Genesis*vfx* User's Manual

This document is designed to help you use the Genesis *vfx* version 1.01 demo found on this CD-ROM. You will find complete explanations of every function that Genesis offers as well as numerous tutorials to get you started.

Please read the installation instructions on page 4 of this document. Take special note of the fact that this manual provides instruction for using both the Windows NT version of Genesis for Kinetix 3D Studio Max. This demo software is designed for use with Max R1 and R2.

We encourage you to visit our web site (www.3dgraphics.com) for the latest Genesis information, and if you like the effects you can create with Genesis, you can order the program directly from our web site via a secure financial transaction.

You can also contact us via the following:

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Chapter 1

Introduction to Genesis

Thank you for using this demo version of Genesis, a revolutionary new special effects plug-in for animation and graphic arts. With Genesis you will be able to harness the basic properties of physics to add spectacular special effects to your images.

By following the simple steps in this manual, you will soon be able to use Genesis to create lens flares, sparkles, glows, heat distortions, 3D particle clouds, gas clouds, explosions and even flowers with complete control over every aspect of the effect.

Getting Started

Genesis currently is available as separate plug-ins for Kinetix 3DStudio Max, NewTek LightWave 3D and Adobe Photoshop users. This manual covers the use of the Max plug-in which is identical to the PhotoShop version with the exception of the Rendering Parameters submenu. The unique characteristics of the 3DStudio Max versions of Genesis are covered in Chapter 3.

Users of 3DStudio Max will achieve the best results with Genesis if they have at a minimum a 120MHz Intel Pentium processor, 64MB of RAM, 10MB of free disk space, a 16-bit graphics display running at above 800 x 600 and Kinetix 3DStudio Max version 1.0 or higher running under Microsoft Windows NT version 3.51, 4.0 or higher.

Installing Genesis for 3DStudio Max

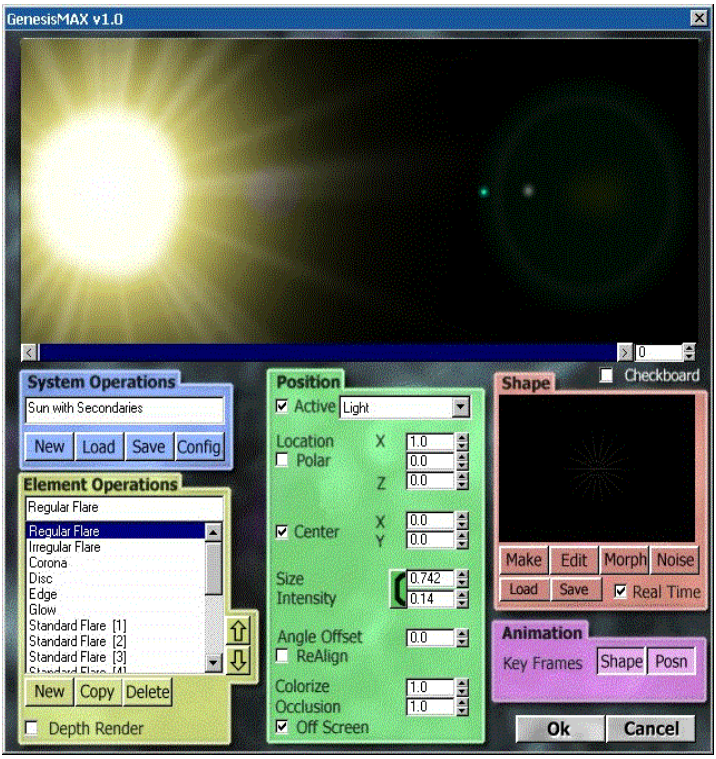
To install the demo version of the Genesis plug-in for 3DStudio Max, follow the step-by-step instructions in the ReadMe.txt file that accompanies this manual.

Open Genesis From 3DStudio Max

To launch Genesis from within Kinetix' 3DStudio Max, call up Video Post and add an image filter event. Select Genesis MAX as your event and click on the set-up button.

