \qquad \text{(EQ 2)}$$

$$V = 0.615\,R - 0.515\,G - 0.1\,B \qquad \text{(EQ 3)}$$

T_Colourist

Description

T_Colourist uses statistical analysis of the image to provide various forms of automated colour correction. It is designed to replicate the skills of a colourist for normal colour balancing. The software applies controlled statistical corrections and as such does not require the subjective input from the artist or a perfectly balanced computer monitor.

You may need to fix an image whose black levels are not neutral or white levels that are slightly tinted. This plug-in has been designed to help with these kinds of problems.

Several controls are included to balance your image, although the defaults should give good results in most cases. Figure 67 is of a

Figure 67. Source Image.   Figure 68. Colourist.

bridge in Rome. The blacks are milky and there is a colour tint in the whites. The defaults in T_Colourist give the result in Figure 68.

Before the picture is corrected it is first analysed. The set of analysis controls determine which pixels are considered in the calculations. You can choose to analyse just one frame and use that as the basis for the corrections on all frames of the clip, or you can choose to analyse each frame of a clip. You can also restrict the pixels used to part of the full image - this is particularly useful if you have colours that would bias the calculations in a way that you don't want.

Type

Tool.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Show On-Screen Tools - switch this on to display the Analysis Box on the image.

Analysis Mode
- **Always** - this will consider the pixels of each frame before applying corrections. This will smooth out (deflicker) luminance fluctuations in a clip.
- **Specified** - this will colour balance frames but preserve any luma variations in the clip.

Reference Frame - sets the frame number of the sequence that is analysed and used as the basis for the corrections.

Lowlight Grade - colour balances the shadows. In the example

Figure 69. Source Image.   Figure 70. Lowlight Grade.

shown (Figure 69) there is no tint in the shadows so the lowlight grade does not affect the image.

Highlight Grade - colour balances the highlights. Figure 72 shows

Figure 71. Source Image.   Figure 72. Highlight Grade.

the correction of the pink tint in the highlights.

Auto Dark Grade - colour balances the shadows *and* clamps them to black (as set by the Black Level). In Figure 74 we can see that the

Figure 73. Source Image.   Figure 74. Auto Dark Grade.

shadows have been corrected and the highlights have been left unaffected.

Auto White Grade - colour balances the highlights *and* clamps them to white (as set by the White Level). In Figure 76 we can see

Figure 75. Source Image.   Figure 76. Auto White Grade.

that the highlights have been fixed but the shadows remain milky. Switch both the Auto Black Grade and Auto White Grade on (the default) we get the picture shown in Figure 78.

Figure 77. Source Image.   Figure 78. Auto White Grade and Auto Dark Grade.

Low Threshold - sets the range of shadows affected in the colour balancing.

High Threshold - sets the range of highlights affected in the colour balancing.

Black Level - the luminance of pure black.

White Level - the luminance of pure white. If you are using floating point images in a 32 bpc project where pixel values range over say, 0 to 3, then you will need to increase this White Level to say 300% or your values will be clipped.

Use Analysis Box - switch this on to use only the pixels within the analysis region in the calculations. The analysis box can be used to crop out unwanted pixels that would adversely bias the calculations.

Box Position - the centre of the sample rectangle.

Box X Size - the horizontal size of the sample area.

Box Y Size - the vertical size of the sample area.

Blending   How to mix between the source image and the effect. See
"Blending" on page 23.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 29.

Hints & Tips   T_Colourist can also be used to deflicker a sequence.

T_Convolve

Description   T_Convolve is a general purpose spatial filter that uses a weighted
                        average of sampled pixels to determine each new pixel value. A
                        number of pre-defined kernel shapes are supplied together with the
                        ability to use your own kernels.

Figure 79. Star Shaped Kernel applied to T_Snow.

Type   Effect.

Controls

About   Click the picture to display the on-line help, Tinderbox version
            number and lmhostid. See "About..." on page 8.

Process - sets which channels to process.

Show
- **Result** - renders the convolution.
- **Kernel** - displays the kernel used.

Mode - choose between one or three kernels.
- **Single Kernel** - the same kernel is used for each colour channel.
- **Kernel Per Channel** - different kernels can be selected for each
  colour channel.

Gain - the brightness of the effect. If the result is too faint, increase
this value.

Kernel   Defines how the pixels will be weighted. Choose from some polygon presets or use your own picture. Figure 80 shows some

Figure 80. Falling Snow (T_Snow).

computer generated falling snow. If T_Convolve is applied to this clip and the Kernel is set to Triangle, you get the result show in Figure 81 on page 46.
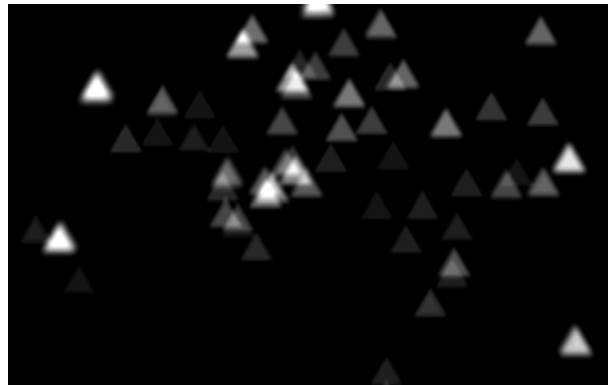

Figure 81. Triangle Kernel applied to Snow.

Kernel - use one of the built-in kernels or supply your own.

- **Triangle** - we all know what a triangle is.
- **Square** - we all know this shape too.
- **Pentagon** - a 5 sided polygon.
- **Heptagon** - a 7 sided polygon.
- **Hexadecagon** - a 16 sided polygon.
- **5 Pointed Star**
- **Kernel Layer RGBA** - uses the layer set below to determine the kernel.

