



**Tinderbox 3  
for  
Combustion**

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## Tinderbox 3 User Guide

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## 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 3 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.

### **About Tinderbox Plug-ins**

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

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

### **Other GenArts Products**

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

# TINDERBOX CONTROLS

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

## About...

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



Figure 1. About.

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



Figure 2. Help.



Figure 3. Version.



Figure 4. System ID.

## Reset

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

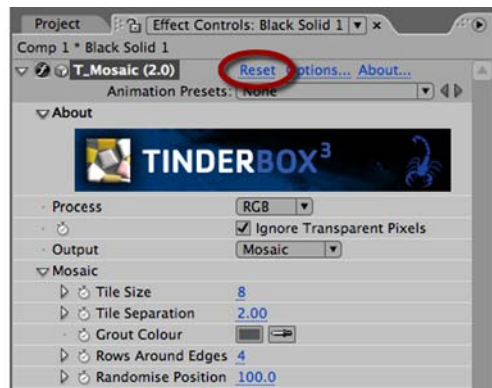


Figure 5. Reset.

## Options...

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

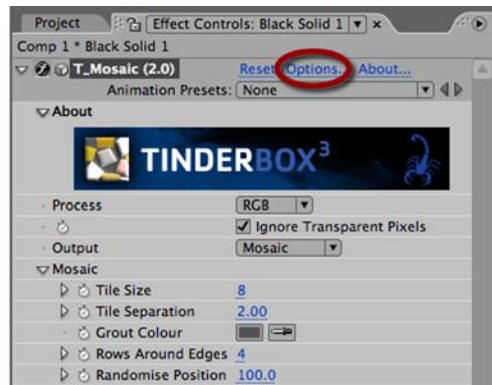


Figure 6. Options.



## Type

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

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

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

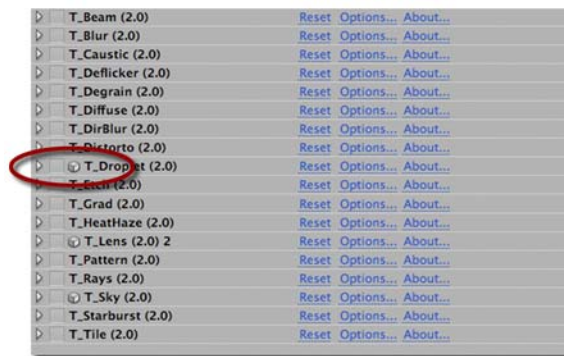


Figure 7. T\_Droplet can use the composition's lights.

**Aspect**

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

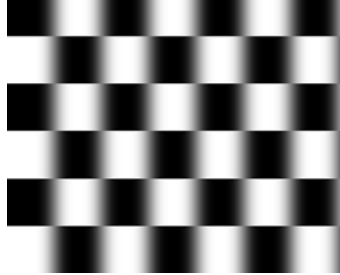


Figure 8. T\_Blur Aspect = 100.

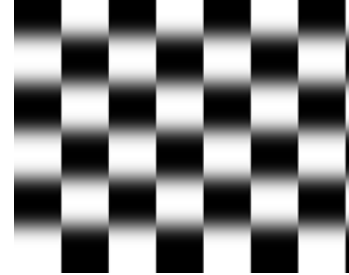


Figure 9. T\_Blur Aspect = -100.

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



Figure 10. T\_Droplet.

Aspect in T\_Droplet being used to sit the ripples on the water.

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

## Process

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

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



Figure 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 mean 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.*

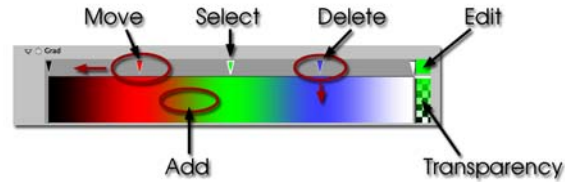


Figure 20. Gradient Controls.

### 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)

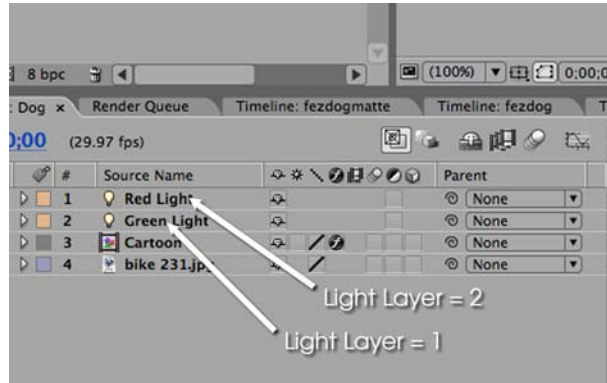


Figure 23. To pick the Red Light set Light Layer to 2.

**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.

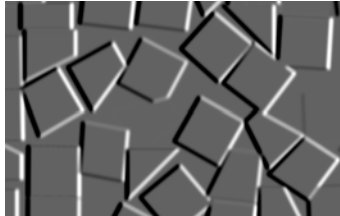


Figure 27. Direction = 90.

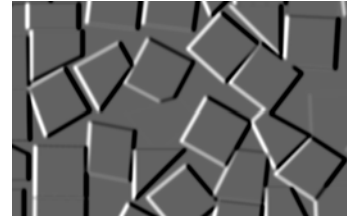


Figure 28. Direction = 270.

**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.

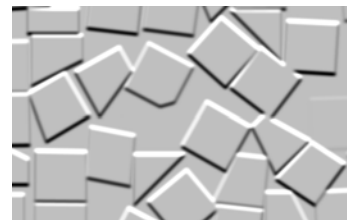


Figure 30. Elevation = 30.

**Position** - the position of the light.

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

#### Ambient Lighting

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

**Ambient Method** - controls how to apply the ambient lighting.

- **None** - switches off ambient lighting.
- **Colour** - switches on ambient lighting and uses the ambient colour in the ambient colour calculations.
- **Source** - switches on ambient lighting and uses the source image colours in the ambient colour calculations.

**Colour** - the colour used in the ambient light calculations.

**Strength** - the amount of ambient light.

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

**Lighting** - controls how to apply the diffuse lighting.

- **None** - switches off diffuse lighting.
- **Colour** - switches on diffuse lighting and uses the diffuse colour in the diffuse colour calculations, Figure 31 on page 17.
- **Source** - switches on diffuse lighting and uses the source image colours in the diffuse colour calculations, Figure 32.

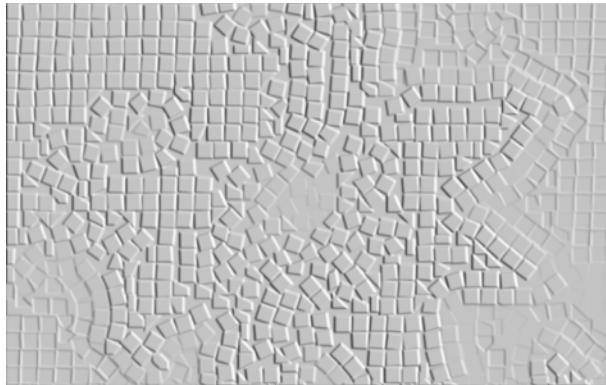


Figure 31. Diffuse Colour.



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 18.

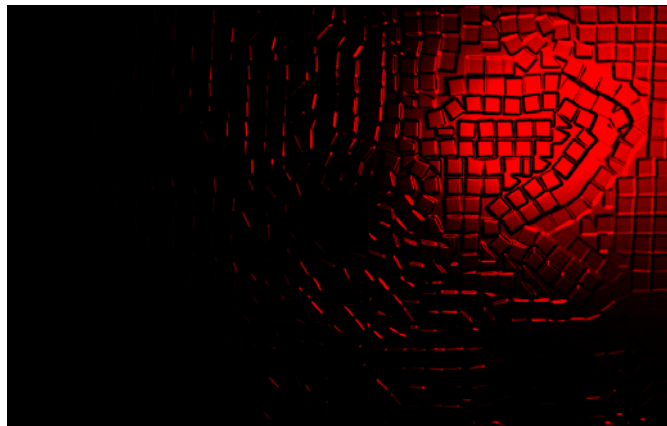


Figure 33. Specular Colour.



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.

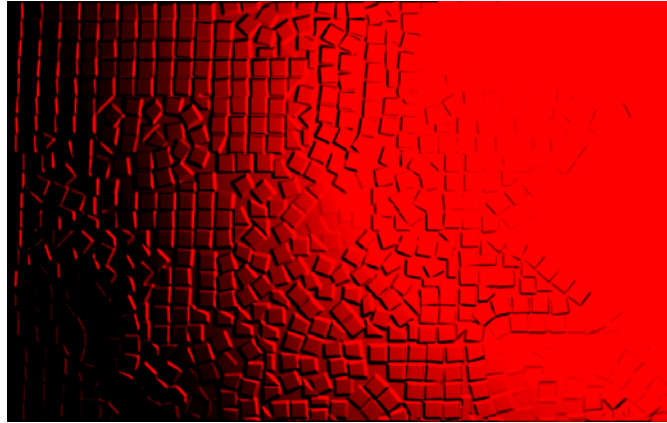


Figure 35. Low Fall-off.

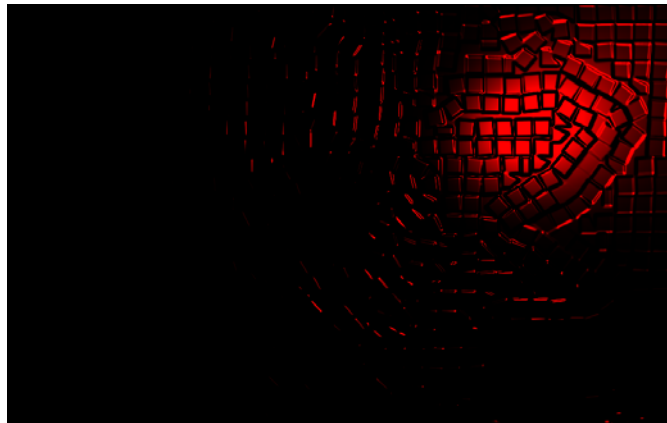


Figure 36. High Fall-off.

## 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 20), 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.

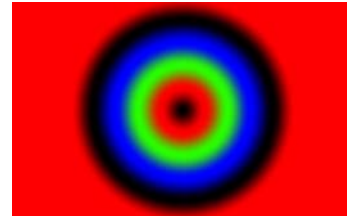


Figure 39. Output Image.

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.

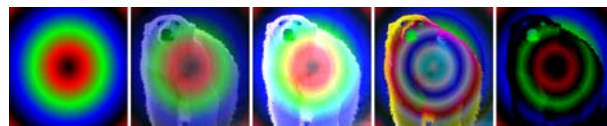


Figure 40. None, Mix, Add, Difference, Subtract Source.

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.

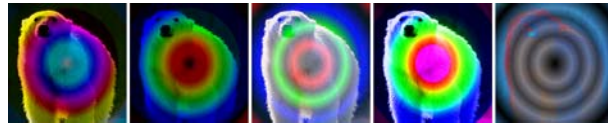


Figure 41. Subtract Effect, Darken, Lighten, Colour, Luminosity.

- **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.

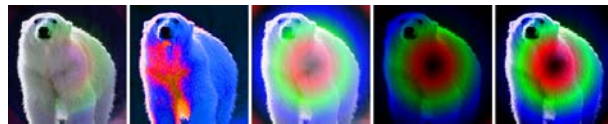


Figure 42. Hue, Saturation, Screen, Multiply, Overlay.

- **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

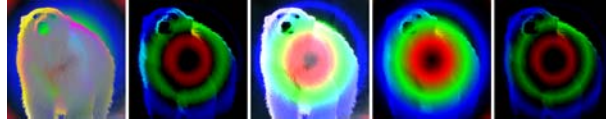


Figure 43. Exclusion, ColourBurn, ColourDodge, HardLight, LinearBurn.