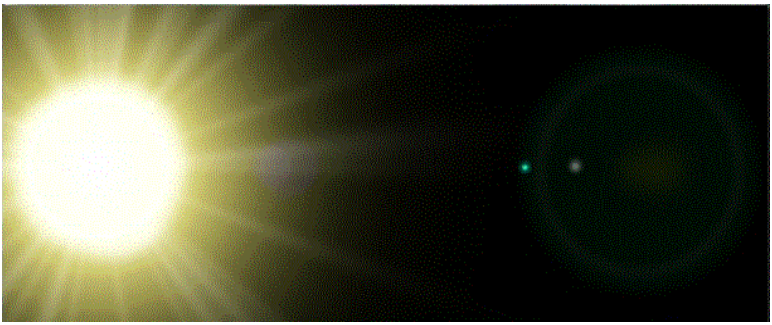
Chapter 2

The Basics of Genesis



The Master Genesis Window

The Master Genesis Window allows you to construct effects easily. With it, you can create a variety of special effects visually through a trial-and-error approach, until you find the look you desire. All effects can be previewed in the Master Genesis Window.



The Preview Window

This region, located in the upper third of the Master Genesis Window, is where previews of effects are displayed. There are two forms of preview, the outline preview, consisting of a red outline of each element, and a full-rendered preview that is identical to a real rendering of the effect.

Preview Window Mouse Controls

Right mouse button click	Renders preview
Left mouse button drag	Moves selected element(s) visually
Shift + Left mouse button drag	Moves light source

The Time Line

The Time Line located immediately below the Preview Window is used to display information about the current animation.

The light blue position marks the current time frame in the animation; green lines represent key frames of position, and red

lines represent key frames of shape. Bright lines indicate selected element key frames and dark lines show unselected elements.

< and > buttons

Use these buttons to move backwards or forwards to a previously selected key frame.

Current Frame Indicator

To the right of the Time Line is located the Current Frame Indicator, which displays the current Genesis frame being displayed in the Preview Window.

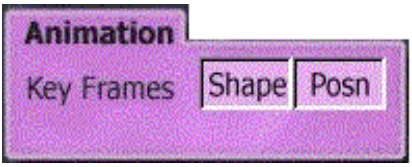
✓ Checkbox

Renders a checkerboard pattern behind objects in preview.

Time Line Mouse Controls

Left mouse button - drag	Moves through animation
Right mouse button - click	Moves to nearest key frame for selected elements
Shift + Left mouse button - drag	Selects time range

Animation Folder



Key Frame Shape

In the Animation Folder, use the Key Frame Shape button to set a key frame for an element's shape at a given frame.

Key Frame Position

In the Animation Folder, This button sets a keyframe for the element's position at a given frame.

System Operations Folder

The start a New system, Load a new system, Save the existing system and Configure the rendering parameters controls determine the behavior of the entire system. Use these controls to load, save and create new systems. The rendering configuration tools are also contained here.

Name Field

A descriptive name you can define for the current effect, such as "Sun with Secondaries" in the example shown above..

New

Deletes the entire system of effects, and allows you to start a new effect.

Load

Loads an effect from disk.

Save

Saves an effect to disk.

Config.

Opens the Rendering Parameters submenu window to allow you to configure the rendering parameters. For detailed information on the Rendering Parameters submenu see Chapter 3.

Animation in Genesis

Animation in Genesis is based upon key frames. A key frame represents a snapshot of the entire system at a particular point in time. If you then ask Genesis to return to the state of the system at a time value for which there is a key frame, it will return to this snapshot.

However, if it is asked to return to the state of the system at a point where there is not a key frame, it will return to a smoothly interpolated frame generated from the immediately preceding key frame.

Key framing is performed on an element-by-element basis. In other words, each element has a set of key frames associated with it that generate its motion.

It is important to note that for every element in a system there must be a key frame at time 0. This represents the initial state of the element.

In Genesis there are two different types of key frames: Shape and Position key frames.

Shape key frames determine the actual look of the element at a particular point in time. In many ways, they can be seen as similar to morphing, although they change over time.
If you insert a rainbow element into the system and add an additional Shape key frame at time step 100 that is a white glow, as you move through time the element will gradually change from a rainbow into a white glow.

Shape key frames are represented on the time line by red bars. Every red bar represents a Shape key frame. Selected elements will have light red bars while unselected elements have dark red bars.