- **Kernel Layer Red** - uses the red channel of the Kernel Layer**.**
- **Kernel Layer Green**
- **Kernel Layer Blue**
- **Kernel Layer Alpha**
- **Kernel Layer Luminance**

Kernel Layer - user defined kernel. If you want to convolve with your own shape, then use this layer to do it. Figure 82 shows a smiley face I drew myself. It's 100
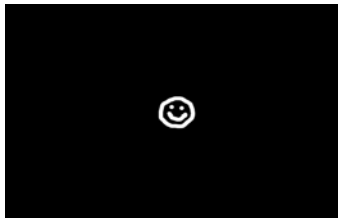

Figure 82. I drew this myself.   Figure 83. Applied to T_Snow.

pixels by 100 pixels. If you use this as the Kernel Layer and apply it to some falling snow then you get Figure 83.

Rotation - the rotation of the kernel.

Scale - the size of the kernel. For your own pictures keep the image small. Switch Show to Kernel so you can see what you're doing.

X Scale - the horizontal scale of the kernel.

Y Scale - the vertical scale of the kernel.

Blending   How to mix between the source image and the effect. See "Blending" on page 23.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 29.

Hints & Tips   See Tinderbox 4 T_Snow if you want to try the examples above. Small kernels will give sharper results.

T_Fire

Description   T_Fire generates animating flames as an alternative to using stock footage.
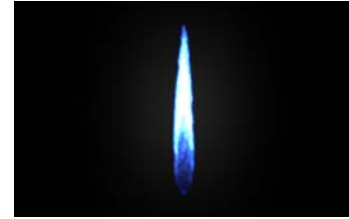

Figure 84. T_Fire.

Figure 85. T_Fire.

Type   Generator.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Process - sets which channels to process.

Presets - choose one of these to get you started.
- **Candle** - Figure 86.
- **Oil** - Figure 87.
- **Gas** - Figure 88.
- **Inferno** - Figure 89.

Figure 86. Preset = Candle.

Figure 87. Preset = Oil.

Figure 88. Preset = Gas.   Figure 89. Preset = Inferno.

Flame Type - the type of flame generated.
- **Candle**
- **Torch**
- **Campfire**
- **Nozzle Flame**

Source Position - the screen position of the source of the flame.

Components - the flames are built along a spline that animates. This parameter is the number of points used in this spline. Higher values allow for more detail in the line. Switch on Render Splines and change this parameter to see the underlying effect.

Flame Width - the width of the flame.

Flame Height - the maximum height of the flame.

Flame Direction - the default (+90) is up. Zero renders a flame pointing right.

Flame Activity - the amount the flame flickers.

Flame Buoyancy - the speed at which the flames rise.

Fire Temperature - the amount the flames flicker and rise. Increase this for a more active fire.

Particle Size - the size of the particles that form the flames.

Flames - the number of flames rendered.

Glow Size - the size of the bright glow around the flame.

Glow Strength - the brightness of the glow.

Separation - the distance between multiple flames.

Pre-roll - the number of frames elapsed before rendering the first flame.

Render Splines - switch this on to render a line rather than a flame. Since this is quick to render, use it to visualise the animation.

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

Intensity - the brightness of the particles that form the flames.

Gain - the overall brightness of the flames.

Gamma - the brightness of the mid-tone particles.

Use Mask - switch this on to use a mask layer to position the source of the flames. The algorithm searches for a white area which it uses as the Source Position.

Mask - the layer used to animate the Source Position.

Wind   Two wind fields are supplied that interact with the flames.

Wind Type - four types of wind generator are supplied.
- **None** - switches the wind off.
- **Uniform** - blows air in a particular direction.
- **Vortex** - swirls air around it.
- **Source** - blows air away from it.
- **Sink** - sucks air towards it.

Strength - the force of the wind.

Source Position - the location of the wind.

Direction - where the wind blows from if wind type is set to uniform.

Fall-off - the amount the strength of the wind decreases with distance from the source position.

Noise   Noise is added to the flames to simulate burning particles within the flames.

Noise Speed - the rate of movement of these particles.

Noise Amount - the amount of noise in x and y.

Noise Depth - the amount of noise along the z axis.

Noise Variation X - the horizontal variation in the noise.

Noise Variation Y - the vertical variation in the noise.

Fractal Scale - the detail in the noise.

Breaking   Allows for smaller flames to break away from the main flame.

Breaking - switch this on to allow smaller flames to break away.

Break Frequency - the rate at which small flames escape.

Min Break Life - the minimum lifespan of these flames (in seconds).

Max Break Life - the maximum lifespan of these flames (in seconds).

Break Frames - the time taken to separate from the main flame (in frames).

Average Break Height - the height at which the flames break free. This is an average height and is measured as a percentage of the Flame Height.

Break Height Range - the height range over which they separate, as a percentage of the Flame Height.

Colours   Controls for the flame colours. The flames are coloured with a colour gradient made from three colours (bright, mid and dark) as well as a glow colour.

Glow Colour/Alpha

Bright Colour/Alpha

Mid Colour/Alpha

Dark Colour/Alpha

Mid Point - the position of the mid colour in the colour gradient.

Blending   How to mix between the source image and the effect. See "Blending" on page 23.

Hints & Tips   Have a look at Tinderbox 4 T_Rain if this fire gets out of hand.

Here are some flames used in a composite.

Figure 90. Blue Screen.

Figure 91. T_Fire.

T_Flow

Description   T_Flow is a flood fill along a path defined by a matte. It can be used
                           to write on text and generate animating mattes as transition effects.
                           Here's a sequence of four frames taken from an animation to write
                           on text using T_Flow.

Figure 92. Frame = 10.   Figure 93. Frame = 20.

Figure 94. Frame = 30.   Figure 95. Frame = 40.

Type   Effect.

Controls

About   Click the picture to display the on-line help, Tinderbox version
             number and lmhostid. See "About..." on page 8.

Process - sets which channels to process.

Colour - the flood fill colour if processing RGB.

Path - the image and channels used to control the flow.

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

Flow Speed - how quickly the effect animates.

Drips   **Mode** - the method of animating along the path.
- **Drips Layer** - the drips are sourced from the Drips layer input.
- **Random Drips** - the drips are randomly positioned.
- **One Drip** - one dot grows from the Position.

Number of Drips - the number of drips if Mode is set to Random Drips.

Position - the position of the start of the animation. It is very important to get this right, or you won't see anything.

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

Drips - specifies the layer used as a source for the drips.