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 overwhites 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.

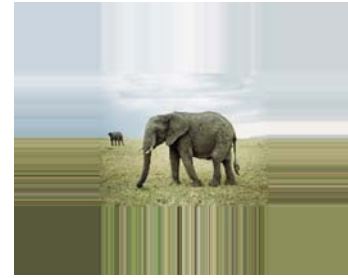


Figure 52. Repeat.

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

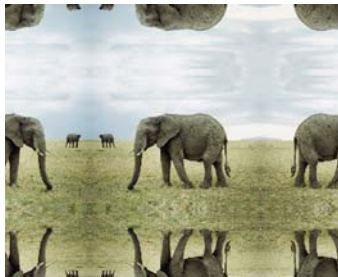


Figure 53. Reflect.



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 3

### T\_BadTV

#### Description

This plug-in processes a clip to make it look as though it was being broadcast on a television suffering from poor reception. There is a master control to alter the signal quality to get vertical rolls, edge distortions, colour loss, ghosting, creeping lines, picture breakup and other interference patterns associated with poor signals. The breakup can be set manually at particular key frames, or if breakup variation is set, the breakup of the picture will vary automatically.



Figure 55. Source Image.



Figure 56. T\_BadTV.

#### Hints & Tips

If you apply BadTV to a clip with the defaults and process the clip the picture quality will randomly drift between good and bad.

For more control over when the picture quality deteriorates, you should set the Breakup Variation to 0 and keyframe the Master Breakup, setting keys to 0 for good picture quality and 100 for the worst picture quality.

For a particular effect to kick in, you have to examine the threshold value. This is best described through an example. So switch the Preset to Good TV and set the Master Breakup to 50. Open the Lines parameter folder. The Line Threshold is 100 and there are no lines on the image. Decrease this value. As the threshold drops below 50 (the master breakup value at this frame) then lines will appear.

All the grouped parameters (Snow, Ghost, Vertical Roll, Lines, etc) have threshold values. Looking at it another way. Set a threshold value for a group and animate the Master Breakup between 0 and 100. As the master breakup exceeds one of the threshold values, that group effect will kick in.

#### Type

Effect.

## Controls

**About** Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Process** - sets which channels to process.

### Presets

- **Good TV** - this resets the parameters to give you a good TV picture. This is useful as a starting point to add Bad TV effects. For example, if you only want snow on your picture, its quicker to start with a good picture and add snow rather than one of the other presets and remove ghosts and lines etc.
- **Bad Colour TV** - colour with distortions.
- **Bad BW TV** - black and white with distortions.
- **Offset Guns** - CRT gun misalignment.
- **Fifties** - 1950's look.
- **Sixties** - 1960's look.
- **Seventies** - 1970's look.
- **Cable Out** - complete picture loss. Only static rendered.

**TV Type** - sets the base television type.

- **Colour** - colour pictures.
- **B W** - black and white pictures.
- **Tint** - colour tinted pictures.

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

**Master Breakup** - the overall degradation of the TV signal. You should use this single control to ramp in and out the various effects that lead to poor reception. This parameter is



modified by the Breakup Variation parameter. If you want to

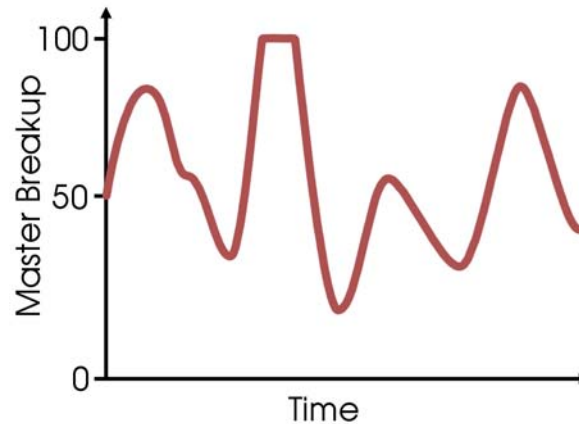


Figure 57. Graph showing Master Breakup over time. The Master Breakup is 50. The Breakup Variation is 150. The variation is added or subtracted from the Master Breakup to give the actual breakup. Note the Master Breakup is clipped at 100 in the graph.

keyframe the breakup you should set the Breakup Variation to zero, and set explicit Master Breakup key frames. If you just want the breakup to vary automatically, make the Breakup Variation greater than zero. If the Breakup Variation pushes the Master Breakup over 100 it will be clipped to 100.

**Breakup Variation** - the variation of the Master Breakup.

**Breakup Speed** - when Breakup Variation is set, the signal breakup oscillates as a fractal wave generated from the Seed value. The Breakup Speed controls the rate at which the wave oscillates. A value of 100 will give one cycle per second.

**Seed** - this number generates a number sequence that is used to randomly vary many of the parameters. The seed determines the fractal wave pattern used to vary the Master Breakup when the Breakup Variation is set. It seeds the fractal line used to give the distorted edges. The Ghost Distance for each ghost is random based on the seed value. The Shash pattern used when Shash is set to Random is determined from the Seed value.

**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.

**Channel Brightness** The luminance of the individual colour channels can be controlled using these parameters.

**Red Brightness** - the strength of the red gun.

**Green Brightness** - the strength of the green gun.

**Blue Brightness** - the strength of the blue gun.

**Saturation** - the colour saturation of the picture.

**Colour Degrade** These controls affect the colour saturation.

**Colour Degrade** - the amount of colour loss when Master Breakup is at a maximum.

**Colour Threshold** - the threshold at which colour begins to degrade. In other words, if the Master Breakup is greater than this value, colours will degrade.

**Ghosting** These controls create the multiple offset images seen with poor television reception.



Figure 58. Ghosting.

**Ghost Images** - the number of repeated images.

**Ghost Threshold** - the Master Breakup level above which ghosting starts to appear.

**Ghost Distance** - the maximum image displacement when Master Breakup is at a maximum. The actual distance for each ghost is random based on the seed value and will vary over time.

**Ghost Strength** - the brightness of the ghosted images.

**Ghost Speed** - the ghosting oscillates from poor to good as the signal is lost and found. This parameter controls the rate of this fluctuation. A value of 100 will give one cycle per

second.

**Edge Distortion** This controls the breakup of the picture at the edges. The shape of the jagged edges are created using the seed value.



Figure 59. Edge Distortion.

**Edge Distortion** - the amount of edge distortion when Master Breakup is at a maximum.

**Edge Jaggedness** - the sharpness of the edge distortion.

**Edge Speed** - the edge distortion oscillates from poor to good as the signal is lost and found. This parameter controls the rate of this fluctuation. A value of 100 will give one cycle per second.

**Edge Threshold** - the Master Breakup level above which the edge begins to degrade.

**Snow** These controls apply noise to the image common with poor analogue signals. You should be aware that the snow can be confused with Shash. If the parameters appear not to respond it may be that you're looking at Shash.



Figure 60. Snow.

**Snow Max** - the amount of snow added when Master Breakup is at a maximum. Snow refers to the noise that appears on the picture due to a poor signal.

**Snow Threshold** - the Master Breakup level above which snow begins to appear.

**Snow Softness** - the blur on the snow.

**Snow Sparseness** - the density of the snow. Increase this value to thin out the snow.

**Lines** This controls the creeping angled lines on VHS.



Figure 61. Lines.

**Line Angle** - the angle of the lines to the horizontal.

**Line Spacing** - the separation of the creeping lines.

**Line Speed** - the speed of creeping lines when Master Breakup is at a maximum.

**Line Threshold** - the Master Breakup level above which the creeping lines begin to appear.

**Vertical Roll** This controls the vertical displacement of the image when the signal is very poor. You can set the vertical offset and roll parameters to displace the picture vertically a fixed amount then as the master breakup is increased, and the signal deteriorates, the picture will begin to roll.

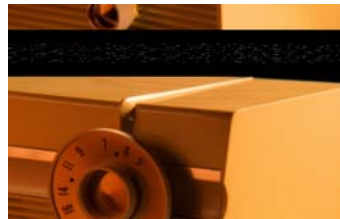


Figure 62. Vertical Roll.

**Offset Max** - the amount of vertical displacement when Master Breakup is at a maximum.

**Offset Threshold** - the Master Breakup level above which the picture begins to be offset.

**Roll Speed Max** - the maximum vertical roll speed when Master Breakup is at a maximum.

**Roll Threshold** - the Master Breakup level above which the picture begins to roll.

**Gun Alignment** The red, green and blue guns in a cathode ray tube fire streams of electrons at the phosphor coating on the television screen to produce a picture. The electron streams are bent using magnets through the shadow mask. If the shadow mask is misaligned a colour shift in the image will be produced.

**Note** *Misaligned guns tend to be caused by defects in the television set or interference by other electrical equipment rather than poor television signals, therefore these parameters are not affected by the Master Breakup and should be set by hand.*



Figure 63. Misaligned Guns.

**Red Gun Alignment** - the displacement of the red gun.

**Green Gun Alignment** - the displacement of the green gun.

**Blue Gun Alignment** - the displacement of the blue gun.

**Playback** Various controls to simulate distortions from playing video tape.



Figure 64. Playback.

**Play Mode** - how to simulate fast forward and rewind image distortions.

- **Video** - horizontal tape head image distortions are applied when altering the play speed. This value is best quickly ramped in rather than flicked on and off.

- **DVD** - no distortion to the image is applied during vary-speed.

**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 zero is rewind.

Fisheye Lens    Spherical distortion of the image.



Figure 65. Fisheye Lens.

**Lens Effect** - switch this on to warp the picture to simulate camera lens distortions from security cameras that have very wide angle lenses.

**Lens Radius** - the size of the warping.

**Lens Strength** - the amount of distortion through the lens.

Shash    This has controls for multiple types of electronic noise. Shash can look a little like snow, so if the parameters are not responding it might be because you're looking at snow.



Figure 66. Shash, Type 1.



Figure 67. Shash, Type 2.

**Shash Type** - sets the type of noise produced.

- **Type 1-5** - selects different types of random noise.
- **Random** - randomly selects one of the above formats for a duration set by the Shash Period.

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

**Shash Max** - the maximum amount of electronic noise when Master Breakup is at a maximum.

**Shash Threshold** - the Master Breakup level above which the picture begins to show this noise.

**EM Interference** - dark horizontal bands on the picture to simulate electromagnetic interference on the cables.



Figure 68. EM Interference.

**White Dot** - the scaling and distortion of the image to simulate power loss to the monitor. Figure 69 and Figure 70 show the

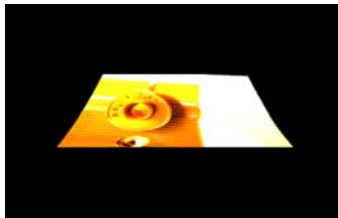


Figure 69. White Dot.

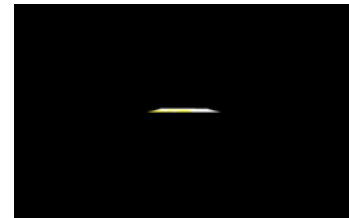


Figure 70. White Dot.

animation of the picture as the power is lost.

**Resolution** - the number of pixels in the image. 100 is full resolution. 50 halves the resolution by skipping every other pixel.



Figure 71. Low Resolution.

**Blur** - defocuses the image.

**Repeat Frames** - control frame repetition to give a jerky feel to the playback. Useful for simulating poor VHS.

**Scanline Width** - controls the emphasis of the horizontal scan lines.

You can get very convincing simulated picture lines using this parameter.



Figure 72. Scanlines.