Filtering - the quality of the anti-aliasing used when processing the effect. See "Filtering" on page 22.

Blending   How to mix between the source image and the effect. See "Blending" on page 23.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 29.

Path Layer Crops   Cropping tools and edge methods.

T_InfiniteZoom

Description

Zoom transition effect from one image to another. As the pixels in the first layer are scaled up, the whole image of the second layer is revealed in those pixels. In the example here the Mercedes SLK in

Figure 96. Source Image.

Figure 97. Zooming in...

Figure 96 is zoomed to form the Bentley in Figure 99. Figure 97 and Figure 98 are two of the in between frames showing the Bentley appearing out of the pixels of the Mercedes.

Figure 98. ...more zoom...

Figure 99. ...Second Layer Revealed.

Quick Start

Apply T_InfiniteZoom to layer 1. Set the Background to layer 2. Animate the Zoom parameter from 0 to 100. Render a sequence.

Type

Transition Effect.

Controls

About

Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Process - sets which channels to process.

Second Layer - the picture that will be revealed in the zoom. If None then the source image will be used.

Zoom - the scale factor applied to the source layer. A value of 0 produces no scaling. A value of 100 completely reveals the next image. To create a transition effect you should keyframe this zoom parameter from 0 to 100.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 29.

Hints & Tips   See also Tinderbox 1 T_Pattern for more conventional transition effects.

T_Kaleid

Description   T_Kaleid produces a classic triangular prism kaleidoscope effect on an image. This is achieved by simulating the inter-reflections of a triangular prism over the picture.

Figure 100. Source Image.   Figure 101. T_Kaleid.
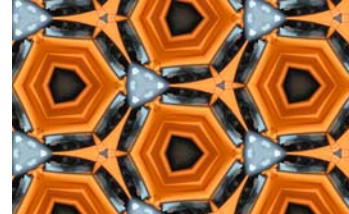
Use the prism group controls to position the prism for the final output, then from the Image group, switch on Show Source Image and move the image under the prism until you're looking at the bit you want. Switch off the Show Source Image.

Type   Effect.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Show On-Screen Tools - switch this on to display the triangular prism over the image.

Process - sets which channels to process.

Prism   Controls for the triangular prism.

Position - the position of the triangular prism.

Size - the size of the triangular prism.

Rotation - the rotation of the prism.

Image   Controls for the image under the prism.

Position X - the horizontal position of the image.

Position Y - the vertical position of the image.

Size - scales the image.

Rotation - rotates the image.

Show Source Image - switch this on to view the source image under the on-screen prism tool.

Filtering - the quality of the anti-aliasing used when processing the effect. (See "Filtering" on page 22.)

Blending How to mix between the source image and the effect. See "Blending" on page 23.

Source Crops Cropping tools and edge methods. See "Source Crops" on page 29.

Hint & Tips It's worth repeating this. Use the prism group controls to position the prism for the final output, then from the Image group, switch on Show Source Image and move the image under the prism until you're looking at the bit you want. Switch off the Show Source Image.

T_LightWrap

Description

You may have noticed that objects filmed in front of very bright backgrounds have the appearance of softened edges as the light spills round from the background. When adding foreground layers onto a background plate, introducing light wrap can dramatically improve the quality of your composite.

T_LightWrap makes this easy. Figure 102 shows a straight composite of a woman over a background (the stained glass window in York Minster). It's a bit hard to see but note the hard edges around the trailing hand and the bottom of the skirt. After T_LightWrap has been applied (Figure 103 on page 59) you'll see light spilling around the hand and through the skirt.

Figure 102. Close-up of the original Composite.
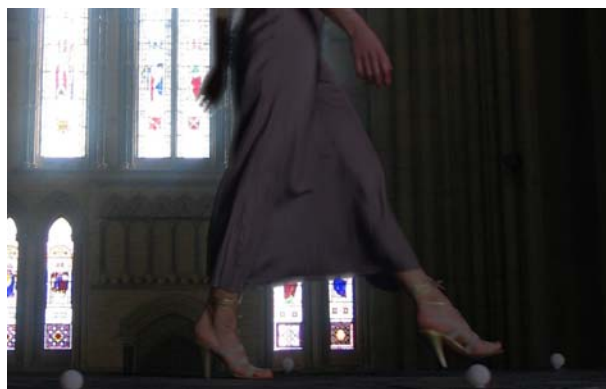
Figure 103. Close-up showing Light Wrap.

Here's the wide shot of the same composite. Note how it fits better

Figure 104. Composite.   Figure 105. T_LightWrap.

into the background.

Type   Effect.

Controls

About   Click the picture to display the on-line help, Tinderbox version
number and lmhostid. See "About..." on page 8.

Process - sets which channels to process.

Background - select the layer which will bleed light into the
foreground image.

Output
• **Wrap Only** - renders just the light wrap.
• **Wrap On Black** - renders the light wrap composited on black.
  This can be a useful tool to see what's going on before switching
  to Blend with Source. See Figure 106.
• **Blend with Source** - composites the light wrap over the
  foreground.
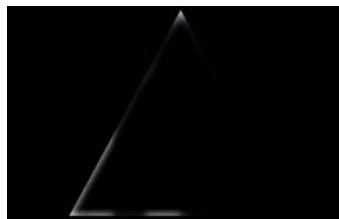
Figure 106. Wrap on Black (for the Polar Bear composite as
shown in Figure 108).

Radius - the distance the background wraps around onto the

foreground. Consider the composite in Figure 107 where a polar
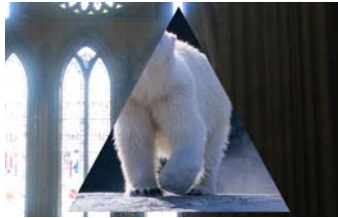

Figure 107. Radius = 0.   Figure 108. Radius = 25.

bear with triangular alpha is composited over a bright background. Note the hard edges around the triangle. In Figure 108 see how the light has spilled onto the foreground at the top and left of the triangle as a result of increasing the Radius to 25.

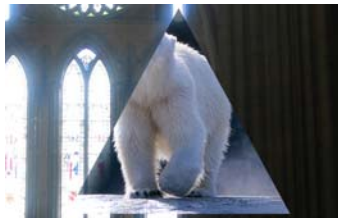**Brightness** - the brightness of the light wrap.