**Filtering** - the quality of the anti-aliasing used when processing the effect. See “Filtering” on page 21.

**Blending** How to mix between the source image and the effect. See “Blending” on page 22.

**Source Crops** How to mix between the source image and the effect. See “Source Crops” on page 28.



## T\_BumpShade

### Description

T\_BumpShade gives an embossed look to images by indenting the source image using information in a bump matte layer and the alpha channel of the source layer and lighting the result. Cartoons can benefit from this technique as shown in Figure 76. The bump can be



Figure 73. Cartoon RGBA.



Figure 74. Outline Shading.

indented or out dented. There are three components to the lighting, ambient, diffuse and specular.



Figure 75. Bump Layer.



Figure 76. Outline and Bump Shading.

### Type

Effect. 3D.

### Controls

About Click the picture to display the on-line help, Tinderbox version number and lmhostid. See “About...” on page 6.

**Outline** These parameters are only needed if you are embossing an RGBA image. By default, they bump the alpha channel to make the cutout stand out.



Figure 77. Text.



Figure 78. T\_BumpShade.

**Outline** - the image and channels used to control the emboss.

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

**Outline Amount** - the apparent depth of the indentations.

**Outline Softness** - the blur on the bump matte before being used to emboss the source image. Increasing this parameter will smooth the edges of the bump.

**Outline Aspect** - the horizontal and vertical weighting of the bump softness.

**Outline Min** - black clipping level on the bump matte.

**Outline Max** - white clipping level on the bump matte.

**Bumping** These parameters bump the image layer.

**Bump** - the image and channels used to control the emboss.

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

**Bump Amount** - the apparent depth of the indentations.

**Bump Softness** - the blur on the bump matte before being used to emboss the source image. Increasing this parameter will smooth the edges of the bump.

**Bump Aspect** - the horizontal and vertical weighting of the bump softness.

**Bump Min** - black clipping level on the bump matte.

**Bump Max** - white clipping level on the bump matte.

- Light** General lighting controls. See “Lighting” on page 13.
- Ambient Lighting** Controls for the constant illumination of all surfaces.
- Diffuse Lighting** Controls for the light reflected from objects with dull matte surfaces. These objects scatter light equally in all directions so that they appear to have the same brightness from all viewing angles.
- Specular Lighting** Controls the light reflected from shiny objects that gives bright highlights.
- Blending** How to mix between the source image and the effect. See “Blending” on page 22.
- Source Crops** Cropping tools and edge methods. See “Source Crops” on page 28.
- Bump Layer Crops** Cropping tools and edge methods.
- Outline Layer Crops** Cropping tools and edge methods.

## Hints & Tips

The example below shows the difference between the outline and the bump mattes. The two layer composite is of a blue textured



Figure 79. Two layer Composite. Figure 80. Outline On, Bump Off.

circle with alpha composited over a 4 colour gradient.

T\_BumpShade is then applied to the blue circle with various combinations of Outline and Bump mattes.

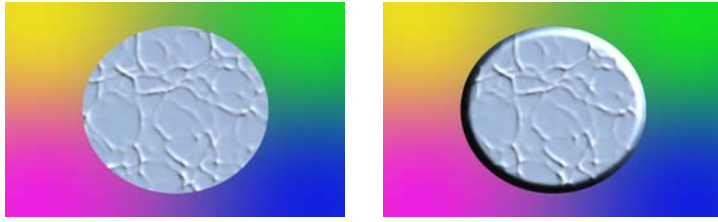


Figure 81. Outline Off, Bump On. Figure 82. Outline On, Bump On.

## T\_CircularBlur

### Description

T\_CircularBlur smears an image around a point. It can give the appearance of motion blur on a rotating object.



Figure 83. Lotus Elise.



Figure 84. Wheel Spin.

### Type

Blur.

### Controls

**About** Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Process** - sets which channels to process.

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

**Position** - the centre of the circular blur.

**Amount** - the strength of blur. Increase this value for a more blurry image. This parameter can be controlled using the radius on-screen tool.

**Aspect** - controls the horizontal and vertical weighting of the blur. Increase this value to blur horizontally. Decrease this value to blur vertically.

**Holdout Radius** - the region at the centre of the effect where no blurring will take place.

**Blur Profile** - defines the weighting of the pixels that are blended together in each blur arc.

- **Box** - weighs each pixel equally. Faster than Gaussian.

- **Gaussian** - weighs each pixel using a gaussian distribution. Pixels at the end of the arc have less effect than pixels in the middle of the arc. Slower than Box.

**Filtering** - the quality of the anti-aliasing used when processing the effect. See “Filtering” on page 21.

**Blending** How to mix between the source image and the effect. See “Blending” on page 22.

**Source Crops** Cropping tools and edge methods. See “Source Crops” on page 28.

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

## T\_Condensation

### Description

Renders thousands of water particles that clump together into water droplets. The droplets are used to distort the source image giving the appearance of water condensation on glass. There are lighting controls and the effect auto-animates the droplets dripping down the glass.



Figure 85. It's been raining!

### Type

Effect. 3D.

### Controls

**About** Click the picture to display the on-line help, Tinderbox version number and Imhostid. See "About..." on page 6.

**Process** - sets which channels to process.

**Particle Size** - the size of the particles that make up a single water droplet.

**Aspect** - the horizontal and vertical weighting of the effect. Alter this value to generate oval shaped particles.

**Total Drops** - the number of water droplets rendered.

**Num Particles** - the maximum number of particles that will clump together to form a single water droplet. The actual number will be

random. Increasing this value will cause the water droplets to have different sizes.

**Bump** - the amount of image distortion through the water droplets by bulging the water droplet surface.

**Drop Colour** - the colour of the water drops.

**Drop Transparency** - the transparency of the drops. Increase this to make the colour of the drops more see-through. The water drops will still distort the image even with the transparency set to 100.

**Seed** - this number generates a number sequence that is used to randomly vary the drops. Different seed values will produce completely different random drop patterns.

**Movement** Controls for the animation of the drops.

**Direction** - the direction of motion of the water droplets. The default, 180 degrees, is down the screen.

**Speed** - the maximum distance in pixels that a water droplet moves per frame. The actual speed of a single droplet will vary. Increase this value to speed up the movement.

**Wander** - how far the drops are allowed to be displaced from their path.

**Movers** - the percentage of drops that will animate.

**Light** See “Light” on page 14.

**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.

**Direction** - the direction of the light source.

**Elevation** - the height of the light source above the image



plane.

Specular Lighting See “Specular Lighting” on page 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.

**Show Drop Mask** - switch this on to show where the drops will be created.

**Filtering** - the quality of the anti-aliasing used when processing the effect. (See “Filtering” on page 21.)

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

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

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

Blending How to mix between the source image and the effect. See “Blending” on page 22.

Source Crops Cropping tools and edge methods. See “Source Crops” on page 28.

Matte Layer Crops Cropping tools and edge methods.

## T\_Deband

### Description

Digitally generated images, particularly 8 bpc images, that have gradual colour changes can appear to have colour bands where there should be a smooth colour gradient. T\_Deband will smooth out the appearance of these bands. Each pixel in the image is converted to a



Figure 86. Banded image.



Figure 87. Smooth after processing with T\_Deband.

floating point value and the surrounding area is analysed for changes in luminance. If a particular area has a small change in luminance, as set by the quantise level, this is marked for breaking up with the blur and noise. This breaking up reduces the appearance of banding. The image is then converted back (quantized) to 8bit (or 16bit).

### Type

Tool.

### Controls

**About** Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Process** - sets which channels to process.

**Quantise Level** - the level at which debanding will occur. The higher this value the more likely it is that debanding will occur at edges showing a change in luminance.

**Note** *For 8 bit images noise and quantise levels of about 2 should be used. For 16 bit images both should be raised to about 255.*

**Blur** - the amount of defocusing added to smooth the bands.

**Noise** - the amount of noise added at luminance boundaries to smooth the bands. The amount of noise added should be similar to the quantise level.

**Show Original** - use this to toggle between the source and output to check the results.

Blending    How to mix between the source image and the effect. See “Blending” on page 22.

Source crops    Cropping tools and edge methods. See “Source Crops” on page 28.

### **Hints & Tips**

You should keep the amount of blurring as low as possible.

## T\_Defield

### Description

T\_Defield generates a frame from a field. A number of sophisticated algorithms are supplied to interpolate the missing field.

For each interlaced frame in the input clip, a single output frame is generated using either the odd or even field. A motion matte can also be generated and then used to limit the defielding to those parts of the image that are moving. The motion matte can be thresholded, softened, eroded and grown.

### Background

It might help to give a little background information on fields before describing the parameters in T\_Defield.

A frame of video is made up of a number of scan lines. For NTSC, the US standard, there are 525 lines although only 486 lines contain image information. To display a single frame of video, every other scan line is first displayed, followed by the scan lines that have been missed out. Both passes create an image with the correct height but half the number of scan lines. These half-frames are known as fields and are displayed twice as quickly as the frame rate. So for NTSC video which has a frame rate of 30 frames per second, each field is displayed for 1/60th of a second. This rather complicated arrangement has the advantage of producing no perceptible flicker to the viewer.

Images that are composed of two fields are commonly known as interlaced frames. Interlaced frames have greater temporal resolution. Objects that quickly move horizontally across the screen will display less strobing than the same animation displayed as progressive scans.

When working on interlaced clips it is sometimes necessary to convert the images to frames before continuing. For example, if you were given an interlaced clip of a fast moving object, it would be impossible to accurately draw along its edges to isolate it as a matte. You would first have to de-interlace the fields producing a clip of twice the length of the original, then rotoscope this new clip and finally re-interlace.

Defielding is also necessary when taking elements shot on video and compositing them into a shot for a film.

### Type

Tool.

## Controls

About Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Field to Strip** - the field that is removed.

- **Even Field** - the even field is removed.
- **Odd Field** - the odd field is removed.

**Replace Field By** - the algorithm that is used to generate the missing field. Only the duplicate method generates a missing line by copying from the previous line. All the other methods interpolate the missing line.

- **Duplication** - the missing line is simply copied from the previous line. This is very quick but of lower quality than the interpolation methods. Figure 90.

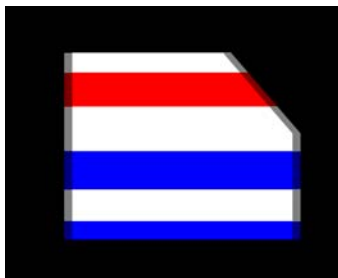


Figure 88. Source Image.



Figure 89. Close up of fields.



Figure 90. Duplication.



Figure 91. Slope Adaptive.



Figure 92. Simple Interpolation.



Figure 93. Wide Interpolation.

- **Simple Interpolation** - linear interpolation from the previous and next lines. Figure 92.
- **Wide Interpolation** - weighted interpolation using a wider range of lines than just the previous and next. This gives very subtle differences to the Simple Interpolation method. Figure 93.
- **Slope Adaptive Interpolation** - complex interpolation of the missing lines. This method gives a particularly good result on slopes. It produces the same result on vertical lines as Simple Interpolation, and a slightly better result on horizontal lines. Figure 91.

**Motion Adaption** - controls whether to use a motion matte to restrict the interpolation to parts of the image that are moving. Potentially this will give a better result as fewer pixels are thrown away.

- **Off** - switches off the motion matte so that the interpolation is on the whole frame and not restricted by the motion matte.
- **On** - uses the matte to restrict the interpolation. Areas that are white (moving) are interpolated, areas that are black (static) are not.
- **Show Motion** - displays the matte of moving parts of the image.

**Clip Min** - pixels at or below this luminance value are set to black.

**Clip Max** - pixels at or above this luminance value are set to white.

**Grow** - the amount the edges are grown or shrunk. Negative value erode the matte edges. Positive values grow the edges.

**Hard Motion Matte** - switch this on to force the motion matte to have no grey values before it is treated with the threshold, grow and softness parameters.

**Softness** - controls the amount of blurring applied to the matte.

Note *Clip Min, Clip Max Grow and Softness are only available when Motion is On.*

Source Crops Cropping tools and edge methods. See “Source Crops” on page 28.

## T\_DiffusionFilter

### Description

This is an optical glow effect that can be applied to highlights to give the impression of radiating heat or light. The low lights can also be treated with this diffusion filter and both can be colour tinted.



Figure 94. Source Image.



Figure 95. DiffusionFilter.

### Type

Effect.

### Controls

About Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Display** - the image that is rendered.

- **Result** - shows the diffusion filter on the source image.
- **Highlight Region** - shows the highlights as a matte. This region is then used to produce the highlight glow.
- **Lowlight Region** - shows the low lights as a matte. This region is then used to produce the low light glow.

**Order** - controls the layering of the glows over each other.

- **Highlights then Lowlights** - the low light glow is layered over the highlight glow.
- **Lowlights then Highlights** - the highlight glow is layered over the low light glow.

Highlights Controls all aspects of the highlight glow.

**Highlights** - controls how the highlights are calculated.

- **None** - switches off the highlight glow.
- **Colour** - the luminance of the pixel is used to create the matte used in the glow and the colour of the glow is taken from the colour parameter.

- **RGB** - the average of the red, green and blue pixel strengths are used to create the matte used in the glow and the colour of the glow is taken from the image and colour parameter.

Colour - the colour of the glow.

Softness - the amount of blur on the highlight glow.

Aspect - the horizontal and vertical weighting of the blur.

Strength - the brightness of the highlight glow.

Clip Min - pixels at or below this luminance value are set to black. Increasing this value restricts the pixels that are used to create the highlight glow.

Clip Max - pixels at or above this luminance value are set to white. Decreasing this value extends the luminance range of the matte used to create the highlight glow.

Note *Display the Highlight Region to see what's going on when changing the clipping values.*

Shrink/Grow - positive values grow the matte used to create the glow. This will make the glow more obvious, although it can be softened back. Negative values erode the matte used to create the glow.

Lowlights Controls all aspects of the low light glow.

**Lowlights** - controls how the low lights are calculated.

- **None** - switches off the low light glow.
- **Colour** - the luminance of the pixel is used to create the matte used in the glow.
- **RGB** - the average of the red, green and blue pixel strengths are used to create the matte used in the glow.

**Colour** - sets the colour of the glow.

Softness - the amount of blur on the low light glow.

Aspect - the horizontal and vertical weighting of the blur.

Strength - the darkness of the low light glow.

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



black. Increasing this value restricts the pixels that are used to create the low light glow.

Clip Max - pixels at or above this luminance value are set to white. Decreasing this value extends the luminance range of the matte used to create the low light glow.

Shrink/Grow - positive values grow the matte used to create the glow. This will make the glow more obvious, although it can be softened back. Negative values erode the matte used to create the glow.

Blending How to mix between the source image and the effect. See “Blending” on page 22.

Source Crops Cropping tools and edge methods. See “Source Crops” on page 28.

## Hints & Tips

On some images it can produce a kind of dreamy quality.



Figure 96. Source Image.



Figure 97. T\_DiffusionFilter.

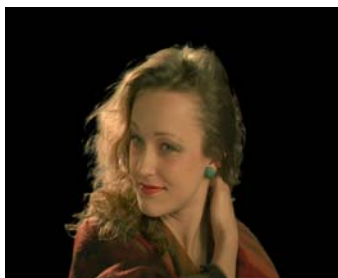


Figure 98. Source Image.

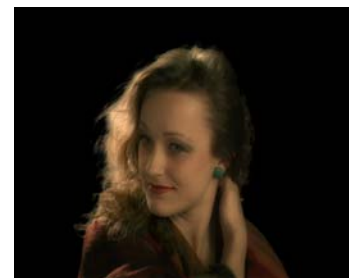


Figure 99. T\_DiffusionFilter.

## T\_EdgeDetect

### Description

This plug-in finds edges in images. Two algorithms are provided to detect the edges. The result can then be blended back into the original using the built-in blending methods. Chalk, etching and glow effects are possible using this technique. Process alpha to generate outlines for feathering and compositing later.



Figure 100. Source Image.



Figure 101. T\_EdgeDetect.

### Type

Effect and Tool.

### Controls

**About** Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Process** - sets which channels to process.

**Method** - two algorithms are provided.

- **Sobel** - Figure 102 on page 57.
- **Canny** - Figure 103 on page 57.

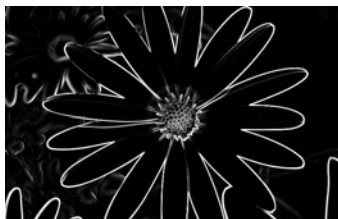


Figure 102. Sobel.



Figure 103. Canny.

**Softness** - controls the amount of blurring applied to the image.

**Gain** - controls the brightness of the lines. This parameter can be

controlled using the radius on-screen tool.

**Pre-blur** - softens the image before applying the Canny filter.

**Lower Threshold** - changes where the edges are found.

**Upper Threshold** - changes where the edges are found.

**Colour Mode** - the edge detection algorithm.

- **Single Colour** - takes the line colour from the Edge Colour parameter. Figure 104 on page 58.
- **RGB** - produces coloured lines. Figure 105 on page 58.



Figure 104. Single Colour.



Figure 105. RGB.

#### Colours

**Edge Colour** - the colour used when the Colour Mode is set to Single Colour.

**Edge Colour Alpha** - sets the transparency of the edge colour when processing the alpha channel.

**Background Colour** - if the picture (RGB) is processed into lines (edges) then the background colour will be the colour put into the gaps between the lines.

**Background Colour Alpha** - the transparency of the background colour when processing the alpha channel.

#### Blending

How to mix between the source image and the effect. See “Blending” on page 22.

#### Source Crops

Cropping tools and edge methods. See “Source Crops” on page 28.

### Hints & Tips

Try animating the Upper and Lower Thresholds of the Canny filter to write on the edges.

## T\_GradientBlur

### Description

T\_GradientBlur finds the gradients in the matte input (or source image if no matte is specified) and uses these to produce directional vectors that selectively blur the source image either along or perpendicular to the vectors. You can get some swirly painterly results as shown in Figure 106. Blurring does not take place in areas



Figure 106. T\_GradientBlur.

that have no gradient. In Figure 108 the matte has no gradient in the



Figure 107. Source Image.

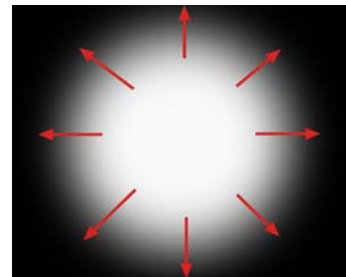


Figure 108. Matte.

centre where it is pure white and at the edges where it is pure black. The gradient direction vectors are shown by the red arrows. In



Figure 109. Blurring along the gradient.



Figure 110. Blurring across the gradient.

Figure 109 and Figure 110, the blurring only takes place in the grey areas where there is a gradient. In Figure 109 the direction set to zero and the blurring is radial. In Figure 110 the image has a direction set to ninety degrees and the blurring is across the gradient vector direction.

## Type

Blur and Effect. It has an optional matte input that is used to define the gradient vectors.

## Controls

**About** Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Process** - sets which channels to process.

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

**Gradient** - the image and channels used to control the gradient. This will define the gradient vectors that are used to blur the source image.

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

**Blur Mode** - the blur method used.

- **Uniform** - uses the Size parameter to set the amount of blurring.
- **Scaled By Gradient** - the amount of blurring set by the Size parameter is continuously scaled by the gradient.

**Size** - the amount of blurring along the gradient vector.

**Bias** - controls the weighting of the blur along the direction of blurring. A bias of zero will smear pixels equally forwards and backwards.

**Blur Direction** - the direction of blur measured against the gradient vectors. A value of 0 blurs along the vectors. A value of 90 blurs across the vectors.

**Pre-blur** - the amount of blurring applied to the gradient matte before the vectors are calculated.

**Blur Profile** - the weighting of the pixels that are blended together

in each blur line.

- **Box** - weighs each pixel equally. Faster than Gaussian.
- **Gaussian** - weighs each pixel using a gaussian distribution. Pixels at the end of the line have less effect than pixels in the middle of the line. Slower than Box.

**Filtering** - the quality of the anti-aliasing used when processing the effect. See “Filtering” on page 21.

**Blending** How to mix between the source image and the effect. See “Blending” on page 22.

**Source Crops** Cropping tools and edge methods. See “Source Crops” on page 28.

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

## Hints & Tips

T\_GradientBlur can produce interesting painterly effects with large Size and Pre-blur values.



Figure 111. Source Image.



Figure 112. Painterly effects with T\_GradientBlur.

## T\_Lightning

### Description

This plug-in generates both realistic lightning bolts and electric plasma discharge effects. The bolts are made up of a main line with



Figure 113. Lightning.



Figure 114. Plasma.

smaller forks that branch off it.

### Type

Generator. T\_Lightning has optional layer inputs to define the start and end positions of the lightning bolt. There is also an avoidance mask layer to restrict the path of the bolt.

### Controls

**About** Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Process** - sets which channels to process.

**Presets** - use these as a starting point.

- **Forked Lightning** - renders a single forked lightning bolt.
- **Lightning Strike 1**
- **Lightning Strike 2**
- **Plasma Ball** - creates auto-animating jagged plasma lines radially from a central spot.
- **Plasma Strings** - renders auto-animating multiple smooth lines between two points.
- **Sheet Lightning** - renders an area or lightning bolts.

**Number of Bolts** - sets the number of bolts drawn between the start

and end positions.



Figure 115. Number of Bolts = 1. Figure 116. Number of Bolts = 3.

**Start** - the position of the start of the lightning bolt. This parameter can be controlled using the position on-screen tool.

**Start Radius** - the size of the circle, centered on the Start position, in which the position of the start of the lightning bolt can be found. The actual position is random and based on the Seed value.

**End** - the position of the end of the lightning bolt. This parameter can be controlled using the position on-screen tool.

**End Radius** - the size of the circle, centered on the End position, in which the position of the end of the lightning bolt can be found. The actual position is random and based on the Seed value.

**Max Width** - the thickness of the lightning bolts.

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

**Fork Chaos** - the amount of fractal detail in the lightning forks. This equates to sub-frequencies.

**Fork Jaggedness** - the amount of sharp projecting notches along the lightning fork.

**Amplitude** - the tautness of the bolt. Increase this value to allow the plasma bolts to deviate from the straight line connecting the start and end positions.



Figure 117. Low Amplitude.

Figure 118. High Amplitude.



**Frequency** - the number of oscillations of the bolt. Increase this to get more bumps between the start and end points.

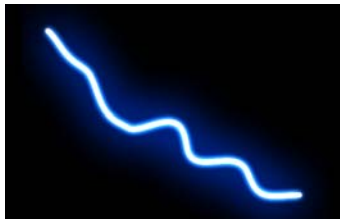


Figure 119. Low Frequency.

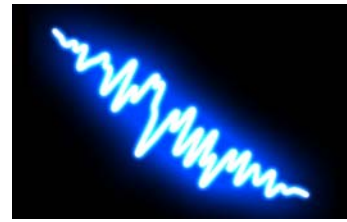


Figure 120. High Frequency.

**Detail** - the amount of detail in the bolts.



Figure 121. Detail = 1.



Figure 122. Detail = 8.

**Bias** - shifts the bulge from the start (-100) to the end (100) of the bolt.



Figure 123. Bias = -100.