Figure 109. Brightness = 0.   Figure 110. Brightness = 100.

Background Blur - the softness of the light wrap. Increasing this
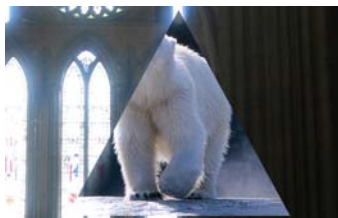
Figure 111. Blur = 3.   Figure 112. Blur = 15.

blurs the background spilling over into the foreground.

Blending Mode - the algorithm to use to blend the light wrap onto the foreground.

Blending   How to mix between the source image and the effect. You can use

this to further boost the brightness of the light spill. See "Blending"

Figure 113. Overcranked Spill.

on page 23.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 29.

Background Crops   Cropping tools and edge methods.

Hints & Tips   If you find that the light wrap does not line up with the foreground as expected, then you should pre-compose the foreground and/or background layers.

T_LineDrawing

Description   Creates line drawings from images. Edges are detected and splines drawn along them.

Figure 114. Source Image.   Figure 115. T_LineDrawing.

Type   Effect.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Process - sets which channels to process.

Figure 116. Process = RGB.   Figure 117. Process = RGBA.

Line Colour - the colour of the lines over the background.

Line Colour Alpha - the transparency of the lines when processing RGBA.
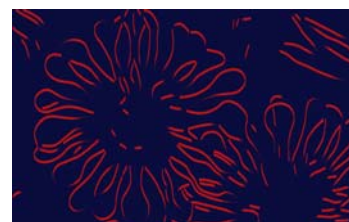

Figure 118. White lines on grey.   Figure 119. Red lines on blue.

Back Colour - the colour behind the lines. The background colour.

Back Colour Alpha - the transparency of the background.

Output - the type of edges to draw.
- **Edges** - single pixel edge detection.
- **Smooth Edges** - splined lines. This is the default option.
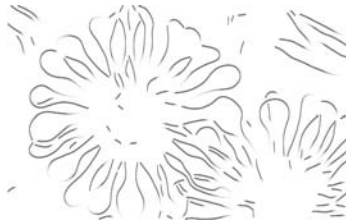
Line Thickness - the width of the lines.

Figure 120. Thin.   Figure 121. Thick.

Pen Aspect - simulates even tipped or square brushes to give different line widths depending on the direction of the line stroke.

Figure 122. Aspect = 0.   Figure 123. Aspect = -75.

Line Smoothness - reduces the number of points in the lines.

Figure 124. Low Smoothness.   Figure 125. High Smoothness.

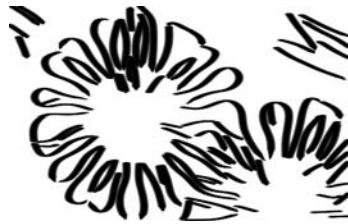**Tapered Length** - the narrowing of the lines at the end of the
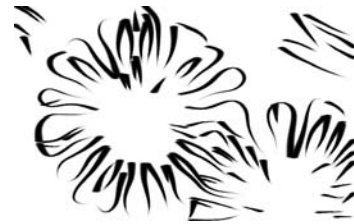
strokes.

Figure 126. No Tapering.   Figure 127. High Tapering.

Spline Type - two methods are supplied to define the curved line between vertices.
- **Cardinal** - this is a cubic hermite spline.
- **B Spline** - this is a uniform b spline. B splines tend to give slightly rounder, smoother lines and this is the default.

Number of Lines - the number of sets of lines drawn. The line positions are offset by the Max Line Separation parameter.

Figure 128. Two Lines.   Figure 129. Three Lines.

Max Line Separation - the maximum distance between line sets. Increase this for more widely spaced lines.

Line Uniformity - the evenness of the line set positions.

Zigzag   The lines can be made to turn alternately from right to left.

Zigzag Amount - how much the lines are allowed to
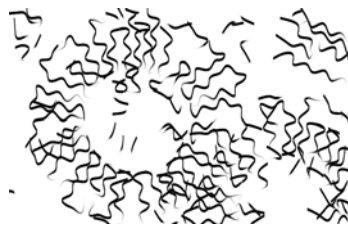

Figure 130. Low.   Figure 131. Extreme.

deviate from their path. Figure 130 has a Zigzag Amount of 10 and Figure 131 a rather extreme value of 100.

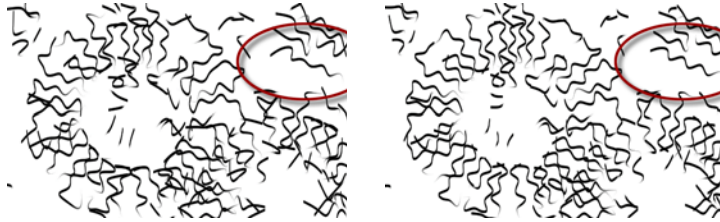**Zigzag Uniformity** - the evenness of the turns. Increase

Figure 132. Uniformity = 0.   Figure 133. Uniformity = 100.

this value for balanced, regular zigzags.

Seed - this number generates a number sequence that is used to randomly vary the zigzags and line positions if Number of Lines > 1.

Edges   T_LineDrawing uses the Canny edge detector to find edges and draw along them. You can view the edge matte using the Output parameter. The threshold controls are the same as those for the Canny mode in Tinderbox 3 T_EdgeDetect. They are used in the last stage of the Canny edge detection algorithm, after it has identified a set of pixels which have steep gradients across them and are therefore likely to belong to an edge. Pixels whose gradient is above the upper threshold are automatically classified as edge pixels, and pixels with gradients below the lower threshold are classified as non-edge pixels. Those whose gradients fall between the two thresholds will be classified as edge pixels only if they are connected to a definite edge pixel by a path through the pixels remaining in the set. The idea is to avoid the breaking up of edges that can occur if you just apply a single threshold and say that everything above it must be a edge, and everything below must not be, because it is likely that along a single edge there will be some pixels that dip below that threshold.