Figure 124. Bias = 100.

**Strike** Controls to auto-animate a lightning bolt.

**Lightning Strike** - switch this on to grow the bolt, wobble it and then ungrow the bolt.

**Duration** - the number of frames of the animation.

**Grow** - how the bolt and forks animate.

- **By Order** - the main bolt is first animated and then the forks are added.
- **By Length** - the bolt and forks are animated according to the length of the bolt.

**Completeness** - the animation of the bolt. A value of 100 will

be complete. A value of 50 will be half finished. You can choose to animate the bolt with this parameter if Lightning Strike is switched off.

**Uniformity** - controls how multiple bolts animate. When set to 100 all the bolts grow at the same rate as Completeness increases. When set to 0, the first bolt fully grows on then the next bolt and so on. Values inbetween will stagger the bolt growth.

**Motion** Controls for the motion of the bolts.

**Speed** - how fast the plasma bolt animates.

**Range** - the amount the bolts are allowed to move away from the straight line connecting the start and end points during the animation.



Figure 125. Range = 1.



Figure 126. Range = 10.

**Twist** - the tension of the plasma bolts at the start and end points. With a value of zero the bolts will always approach the start and end points along the line that connects them. In other words they are tightly clamped. Increasing the Twist slackens off the tension allowing the bolts to flop around more.

**Taper** Controls for the gradual reduction in width of the bolts.

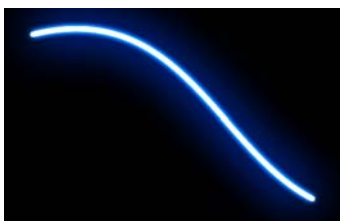


Figure 127. Taper Off.



Figure 128. Taper On.

**Taper** - the reduction in the width of the bolt towards the end position.

**Tapered Length** - the percentage of the bolt length that is

tapered. If zero, no tapering is performed. If 100 the bolt is tapered from start to end.

### Variation Along Length



Figure 129. Amount = 300.

**Amount** - the amount of width changes along the lightning bolt. This parameter is usually set to zero.

**Length** - the length of the width variations along the length of the bolt.

**Speed** - the rate of change of width variations.

**Forks** Controls to split bolts into smaller branches and twigs.

**Levels of Forking** - the number of forks on forks. This equates to adding twigs to branches.



Figure 130. Levels = 1.



Figure 131. Levels = 3.

**Number of Main Forks** - the number of “branches” off the main lightning bolt.

**Number of Smaller Forks** - the number of “twigs” off the branches.

**Min Fork Size** - the minimum length of the forks.

**Max Fork Size** - the maximum length of the forks.

**Fork In Single Direction** - switch this on to force all the

forks to branch off one side of the main bolt.



Figure 132. Both Sides.



Figure 133. One Side.

**Fork Direction** - the direction the forks branch.

**Direction Range** - the spread of directions possible. Low values will bunch the branches together. High values will allow them to go off in all directions.



Figure 134. Range = 0.



Figure 135. Range = 100.

**Min Fork Angle** - the minimum angle between the fork and the bolt.

**Max Fork Angle** - the maximum angle between the fork and the bolt.

**Fork After** - the point along the line between the start and end positions at which forking starts. If zero then forking could begin at the start position. If set to 50 then forking can only begin halfway along the line.

**Fork Before** - the point along the line between the start and end positions at which forking ends.



Figure 136. After = 75; Before = 80.

**Main Fork Fineness** - the reduction in length of the main

forks as they approach the end point.

**Smaller Fork Fineness** - the reduction in length of the small forks as they approach the end point.

**Fork End Wander Speed** - how fast the forks can wobble about.

**Colour** The colour controls for the lightning bolts.

**Intensity** - the strength of the light emitted from the bolt.

**Bolt Colour** - the colour of the bolt core.

**Bolt Colour Alpha** - sets the transparency of the bolt.

**Glow** There are two glows that surround the bolts to give a subtle inner and outer glow. The second glow is labelled Halo as this is the effect it gives on our presets.



Figure 137. Blue Glow.



Figure 138. Yellow Halo.

**Glow Radius** - the size of the first glow.

**Glow Intensity** - the strength of the first glow.

**Glow Colour** - the colour of the first glow.

**Glow Colour Alpha** - the transparency of the first glow.

**Halo Width** - the size of the second glow.

**Halo Intensity** - the strength of the second glow.

**Halo Colour** - the colour of the second glow.

**Halo Colour Alpha** - the transparency of the second glow.

**Avoid** The avoidance mask defines a region where the lightning bolts cannot enter. You can use this to fire lightning bolts around text as shown in Figure 140.

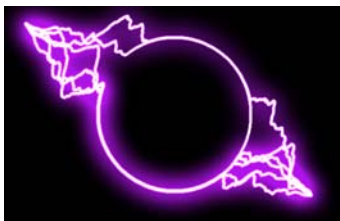


Figure 139. Circular Mask.



Figure 140. Text.

**Avoid** - the image and channels used to control the avoidance of the lightning. Any pixels that are non-black are avoided.

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

**Avoid Clip Min** - pixels at or below this luminance value are set to black

**Avoid Clip Max** - pixels at or above this luminance value are set to white.

**Start** This matte defines the possible starting points of the lightning bolt effectively overriding the Start parameter.

**Start** - the image and channels used to control the start position of the lightning.

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

**Start Seed** - this number generates a number sequence that is used to randomly vary the start position within the possible start positions defined using the matte.

**Start Clip Min** - pixels at or below this luminance value are set to black

**Start Clip Max** - pixels at or above this luminance value are set to white.

**Start Halo Width** - this option is used to change the width of the halo of the mask input when Start is set to one of the Halo options.

**End** This matte defines the possible ending points of the lightning bolt effectively overriding the End parameter.

**End** - the image and channels used to control the end position of the lightning.

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

**End Seed** - this number generates a number sequence that is used to randomly vary the end position within the possible end positions defined using the matte.

**End Clip Min** - pixels at or below this luminance value are set to black

**End Clip Max** - pixels at or above this luminance value are set to white.

**End Halo Width** - this option is used to change the width of the halo of the mask input when End Mask is set to one of the Halo options.

**Show Mask** - choose this option to view the selected Mask.

**Blending** How to mix between the source image and the effect. See “Blending” on page 22.

## Hints & Tips

See also Tinderbox 1 T\_Sky.

## T\_MatteTool

### Description

T\_MatteTool provides a suite of tools to manipulate mattes, in particular, the growing and eroding (Figure 143) of edges with *subpixel* precision. However, it excels at providing a comprehensive set of tools for manipulating mattes pulled from blue and green screen keyers. Tools include matte clean-up while preserving edge detail and halo tools (Figure 144) for softening edges in composites.



Figure 141. Cartoon.



Figure 142. Matte.



Figure 143. Shrink.



Figure 144. Halo.

### Type

Tool.

### Controls

- About Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.
- Channels The channels to process. You can choose to manipulate the luminance or any combination of the red, green, blue or alpha channels.

Process

- **RGBA**
- **Luminance**



**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 amount of eroding or growing of the matte edges. Negative values erode the matte. Positive values grow the matte.

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

**Mode** - how to manipulate the matte.

- **Shrink / Grow** - positive values grow the matte edges. Negative values erode the matte edges.
- **Halo In / Out** - creates a line on the inside (or Outside) edge of the matte. See Figure 145 and Figure 146.
- **Halo** - creates a line centered on the edge of the matte.

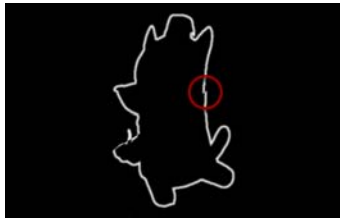


Figure 145. Split Screen showing Halo In and Halo Out.

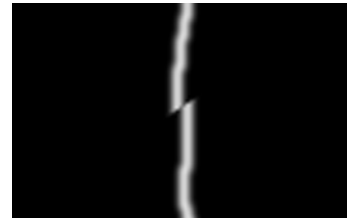


Figure 146. Close-up of Halo In and Halo Out.

**Shape** - sets the profile of the filter used to erode/grow the matte edges.

- **Circle** - corners are rounded off with this algorithm.
- **Square** - sharp corners are preserved with this algorithm.

**Softness** - the amount of blurring applied to the matte.

**Softness Aspect** - the horizontal and vertical weighting of the effect.

**Negate** - switch this on to invert the matte.

**Halos Cut Blurs** - this cuts into the inside or outside edges of softened In/Out Halos.

**Despeckle Black** - increase this to remove black pixels in white areas while preserving edges. This works by growing the surrounding white pixels into the black spots.

**Despeckle White** - increase this to remove white pixels in black areas while preserving edges. This works by growing the surrounding black pixels into the white spots.

**Clip Rollback** - controls the amount of erosion of the edges of the black threshold matte when Clip Min is used to remove dust in the background.

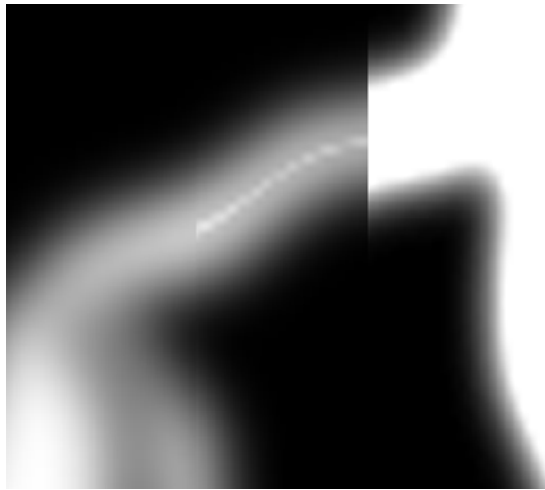


Figure 147. 3-way vertical split screen showing the original matte on the left, the modified Matte using Clip Max on the right and the Rolled Back Matte in the middle. Note that the Rolled Back Matte recovers the original edges while firming up the foreground matte. For additional clarity a horizontal split screen of the same images is shown below.

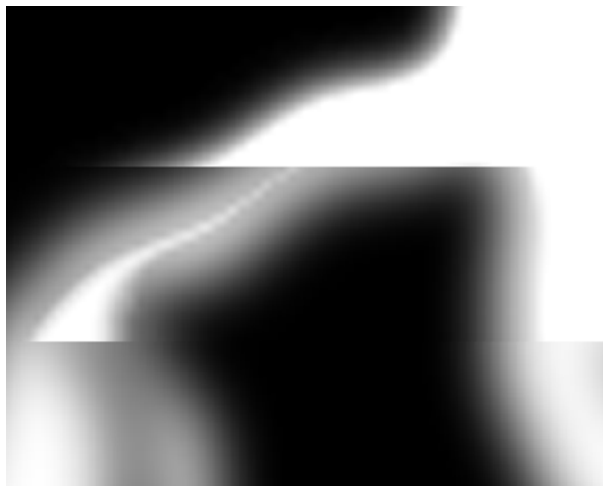


Figure 148. 3-way horizontal split screen showing top to bottom the Clip Max, Clip Rollback and Original Matte.

**Clip Min** - pixels at or below this luminance value are set to black. When compositing, this parameter can be used to improve the

background image if parts of the foreground are showing through.

**Clip Max** - pixels at or above this luminance value are set to white. When compositing, this parameter can be used to firm up the centre of the matte making it less transparent to the background. Increasing this value too much will affect the edges of your matte. Roll Back Max should be used to compensate.

**Blending** How to mix between the source image and the effect. See “Blending” on page 22.

**Source Crops** Cropping tools and edge methods. See “Source Crops” on page 28.

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

## Hints & Tips

Can be useful for tidying up mattes from keyers. Also if you have an image and associated matte which when composited into a scene has a rather harsh line around it, you can use T\_MatteTool to extract a soft halo which can then be used in T\_BlurMasked to soften the edge.

## T\_Mosaic

### Description

Mosaics are pictures or patterns produced by arranging together smaller pieces of stone, tile or glass. This plug-in simulates this technique. There are controls for the size of tiles, grouting and lighting.



Figure 149. Source Image.

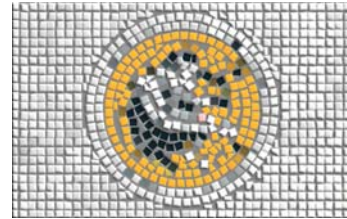


Figure 150. Mosaic.

### Type

Effect. 3D.

### Controls

**About** Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Process** - sets which channels to process.

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

**Output** - the image to display.

- **Mosaic** - renders the mosaic tiles.
- **Edge Map** - renders edges along which tiles are positioned.

**Mosaic** Controls the tiles.

**Tile Size** - the size of the tiles.



Figure 151. Small Tiles.

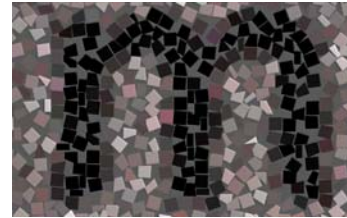


Figure 152. Big Tiles.

**Tile Separation** - the gaps between tiles.

**Grout Colour** - the colour of the filling between tiles.

**Rows Around Edges** - the approximate number of rows of tiles that follow the edge lines.



Figure 153. Rows = 0.



Figure 154. Rows = 10.

**Randomise Position** - allows more freedom in the positioning of the tiles.

**Randomise Shapes** - allows tiles of an irregular shape to be used.



Figure 155. Randomise Shapes = 0. Figure 156. Randomise Shapes = 5.

**Point Seed** - this number generates a number sequence that is used to randomly vary the tiles. Change this seed value to produce a different pattern of tiles.

**Edges** T\_Mosaic 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 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 an 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 source image before finding the edges. High values give more curved edges and fewer edges.

**Lower Threshold** - used to define the edges.

**Upper Threshold** - used to define the edges.

**Light and Shade** These controls affect the apparent thickness and depth profile of the tiles under illumination.

**Scale** - the tile depth.

**Softness** - the tile profile. Low values give a sharp profile and high values rounds the top edges off.



Figure 157. Softness = 0.



Figure 158. Softness = 5.

**Light** General lighting controls. See “Lighting” on page 13.

**Diffuse Lighting** Controls for the light reflected from objects with dull matte surfaces. These objects scatter light equally in all directions so that they appear to have the same brightness from all viewing angles.

**Specular Lighting** Controls the light reflected from shiny objects that gives bright

highlights.

**Blending** How to mix between the source image and the effect. See “Blending” on page 22.

**Source Crops** Cropping tools and edge methods. See “Source Crops” on page 28.

## Examples

Here’s Mosaic on a flower.



Figure 159. Source Image.



Figure 160. Mosaic.

Mosaic also works well on text.

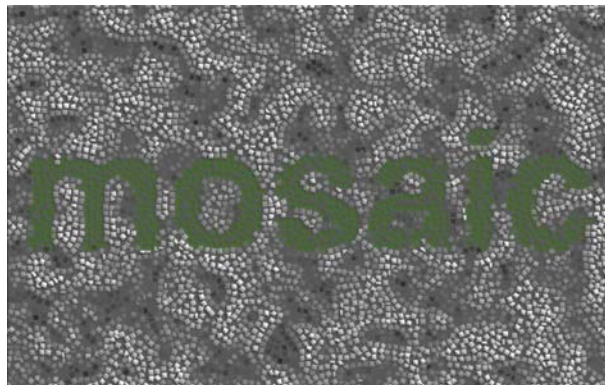


Figure 161. Mosaic.

## T\_OldFilm

### Description

T\_OldFilm converts contemporary video footage into images that look as though they were shot on film and left to degrade over time. Scratches, hair and dirt have been statistically modelled. There are controls to colour the image, add grain, remove fields and apply camera/sprocket shake.



Figure 162. Source Image.



Figure 163. T\_OldFilm.

### Type

Effect.

### Controls

**About** Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Process** - sets which channels to process.

**Presets** - several presets ship with T\_OldFilm including black &



Figure 164. Source Image.

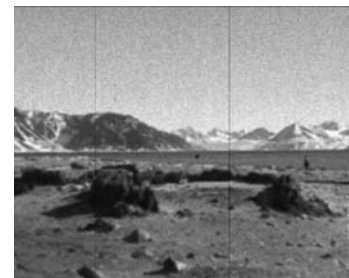


Figure 165. Black & White 3

white, sepia, forties and techno colour. A few are shown here with the source image for comparison.



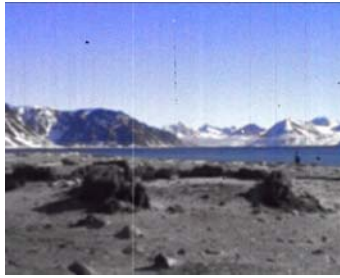


Figure 166. Forties.



Figure 167. Techno Colour.

**Film Type** - sets the base colour type before defects are added.

- **Colour** - colour information is retained in the image.
- **B & W** - the image is converted to black and white.
- **Tinted** - the image is washed with the tint colour.

**Tint Colour** - the colour used when tinting the image.

**Tint Amount** - the amount of the tint colour washed into the source image.

**Contrast** - the ratio of the brightest to darkest tones in the image. Increase this value for more contrast.

**Brightness** - the luminance of the image.

**Saturation** - the colour purity. Decrease this value to wash out the colours.

**Seed** - this number generates a number sequence that is used to randomly vary other parameters. For example, the number and positions of the scratches.

**Defield** These parameters convert fielded video images to frames. See “T\_Defield” on page 51.

**Defield Image** - switch this on to convert field images to frames.

**Replace Field By** - the algorithm that is used to generate the missing field. See the parameter description on page 52.

**Field To Strip** - the field that is removed.

- **Odd Field** - the odd field is thrown away.
- **Even Field** - the even field is thrown away.

**Scratches** These parameters add those long vertical scratches that occur on old film that has run through the projector too many times.



Figure 168. Source Image.



Figure 169. Print Scratches.

**Scratch Type** - vertical scratches can occur when the film (negative or print) passes through the cutter or projector.

- **None** - no scratches are drawn.
- **Print** - bright scratches due to wear on the print after it has been passed through the projector multiple times.
- **Negative** - dark scratches on the film negative. These are much less common than print scratches as the negative is handled infrequently.
- **Print and Negative** - both types but weighted towards bright scratches.

**Scratches** - the number of scratches.

**Scratch Opacity** - the maximum opacity of the scratches. Increase this value to make them less transparent.

**Scratch Width** - the maximum horizontal width of a scratch. The actual width will vary.

**Scratch Movement** - the maximum horizontal movement of a scratch as a proportion of the screen width.

**Scratch Speed** - the oscillations per second.

**Scratch Lifetime** - the maximum lifetime of a scratch. The actual lifetime will vary.

**Random Scratches** - the maximum number random scratches per second. Random scratches are both transient and shorter than normal scratches.

**Dirt** These controls add organic dirt.



Figure 170. Source Image.



Figure 171. Dirt.

**Dirt Type**

- **None** - no dirt is drawn.
- **Print** - bright dirt marks on the print.
- **Negative** - dark dirt marks on the film negative.
- **Print and Negative** - both types.

**Dirt** - the maximum amount of dirt added.

**Dirt Size** - the maximum size of the dirt. The actual size will vary.

**Hair** These controls add the small number of hairs that are stuck to the negative or print as a result of handling.



Figure 172. Source Image.



Figure 173. Hair.

**Hair Type**

- **None** - no hairs are drawn.
- **Print** - bright hairs on the print.
- **Negative** - dark hairs on the film negative.
- **Print and Negative** - both types.

**Hair** - the average number of hairs per second.

**Hair Size** - the maximum length of the hairs.

**Stains** These control the splotches of colour added to the image. Stains simulate the mildew and colour damage from storing film poorly in damp conditions.



Figure 174. Source Image.

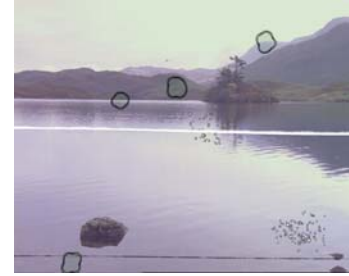


Figure 175. Stains.

**Stains** - the number of stains.

**Stain Size** - the size of the stains.

**Stain Opacity** - the maximum opacity of the stains. The actual opacity will vary.

**Large Defects** - the number of horizontal lines and pitting that represent large film defects on badly stored film.

**Large Defect Scale** - the size of the defects.

**Vignette** These parameters control the colour fading at the edges of the film.



Figure 176. Source Image.



Figure 177. Sepia & vignette.

**Vignette** - switch this on to apply the fading at the screen edges.

**Vignette Radius** - the size of the circular vignette.

**Vignette Fall-off Width** - the softness of the circular vignette.

**Vignette Centre** - the position of the middle of the circular vignette.

**Flicker** Old film that has undergone uneven development in the film lab will exhibit brightness variations. These are simulated with the flicker parameters.

**Flicker** - switch this on to add luminance flicker to the clip.

**Flicker Amount** - the amount of brightness variations.

**Flicker Speed** - how fast the brightness varies.

**Jerkiness** - the temporal jerkiness of the clip. Old films tend to have a very staccato movement.

- **None** - no frame duplication.
- **Double Frames** - if we represent an input clip as frames 1,2,3,4,5,6,7,8 then the output clip will be 1,1,3,3,5,5,7,7.
- **Triple Frames** - if we represent an input clip as frames 1,2,3,4,5,6,7,8 then the output clip will be 1,1,1,4,4,4,7,7

**Streakiness** - the amount of vertical streaks on the image.

**Focus** These controls simulate the random defocusing of the image that occurs when the film is loaded badly in the camera or projector.

**Defocus** - the gaussian blur applied to the image. The actual blur will vary if the Defocus Variation parameter is greater than zero.

**Defocus Variation** - the percentage of variation of the blur. A value of 100 means that the blur could vary between zero and double the defocus amount.

**Defocus Speed** - the blur will increase and decrease in cyclic waves over time. The speed controls the number of oscillations per second of this defocus. The actual oscillations are random (fractal).

**Diffusion** This is an optical glow effect that can be applied to highlights to give the impression of radiating heat or light. See “T\_DiffusionFilter” on page 54.

**Highlight Diffusion** - switch this on to apply the effect.

**Highlight Min** - pixels at or below this luma value will not be diffused.

**Highlight Max** - pixels at or above this value will be diffused

to white.

**Highlight Amount** - the strength of the diffusion applied.

**Highlight Softness** - the softness of the diffusion filter.

**Camera Shake** The shake parameters simulate the frame vibrations and horizontal jumping from missing sprockets as the film is drawn through the projector. For more comprehensive camera shake parameters see *Tinderbox 2 Wobble*.

**Camera Shake** - switch this on to apply simulated camera shake to the image. The shake algorithm is XY Translational.

**Shake Speed** - how fast the camera shakes.

**Shake X** - the maximum horizontal movement of the image. The actual amount will vary.

**Shake Y** - the maximum vertical movement of the image. The actual amount will vary.

**Grain** The particles of silver halide in film are known as grain. These particles are sensitive to light and are visible when the film is projected. Different film stocks have different grain characteristics. Film stocks that rely on the camera lens focussing the image differently for each layer of coloured emulsion, due to the finite depth of the layered emulsions, will exhibit a slight defocusing on the red, green and blue grain. This is simulated with the softness parameters. For more comprehensive grain see *Tinderbox 2 Grain*.