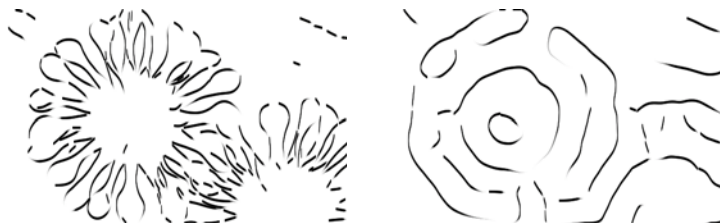**Image Softness** - blurs the image before edges are detected.

Figure 134. Softness = 0.   Figure 135. Softness = 50.

Lower Threshold - used to define the edges.

Upper Threshold - used to define the edges.

Blending   How to mix between the source image and the effect. See "Blending" on page 23.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 29.

Hints & Tips   See also Tinderbox 1 Etch and Tinderbox 2 T_Contour. Both of
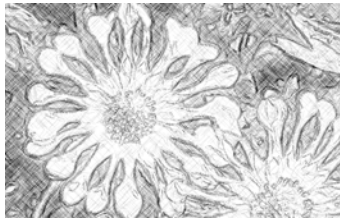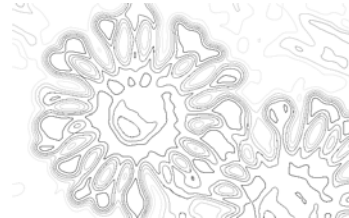

Figure 136. T_Etch.   Figure 137. T_Contour.

these give similar but different results to T_LineDrawing and are shown here in Figure 136 and Figure 137 on the flower for comparison.

T_Median

Description   T_Median is an NxN median filter. It is faster than the median filter in After Effects and can also be used on 32bpc images. Median filters are useful for cleaning up isolated spots and noise. For each
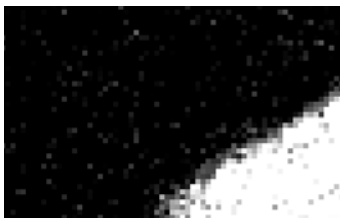

Figure 138. Close up of a matte showing noise in the black and white areas.

Figure 139. After T_Median has been applied with Radius= 1. Note the single pixel noise has gone.

pixel an array of surrounding pixels is considered, sorted by brightness and the middle value, regardless of screen position, is picked to replace the central pixel.

Type   Tool.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

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

Channels   Sets which colours channels to process. If the noise is only in the blue channel then processing just the blue channel will cleanup the image while retaining image detail in the other channels.

Process Red - switch this on to process the red channel.

Process Green - switch this on to process the green channel.

Process Blue - switch this on to process the blue channel.

Process Alpha - switch this on to process the alpha channel.

Radius - the size in pixels of the NxN filter. Increase this to remove more noise at the expense of image detail. A value of 1 will consider a block of 9 pixels centered on the pixel to be adjusted.

Aspect - the horizontal and vertical weighting of the effect.

Blending   How to mix between the source image and the effect. See "Blending" on page 23.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 29.

Hints & Tips   Large radius values in T_Median remove detail giving a smooth painterly look. It's a bit hard to see but Figure 140 and Figure 141

Figure 140. Source Image.   Figure 141. T_Median.

show the effect. Figure 142 shows the results of applying T_Paint

Figure 142. Tinderbox 2 Paint.

(Tinderbox 2) as a comparison.

T_MuzzleFlash

Description

T_MuzzleFlash generates the burst of light seen at the end of a gun barrel when fired.

Figure 143. The name's Bond, James Bond.

Quick Start

Switch your project settings to frames. It'll be easier if you do. Shuttle through your clip until the point at which the gun is supposed to fire. Select the Muzzle Position tool and click on the end of the gun. Set the Trigger Frame to the frame you're on. Choose a Gun Type that most closely matches the gun fired. Tune the look with the Flash group parameters. Now use the Muzzle Elevation and Rotation parameters and align the flash along the gun barrel. Render the sequence.

Type

Generator. Effect.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Show On-Screen Tools - switch this on to display the rotation widget.

Process - sets which channels to process.

Muzzle Position - the screen position of the muzzle flash.

Muzzle Elevation - the elevation of the flash.

Muzzle Rotation - the direction of the bullet.

Muzzle Flash Offset - moves the flash away from the end of the gun in the direction of the muzzle flash.

Gun Type - a range of muzzle flashes have been modelled for you.
- **M16** - US made lightweight assault rifle firing standard 5.56mm ammunition and favoured by the US infantry.
- **AK-47** - Russian made assault rifle designed by Mikhail Kalashnikov.
- **Beretta** - Italian made low powered pistol. The Beretta 418 was James Bond's main gun in From Russia With Love but later superceded by the Walther PPK.
- **Colt 45** - US made single action revolver holding six rounds of ammunition and widely associated with spaghetti westerns. Also known as the Peacemaker.
- **12 Gauge** - pump action shotgun. The 12 gauge refers to the bore diameter.

Flash Variant - a number of subtly varying looks are provided. Choose Flash 1, 2 or 3 or select Random if you want us to choose for you.

Flash   Controls for the shape and colour of the muzzle flash.

Flash Width - the width of the muzzle flash.

Flash Length - the length of the muzzle flash.

Flash Intensity - the brightness of the muzzle flash.

Flash Noise - the image noise in the flash (not the sound of the gun firing). This breaks up the edges giving a more smoky look. This essentially scales the Noise Detail parameter.

Suppressor Flashes   Some rifles, like the M16, have angled flashes from the barrel. These suppressor flashes are controlled here.

Figure 144. M16 with Suppressor Flashes.

Suppressor Flashes - the number of angled flashes.

Suppressor Flash Width - the width of these flashes.

Suppressor Flash Length - the length of these flashes.

Suppressor Flash Intensity - the brightness of these flashes.

Suppressor Flash Noise - the breakup of the edges. This essentially scales the Noise Detail parameter.

Suppressor Flash Rotation - the rotation around the gun direction.

Trigger   Controls for firing the gun. All gun types, except the M16 and AK-47, are single fire guns controlled by the Trigger Frame parameter. The M16 and AK-47, which fire a burst of bullets, are controlled by the Rapid Fire parameters.