**Grain** - switch this on to apply grain to the image.

**Grain Max** - the overall size of the grain particles.

**Grain Softness** - the overall defocusing of the grain.

**Red Grain** - the size of the red grain particles.

**Green Grain** - the size of the green grain particles.

**Blue Grain** - the size of the blue grain particles

**Red Grain Softness** - the defocusing of the red grain particles exhibited on some colour film stock.

**Green Grain Softness** - the defocusing of the green grain

particles exhibited on some colour film stock.

**Blue Grain Softness** - the defocusing of the blue grain particles exhibited on some colour film stock.

**Colour Correction** These parameters adjust the image colour.

**Colour Correct** - switch this on to activate colour correction.

**Red Contrast** - the ratio of the brightest to darkest red tones in the image.

**Red Brightness** - the luminance of the red channel in the image.

**Red Saturation** - the purity of the red channel in the image.

**Green Contrast** - the ratio of the brightest to darkest green tones in the image.

**Green Brightness** - the luminance of the green channel in the image.

**Green Saturation** - the purity of the green channel in the image.

**Blue Contrast** - the ratio of the brightest to darkest blue tones in the image.

**Blue Brightness** - the luminance of the blue channel in the image.

**Blue Saturation** - the purity of the blue channel in the image.

**Colour Ageing** - the degradation of colour information in aged film.

**CMY Process** - a complex multi-faceted colouring algorithm. Best used with a bit of trial and error.

**Film Burn** If the film sticks in the gate when projected, the heat from the light source may ignite and burn the film. These parameters control this

feature which can burn through revealing the underlying layers of the composite.



Figure 178. Source Image.



Figure 179. Film Burn.

**Burn Through** - switch this on to simulate the film sticking in the gate and burning.

**Burn Frame** - the first frame that will burn.

**Burn Length** - the number of frames it takes to burn the film.

**Hold Frames** - the number of frames that are repeated, when the film is stuck in the gate, before the burn starts.

**Burn Colour** - the colour under the film that is revealed after burning.

**Burn Colour Alpha** - this is the transparency of the colour that is shown behind the film that has been burned. This enables you to burn through to an underlying layer. Make sure you have Process set to RGBA.

Blending      How to mix between the source image and the effect. See “Blending” on page 22.

Source Crops      Cropping tools and edge methods. See “Source Crops” on page 28.

**Hints & Tips**      See also “T\_BadTV” on page 30.



## T\_Particles

### Description

T\_Particles is an particle engine capable of handling floating point colour and inheriting camera information from the After Effects camera. Each particle is composed of a spark and a glow which can be rendered separately. Each particle can also generate its own particles giving a fizzing effect. All particles are subject to external environmental forces like gravity, air resistance and wind, as well as a turbulent displacement field.

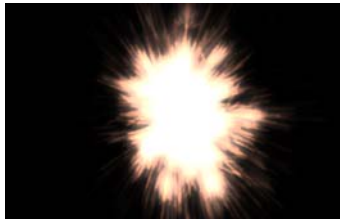


Figure 180. Explosion.

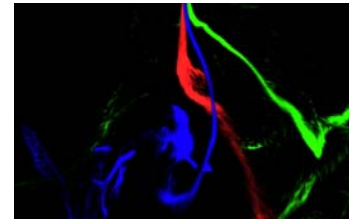


Figure 181. Emulsion.

### Type

Generator. 3D.

### Quick Start

T\_Particles has a number of presets which provide you with different examples. This is a good place to start. It's worth breaking these down against the controls employed to get a feel for what is going on.

One common problem is that, by default, the engine starts generating particles at frame 0, and in a new comp you default to being at time 0. Thus applying the effect will result in a blank output. Try cycling to a later point in the simulation to see the particles part way through their lifespan.

As with all particle effects it's worth doing a bit of setup work first. You should figure out if you want to move the camera during the generation time. If so, add an After Effects camera into the composition. This means you'll be able to use standard tools such as orbit camera for animation/positioning purposes. If you prefer, you can use the built-in camera. For interactive speed when animating the camera, switch off Show Particles and Show Speed and switch on Show Guides. When you're ready to view the particles, toggle these controls and edit the parameters in the Generator, Child Particles and Rendering folders. Add some environmental factors and preview your masterpiece!

## Controls

**About** Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Presets** A number of presets are provided as a starting point.

- Explosion -
- Sodium - creates particles between frames 0-100.

**Process** - sets which channels to process.

**Particle Size** - the size of the created particles at birth.

**Lifetime (Secs)** - how long a particle will live after birth measured in seconds.

**Lifetime Variance (%)** - randomly varies the lifespan of each particle. A value of 10% means that each particle will live for Lifetime +/- 10%.

**Particles/Sec** - the rate of particle emission.

**Particles/Sec Variance** - randomly varies the emission of the particles.

**Start Creating (Frame)** - the frame at which particles are first created.

**Stop Creating (Frame)** - the frame at which particles stop being created. Although no new particles will be created after this frame, existing particles may still be visible long after this point.

**Show Particles** - switch this on to render the particles.

**Show Glow** - switch this on to render the glow around particles.

**Particle Colour** - the colour of the particles.

**Particle Brightness** - the luminance of the particles. Increase this to make them brighter.

**Particle Fade After (%)** - when to fade out the particles as a percentage of its lifespan. If set to 50% then the particles will start to fade half way through their life.

**Camera** The camera controls. See “Camera” on page 20.

**Generator** The controls that determine how the particles are emitted.

**Position** - where the particles are created as X, Y, Z variables.

**Rotation** - the rotation around the y axis.

**Elevation** - the rotation around the z axis.

**Cone Angle** - the range of possible angles over which the particles can be emitted. Low values will give a narrow, focussed beam, higher values will give more of a spray.

**Emitter Size** - the size of the rectangular area over which particles are emitted.

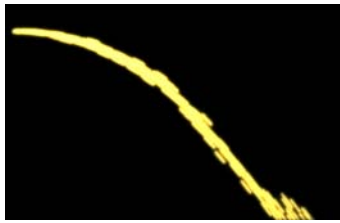


Figure 182. Narrow Beam and Emitter Size.



Figure 183. Wide Beam and Emitter Size.

**Emitter Aspect** - changes the proportion of the length to the width of the emitter rectangle.

**Speed** - the speed of the particles at birth.

**Speed Variance** - governs the distribution/spread of the birth speeds.

**Add Source's Velocity** - switch this on to add the speed of the particles to the speed of the emitter.

**Environment** The parameters that apply forces to the particles.

**Gravity** - simulates the force applied to the particles as a result of their proximity to a large body. This gives a downward acceleration with negative values.

**Air Resistance** - the force encountered by particles in motion, in a direction opposite to their motion.

**Wind Speed** - the directional force applied to particles. Use

the Wind X, Y, Z parameters to set the amount and direction.

**Turbulence** - allows the particles to be influenced by a spatially variable displacement field (essentially a fractal pattern) that enables the particles to swirl around.

**Strength** - the maximum force introduced by the displacement field.

**Rate of Change** - the speed at which the displacement field evolves.

**Complexity** - the number of layers of fractal noise used to generate the displacement field. Higher numbers tend to result in a higher spatial frequency of displacement. Essentially, particles close together are more likely to be differently affected by the field.

**Floor** - defines a plane that forms a barrier to the particles, so they bounce off it.

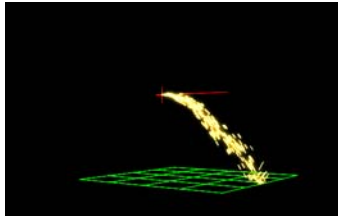


Figure 184. Bouncing.

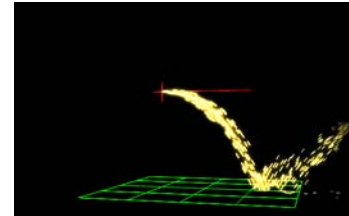


Figure 185. Bouncing.

**Enable Floor Bouncing** - switch this on to activate the floor.

**Floor Level** - the height of the floor. Switch on Show Guides to see it rendered in green.

**Bounciness** - simulates the properties of the floor that govern how much energy is absorbed by particles striking it. Plainly speaking this is the bounciness of the floor. Small values mean the particles have a low bounce (like on a soft carpet). Higher values will result in more bouncy particles (like on a hard wooden floor). However, its worth remembering that the height they bounce to is also governed by the speed at which they hit the floor.

Child Particles Each particle can emit other particles.

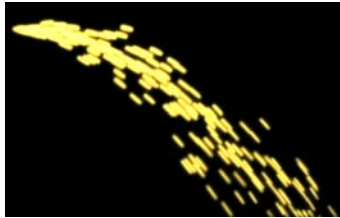


Figure 186. Fizzles Off.



Figure 187. Fizzles On.

**Child Particles** - switch this on to create fizzles.

**Children/Sec** - the emission rate of child particles.

**Child Lifetime** - the lifespan of emitted child particles.

**Child Lifetime Variance (%)** - the spread of the generated child particles.

**Child Speed** - the speed of the child particles.

**Child Size (%)** - the size of the child particles as a percentage of the parent particle size.

Rendering Governs the appearance of the particles generated.

**Glow Core Colour** - the inner colour of the particle glow.

**Glow Outer Colour** - the output colour of the particle glow.

**Glow Size** - the glow radius.

**Glow Brightness** - the luminance of the glow.

**Glow Balance** - the ratio of core to outer colour. High value bias towards the outer colour.

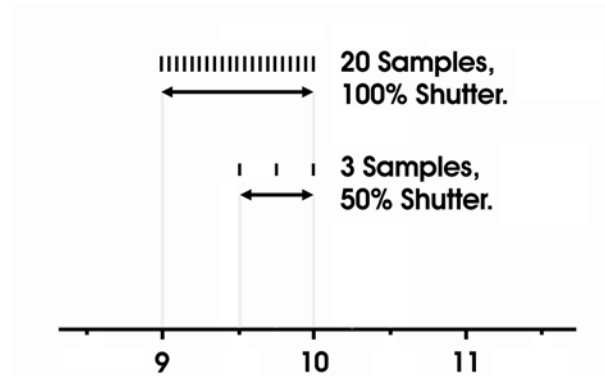
**Exposure - motion blur.**

Figure 188. Diagram showing Shutter and Samples. Frame numbers are running on the horizontal axis.

**Samples** - the number of frames that are computed and blended together to simulate motion blur. Increase this for a higher quality results but it will take much longer to render. This parameter is only available if you have set Filtering to High.

**Shutter** - sets how long the camera shutter is open. Increase this value for more motion blur. A value of zero will produce no motion blur. This parameter is only available if you have set Filtering to High.

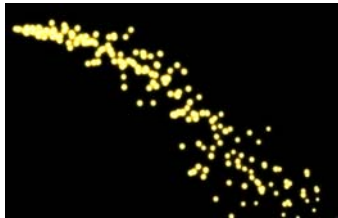


Figure 189. Shutter = 1.

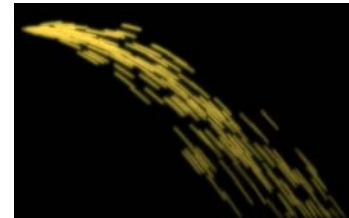


Figure 190. Shutter = 200.

**Average Samples** - this is normally switched on and will ensure that each subsampled image is divided by the number of samples before blending together. This average gives the correct motion blur. If you switch it off the subsampled images are just added together giving a brighter result.

**Guides** Governs the drawing of the floor and particle direction vector.

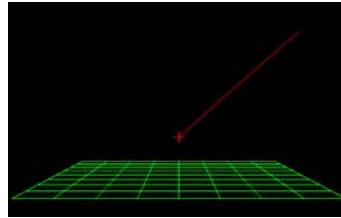


Figure 191. Grid and Particles.