To fire one round at frame N, set the Trigger Frame to N. If you want to fire two rounds at frames N and M, then switch on keyframing go to frame N and set Trigger Frame to N then advance to frame M and set Trigger Frame to M. Now make sure that the graph for these

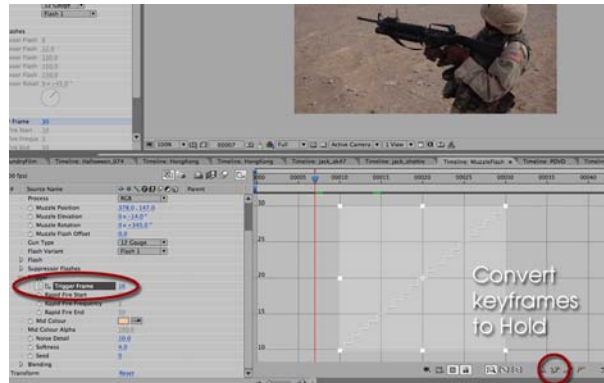keyframes is set to Hold as shown in Figure 145.

Figure 145. For Multiple Shots set Keyframes to Hold.

Trigger Frame - the frame at which the muzzle flash appears. This can be keyframed but make sure you set the animation graph to Hold otherwise you'll get a continuous flash between keyframes.

Rapid Fire Start - the frame at which the M16 and AK-47 start firing.

Rapid Fire Frequency - the gap between bursts of fire. This value is in frames. For example, if set to 10, then 10 frames will elapse between bursts of fire, assuming we're still between the start and end period.

Rapid Fire End - cease fire.

Mid Colour - the colour at the edges of the flash.

Mid Colour Alpha - the transparency of the flash.

Noise Detail - the base level noise that breaks up the light flash. You do not normally need to adjust this.

Softness - the softness of the muzzle flash. You do not normally need to adjust this.

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

Blending   How to mix between the source image and the effect. See "Blending" on page 23.

Hints & Tips   Here's a picture of the engineering team doing some "research".

Figure 146. He shouldn't be allowed guns.

See also Tinderbox 2 T_PseudoColour for thermal camera looks and Tinderbox 4 T_Security to make your clips look like night vision cameras.

T_Quantise

Description Reduces the colour information in an image to produce bands while preserving the quality of the original colours.

Figure 147. Source Image.

Figure 148. T_Quantise.

Type Effect.

Controls

About Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Levels - the number of quantise bands.

Blending How to mix between the source image and the effect. See "Blending" on page 23.

Hints & Tips T_Quantise is similar to After Effects Posterize filter but more faithfully replicates the source image's colours at low level values. T_Quantise also works on 32bpc images.

T_Rain

Description   Renders 2D rain over an image. It's quick to render and gives very plausible results for many shots. It's worth noting that it does not create splashes on surfaces and nor is it 3D rain.

Figure 149. Dry.   Figure 150. Wet.

Type   Effect.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Process - sets which channels to process.

Presets - a number of presets are supplied increasing in intensity.

Drop Length - the apparent length of the droplets due to

Rain Direction - the angle of the rainfall. The default value of -90 is vertically down.

Rain Intensity - the brightness or visibility of the rain.

Rain Density - the amount of rain falling. Low values give sparse rain and high values the need for a brolly.

If you look at rain falling at night through a bright light, like a street lamp or cars headlights you will have noticed a blooming of the light as it is refracted through the water droplets. The diffusion parameters simulate this. The diffusion is ramped in between the Min and Max values. To switch off the diffusion set both the Min and Max to 100.

Diffusion Min - the luminance value at which point the diffusion

starts.

Diffusion Max - the luminance value at which point the diffusion is at a maximum.

Figure 151. Diffusion Min = 100.   Figure 152. Diffusion Min = 80. Note the blown highlights.

Matte - the image and channels used to control the rain intensity.

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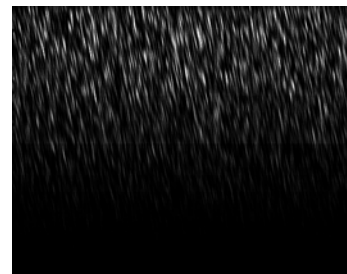

Figure 153. Matte.   Figure 154. Attenuated Rain.

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

Blending	How to mix between the source image and the effect. See "Blending" on page 23.
Source Crops	Cropping tools and edge methods. See "Source Crops" on page 29.
Matte Layer Crop	Cropping tools and edge methods.
Hints & Tips	See also T_Snow.

T_Security

Description   Changes images to make them look as though they were shot on low cost surveillance cameras.

Figure 155. Expensive Camera.   Figure 156. Security Camera.

Type   Effect.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Process - sets which channels to process.

TV Type - sets the type of output.
- **Colour** - colour pictures.
- **B and W** - black and white pictures.
- **Tint** - colour tinted pictures to simulate radar screens.

Figure 157. Colour.   Figure 158. Tint.

Tint Colour - the tint colour used when TV Type is set to Tint.

Contrast - the ratio of the brightest tones to the darkest tones. Increase this value to make the shadows darker and the highlights brighter.

Brightness - the picture luminance.

Quantise - switch this on to reduce the colour information or shades of grey in the image.

Quantise Levels - the number of bands of colour, or shades of grey.

Play Speed - the speed of the clip. 0 is paused, 100 is play at normal speed, greater than 100 is fast forward and less than 0 is rewind.

Frame Rate - this sticks the image during playback. For the default value of 5 the image is frozen for 5 frames before jumping forward again.

Fisheye Lens   Controls for the distortion of the image due to the very wide angle lenses used on security cameras.

Figure 159. No Distortion.   Figure 160. Fisheye Distortion.

Lens Effect - switch this on to activate the distortion.

Lens Radius - the size of the circular distortion.

Lens Strength - the amount of distortion.

Shash   Shash is the electronic noise that affects picture quality.

Shash Type - the type of noise produced. Just pick one that you like.
- **Random** - automatically selects any of the types.
- **Type N** - 5 different noise types.
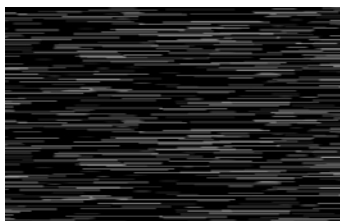

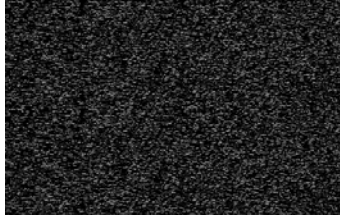Figure 161. Type 1.   Figure 162. Type 2.
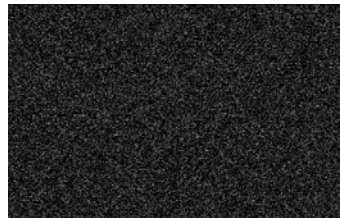
Figure 163. Type 3.

Figure 164. Type 4.

Figure 165. Type 5.

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

Shash Period - the number of seconds each type of shash is rendered when the Shash Type is Random.

Shash Max - the amount of electronic noise. Increase this to make it more obvious.

EM Interference - the dark horizontal bands on the picture to simulate electromagnetic interference on the cheap cables they use.

Figure 166. EM Interference.

White Dot - the scaling and distortion of the image to simulate power loss to the security monitor. Figure 167 and Figure 168 show

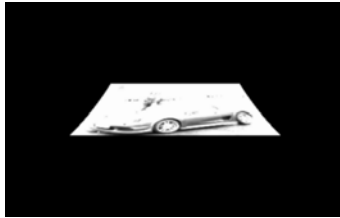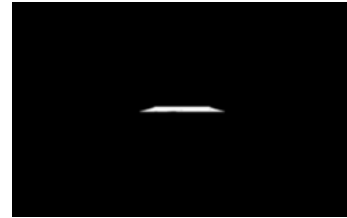the animation of the picture as the power is lost.

Figure 167. Going...   Figure 168. ...going...

Scanline Width - the emphasis of the horizontal scan lines. Increase this value for chunkier lines.

Figure 169. Exaggerated Scanlines.

Blur - defocuses the image.

Filtering - the quality of the anti-aliasing used when processing the effect. (See "Filtering" on page 22.)

Blending   How to mix between the source image and the effect. See "Blending" on page 23.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 29.

Hints & Tips   See also Tinderbox 3 T_BadTV.

T_Snow

Description   Renders swirling, falling snow as shown in Figure 170.

Figure 170. Simulated Snow.

Type   Generator.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Process - sets which channels to process.

Flake Size - the size of the snowflakes.

Flakes/Sec - the amount of snow falling. Increase this for heavy snowfall.

Flakes/Sec Variance (%) - how much the flakes/Sec parameter is allowed to change. Rather than keyframing the Flakes/Sec, just set the variance to a constant to get random changes in amount of snowfall.

Lifetime (Secs) - how long snowflakes live before melting.

Lifetime Variance (%) - how much the Lifetime parameter is allowed to change. Rather than keyframing the Lifetime, just set the variance to a constant to get random changes in the snow's lifespan.

Start Creating (Frame) - the frame when snow starts to fall.

Stop Creating (Frame) - the frame when the snow stops falling.

Falling Speed - how fast the snow falls.

Flake Colour - default is white for snow but hey, you might have some strange requirements to change this.

Settle Controls to allow the snow to stick to objects. To get the snow to settle on something you need a matte defining the object. White areas should define the object.

Figure 171. Snow settling on Skier.   Figure 172. On Text.

Show Settle - switch this on to show the matte you're using.

Settle - the matte layer used to allow the snow to settle.

Component - the channel used.

Threshold - hard edged mattes are used to define where the snow settles. This threshold value alters the luminance point at which grey areas are considered black or white.
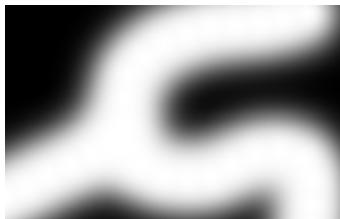

Figure 173. Soft Matte.   Figure 174. Hard edged matte used with high Threshold value.

Air Resistance - the simulated force acting against the movement of the snow.

Gravity - the simulated force pulling the snow in a particular direction, usually down.

Wind Controls to blow the snow in a particular direction with uniform force.

Wind X - blows the snow horizontally.

Wind Y - blows the snow vertically.

Wind Z - blows the snow towards you, or with negative values away from you into the distance.

Turbulence   Controls for swirling the snow around.

Strength - the amount of turbulence.

Rate of Change - how quickly the turbulence changes.

Complexity - simulates multiple interacting forces gives complex movement of the snow.

Samples - the number of frames that are rendered and blended together to simulate motion blur. This parameter is only available if you have set Filtering to High.

Shutter - the length of time the virtual camera shutter is open to give motion blur. Increase this value for more motion blur. A value of zero will give no blur. This parameter is only available if you have set Filtering to High.

Clip Near - the position along the z axis in front of which snow is not drawn.

Clip Far - the position along the z axis behind which snow is not drawn.

Filtering - the quality of the anti-aliasing used when processing the effect. (See "Filtering" on page 22.)

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

Blending   How to mix between the source image and the effect. See "Blending" on page 23.

Hints & Tips   For higher temperatures, try T_Rain.

T_SoftGlow

Description

Provides a subtle glow to images with the defaults. The controls to use are Brightness to boost the effect, Clip Min to increase the areas affected by the glow and Source Bleed to introduce colours from the source image.

Figure 175. Source Image.

Figure 176. T_SoftGlow.

Type

Effect.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Process - sets which channels to process.

Glow Edges - add glow only to the edges. To get this to work you should switch Blending to None to view just the glow. Then edit the Clip Min and Max values to define the edge, then increase the Brightness. Switch Blending back to Screen to view the result.

Figure 177. Glow on the edges.

Spread - the blur on the glow.

Aspect - controls the horizontal and vertical weighting of the blur.

Brightness - the intensity of the glow. Increase this if you need more

glow, or change the clip levels.

Glow Colour - the colour of the glow.

Glow Colour Alpha - the transparency of the glow if processing RGBA.