**Show Guides** - switch this on to show the floor and particle vector. The floor is shown as a green plane and particles as a red vector. The length of the vector is controlled by the Speed of the particles.

**Floor Grid Size** - the grid size of the floor.

**Floor Grid Divisions** - the number of lines making up each side of the grid.

**Filtering** - the quality of the anti-aliasing used when processing the effect. See “Filtering” on page 21.

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

**Blending** How to mix between the source image and the effect. See “Blending” on page 22.

## Hints & Tips

Don't forget to switch off Show Guides before rendering your final version.

## T\_Plasma

### Description

T\_Plasma generates animating organic fractal patterns.

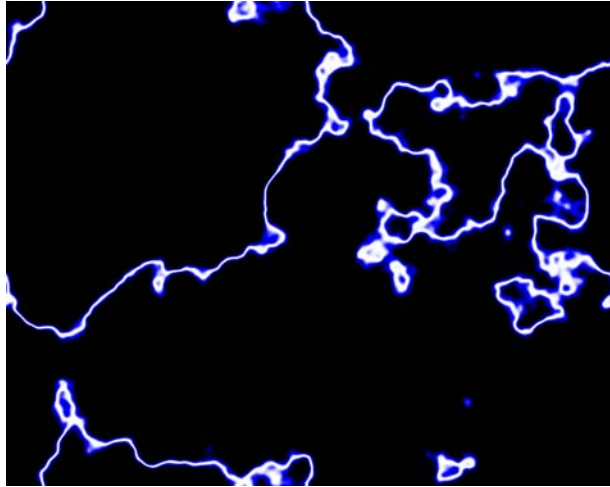


Figure 192. T\_Plasma.

### Type

Generator.

### Controls

**About** Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Process** - sets which channels to process. Choose RGBA to composite through to the underlying layers.

**Size** - the overall size of the plasma.

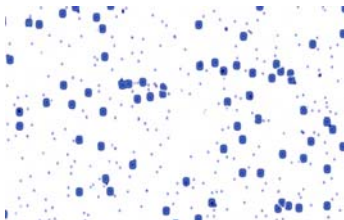


Figure 193. Size = 5.

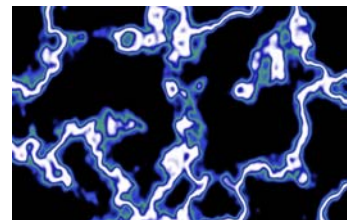


Figure 194. Size = 50.

**Sharpness** - the positions of the colours in the plasma shapes. This gives the effect of sharpening the fractal lines by bunching the



gradient colours together.

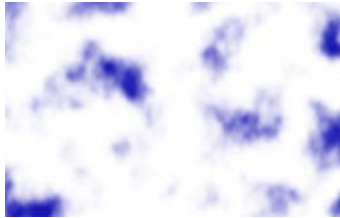


Figure 195. Sharpness = 0.1.

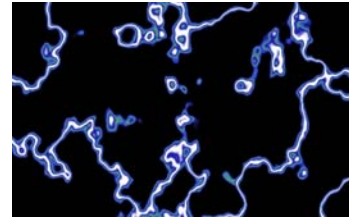


Figure 196. Sharpness = 20.

Fractals - the plasma fractal detail.

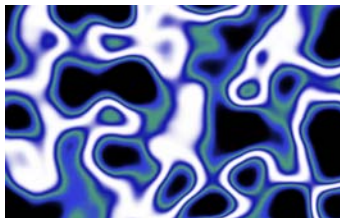


Figure 197. Fractals = 2.

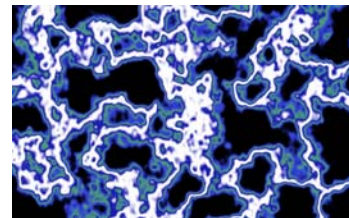


Figure 198. Fractals = 200.

**Impulses** - the number of plasma shapes.

**Seed** - controls the random position of each of the plasma shapes.

**Speed** - controls how quickly the plasma moves.

**Accelerate High Frequencies** - switch this on to make the plasma boil more by having the smaller details move faster.

Colour Gradient Controls for the colours of the gradient.

Blending How to mix between the source image and the effect. See “Blending” on page 22.

Source Crops Cropping tools and edge methods. See “Source Crops” on page 28.

## T\_Silk

### Description

T\_Silk is digital wrinkle cream. It is used to reduce wrinkles,



Figure 199. Rough.

freckles and minor blemishes in actors' faces. The clever bit is that it



Figure 200. Smooth.

doesn't require mattes to retain detail. Figure 200 on page 97 shows the results of smoothing the source image in Figure 199 on page 97. T\_Silk is a blur with a variable kernel size that ramps off as it approaches an edge. T\_Silk is effectively a smart blur.

### Type

Blur.

## Controls

**About** Click the picture to display the on-line help, Tinderbox version number and lmhostid. See “About...” on page 6.

**Process** - sets which channels to process.

### Output

- **Result** - the silked image.
- **Edge Map** - the edges we’re avoiding.
- **Detail** - the source image we’re compositing back over.

**Smoothness** - the amount of blurring applied if not near an edge.

**Iterations** - repeats the silk process up to a maximum of three times. The maximum value will give slightly higher quality results, but take longer to render.

**Edges** These parameters control the edges that are avoided by the blur.

**Alternate Edges** - select this to use another layer as the edge matte. If set to None the edges are extracted from the source image using the parameters below.

**Edge Threshold** - clips some of the line detail. Increase this



Figure 201. Strength = 10.



Figure 202. Strength = 40.

value for fewer lines.

**Edge Pre-blur** - blurs the image before calculating the edges.



Figure 203. Softness = 5.



Figure 204. Softness = 50.

**Edge Grow** - expands the edge matte.

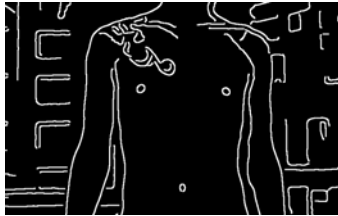


Figure 205. Grow = 1.



Figure 206. Grow = 10.

**Detail** These parameters control the blending back of the source image over the silked image.

**Alternate Detail** - select another layer here to composite over the silked image. If set to None the detail is extracted from the source image using the parameters below.

**Preserve Detail** - defines the areas that will be kept and composited back over the silked image. Increase this parameter to expand the detail areas.



Figure 207. Detail = 1.

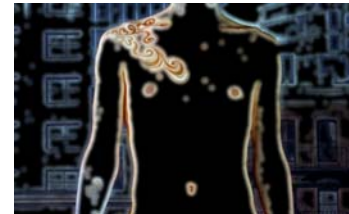


Figure 208. Detail = 50.

**Detail Softness** - softens the matte used to composite the detail. This helps to blend it into the silked areas.

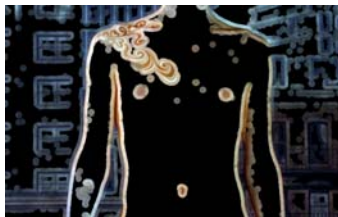


Figure 209. Softness = 0.

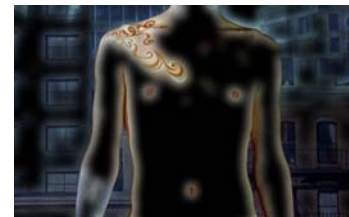


Figure 210. Softness = 30.

**Detail Grow** - expands the edges of the region, defined by the



Figure 211. Grow = 5.



Figure 212. Grow = 20.

Preserve Detail, that will be composited back. It does not add new areas of detail, to do that you need to increase the Preserve Detail.

Blending    How to mix between the source image and the effect. See “Blending” on page 22.

Source Crops    Cropping tools and edge methods. See “Source Crops” on page 28.

## Hints & Tips

If there are large parts of the image that you don't want affected regardless of edge information, mask out the area you want and composite it back over the image.

## T\_Starfield

### Description

T\_Starfield renders an infinite three dimensional field of stars. You can move around the star field in any direction looking at a particular point or in a particular direction. The auto modes will randomly tumble you through space.

There are two types of star. Those in the foreground that you can fly through in 3D space and those in the background that cannot be reached. These infinite band of stars simulates galaxies.



Figure 213. T\_Starfield.

### Type

Generator. 3D.

### Controls

**About** Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Process** - sets which channels to process.

**Star Shape** - multi-point stars and circles are provided.

**Auto Animation** - controls whether to auto-animate the movement of the camera.

- **Off** - the camera does not move by default. Key frames must be set.
- **Position** - the position of the camera is animated without key frames being explicitly set.

- **Rotation** - the rotation of the camera is animated without key frames being explicitly set.
- **Pos. & Rot.** - both the position and the rotation of the camera is animated automatically.

**Position Speed** - the rate of movement of the camera towards the stars.

**Rotation Speed** - the rate of rotation of the camera.

Stars These parameters control the number, size, brightness and colour of the stars.

**Density** - the number of stars drawn. Increase this for more stars.

**Size** - the size of the largest star. Large stars will have a large glow. Actual star sizes will vary.

**Brightness** - the overall luminance of the stars.

**Saturation** - the colour saturation of the stars. A value of 0 will render black and white stars.

Galaxy These parameters control the band of stars formed into galaxies in the far reaches of outer space.

**Galaxy Number (000s)** - the number of stars drawn in the galaxy. This figure is calibrated in thousands.

**Galaxy Brightness** - the luminance of the galaxy stars.

**Galaxy Star Size** - the size of the stars in the galaxy.

**Galactic Squash** - the squash of the galactic band of stars. High values are good.

Motion Blur When animating the camera the results are improved with motion blur on the stars.

**Samples** - the number of times the stars are rendered and blended together. Increase this parameter for higher quality rendering of the blur.

**Shutter** - how long the camera shutter is open when exposing

the scene. Increase this value for more motion blur.



Figure 214. Shutter = 0.



Figure 215. Shutter = 100.

**Camera** Controls for the built-in camera. See “Camera” on page 20.

**Seed** - this number generates a number sequence that is used to randomly vary the pattern of stars rendered.

**Blending** How to mix between the source image and the effect. See “Blending” on page 22.

### Hints & Tips

Try adding a coloured glow to the highlights using `T_DiffusionFilter`, and if want a slightly stylized look you could add sparkles to the stars using `T_Starburst` from `Tinderbox 1`.

See also `Tinderbox 2 T_NightSky` for the proper constellations.



## T\_Turner

### Description

T\_Turner generates noise artifacts in your images, giving the look of a faded, mottled painting.



Figure 216. Source Image.



Figure 217. T\_Turner.

### Type

Effect.

### Controls

**About** Click the picture to display the on-line help, Tinderbox version number and Imhostid. See “About...” on page 6.

**Process** - sets which channels to process.

**Cleanness** - high values give a rich colour to images and boost the contrast - almost a technicolour look. Values below 100 produce a more mottled painterly effect.

**Colour Contrast** - values above 100 amplify the colour contrast in the image.

**Lowlights** - values above or below 100 raise or lower the intensity of the darker parts of the image.

**Highlights** - values above or below 100 raise or lower the intensity of the brighter parts of the image.

**Blending** How to mix between the source image and the effect. See “Blending” on page 22.

Source Crops    Cropping tools and edge methods. See “Source Crops” on page 28.

**Hints & Tips**

See also T\_Paint in Tinderbox 2 and “T\_GradientBlur” on page 59.  
Try using T\_Etch with Blending set to Colour and then apply  
T\_Turner for a coloured chalk look.

## **Appendix A**

### **GENARTS TINDER PLUG-INS**

#### **END USER SOFTWARE LICENSE AGREEMENT**

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