Source Bleed - introduces colours from the source image into the glow. Figure 178 on page 86 shows just the white glow with none of

Figure 178. Source Bleed = 0.

Figure 179. Source Bleed = 100.

the blues from the polar bear reintroduced.

Breakup   The breakup parameters scatter pixels in the image that are then blurred. This can give a subtle shimmer to the glow.

Figure 180. Pixel Scattering effect using Breakup.

Time Constant Breakup - switch this on to freeze the pixel scattering on all frames. Switch this off to give a subtle shimmer to the glow.

Breakup - the amount of pixel scattering.

Aspect - the horizontal and vertical weighting of the effect.

Clip Levels   Controls the extent of the glow. The glow is phased in between the min and max values. Above the Max value there is full glow.

Figure 181. Min = 0, Max = 100.   Figure 182. Min = 50, Max = 75.

Clip Min - the luma threshold below which there is no glow. Decrease this value for more glow in the shadows.

Clip Max - the luma threshold above which there is full glow. Decreasing this value for more glow in the highlights.

Mask - the image and channels used to control the mask.

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

Masking - what to do with the Mask Layer input.
- **Before Glow** - applies the mathematical operator AND to the glow and Mask Layer and uses the result as the glow source.
- **After Glow** - cuts out the glow using the Mask Layer. Only the parts of the glow that overlap with full alpha in the mask input are displayed.
- **Before & After** - performs the Before Glow operation followed by the after Glow.

Blending   How to mix between the source image and the effect. See "Blending" on page 23. The blending function controls how the glow is added back onto the image. Screen is the default but other methods give good results too.

Figure 183. Blending = SoftLight.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 29.

Hints & Tips   See also Tinderbox 2 T_Glow.

T_Water

Description   Renders multiple distorting droplets over an image. The ripples can

Figure 184. Water Ripples on a Koi Carp.

be sourced from a layer or drip randomly on the image. The ripples can also bounce off objects defined by mattes.

Type   Effect. 3D.

Controls

About   Click the picture to display the on-line help, Tinderbox version number and lmhostid. See "About..." on page 8.

Process - sets which channels to process.

View - choose what to render.
- **Output** - renders the distortion of the source image using the ripples.
- **Ripples** - renders just the droplet distortions. This is more than twice as fast to render as the output which can be useful in setting up the animation.

Pre-roll - the default animation is to start dripping at frame 1. If you want it to have started raining before this set a pre-roll.

Softness - softens the ripples as shown in Figure 186.

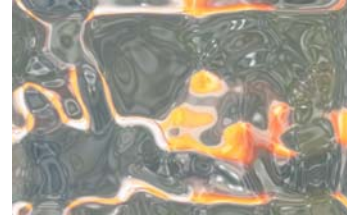Figure 185. Softness = 1.   Figure 186. Softness = 50.

Ripple Damping - the rate at which the ripples fade away over time.
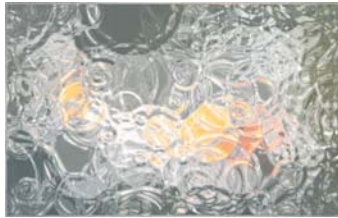

Figure 187. Damping = 0.   Figure 188. Damping = 10.

Ripple Wavelength - the distance between wave peaks.

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

Drips - rather than have random drops forming the ripples you can use a matte to generate the ripple shape. Figure 189 shows the "S"

Figure 189. Drip Layer.

shaped drip layer over a grey background and Figure 190 and Figure 191 shows two stages in the resulting animation.

Figure 190. Early in the   Figure 191. Later in the
Simulation.   Simulation.

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

Rain Frequency - the amount of rain. Increase this for heavy rain and decrease for light shower.

Rain Width - the size of the rain drop when it hits the water surface.

Rain Seed - this number generates a number sequence that is used to randomly vary the pattern of rain drops.

Rain Power - the amount the drip bends the water surface on impact corresponding to the amount of image distortion.

Rendering   Controls for the lighting and look of the ripples.

Light   See "Lighting" on page 15.

Host Light - switch this on to use the After Effects light. If more than one light is in the composition, the top layer light is used.

Type
- **None** - no lights are used. Lighting parameters are switched off.
- **Infinite** - simulates the parallel rays from a distant light source, like the sun.
- **Local** - point light.

Direction - the direction of the light source.

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

Position - the location of the Local light.

Distance - the distance of the Local light from the image plane.

Specular Lighting   See "Specular Lighting" on page 18.

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.

Glass   Controls to make the distortions look like glass.

Bump Amount - the amount the glass matte appears to deform the image in the z axis. Positive values push out from the screen. Negative values indent.

Distortion Scale - the amount light rays are refracted (bent) when entering the glass. This is also known as the refractive index of the glass. Changing this parameter alters the amount of distortion of the source image in the glass.

Aberration - introduces colour fringing in the distortions.

Walls - the image and channels used to control the reflection of the ripples as shown in Figure 192.
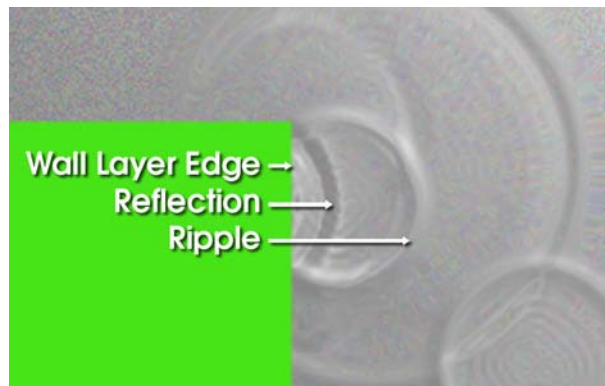
Figure 192. Bouncing off the Walls.

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

Wall Clip Min - the luma value mapped to black.

Wall Clip Max - the luma value mapped to white.

Blending   How to mix between the source image and the effect. See "Blending" on page 23.

Source Crops   Cropping tools and edge methods. See "Source Crops" on page 29.

Hints & Tips   See also Tinderbox 2 T_Ripple.

Appendix A

GENARTS TINDER PLUG-INS

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