Position key frames determine the position, orientation and all of the parameters in the Position section of the Master Genesis Window. Position key frames are represented on the time line by green bars. Every green bar represents a shape key frame. Selected elements will have light green bars, and unselected elements have dark green bars.

The Position key frame function is similar to the Shape key frame function. If you have a Position key frame at [1, 0, 0] at time 0 and insert another at [-1, 0,0] at time 100, as you move through time between 0 and 100, the element will move across the screen..

Creating animations is extremely simple. All you need to do is create an element at the default position of [1, 0, 0]. If you now wish it to be animated, move to another frame in the animation, such as 100 and change the position of the element to [-1, 0, 0] for instance.

If you move backwards and forwards in time, you will see that the element moves between these two positions. If you wish to animate changes in its shape over this range, move to time 0 and

use Make to build a rainbow. Move to time 100 and click Make to create a white glow. A Shape key frame is automatically created at time 100 when you do this. If you now move backwards and forwards interactively between time 0 and 100, you will see the element not only changing position, but also shape.

If you are at an existing key frame and wish to change the position or shape of the information stored in that key frame, simply modify the position or shape, respectively. The contents of the keyframe are automatically updated.

In the Animation folder of the Master Genesis Window, there are two buttons: Shape and Position. These are depressed if you are at a frame where there is a Shape or Position key frame, respectively. These buttons can be used to insert additional key frames manually.

They also can be used to delete key frames. If there is a key frame at the current time step, one of these buttons should be depressed. By clicking on it so that it is not depressed, you can delete the key frame.

All animation operations can be performed on multiple key frames at once. To select a range of key frames, hold down the Shift key while you select your time step. All such range selection modification options operate on all key frames in the range.

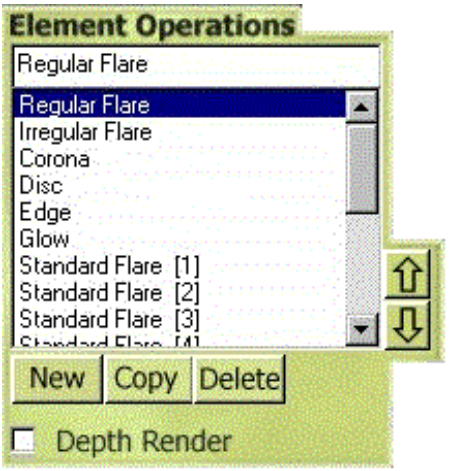
This can be used for selecting a large number of key frames at one time. It can also be used for modifying the positions and shapes of a large number of key frame positions at once.
All animation operations can be performed on a number of selected elements at once.

When using Morph to morph between two animated elements, Genesis does it's best to morph the animations as well. However,

if the elements that are being morphed have different co-ordinate modes, slight errors can occur.

In the Genesis plug-in for 3DStudio Max in the Configuration window, there is an Animation Convert variable that can be used globally to synchronize the Genesis animation speed with the Max speed. If a value of 1 is set, 1 Genesis Time Step = 1 Max frame. If a value of 2 is selected, 1 Genesis Time Step = 2 Max frames. If a value of 0.5 is selected, 0.5 Genesis Time Steps = 1 Max frame.

Element Operations Folder



Name (Window)

The area used to type the descriptive name you supply for the currently selected element.

Selected Elements

The area used to select an element or multiple elements Standard Microsoft Windows controls apply: Shift, Ctrl + Click for multiple selections.

This area also displays the default rendering order of elements given in this list. By double clicking on an element name, the Make an Element submenu is launched, which allows you to modify the existing upon which you double clicked. For instructions on using the Make an Element submenu, see Chapter 4.

New

Adds a new element to the system and launches the Make an Element submenu. See Chapter 4 for details on the Make an Element submenu.

Copy

Makes a copy of the selected elements.

Delete

Deletes selected elements.

⇧ Up Arrow

Moves selected elements up one element in rendering order.

⇩Down Arrow

Moves selected elements down one element in rendering order.

✓Depth Render

Ignores rendering order and renders in front-back order determined by the Z values of elements.

Position Folder

✓ Active

Check the Active box to render selected elements. Leave the box unchecked to disable rendering.

Active (Window)

Selects the rendering mode for the selected elements. These modes include Light, Object, Tint, Add, Subtract, Negative, Blur 1, Blur RGB, Ang. (Angular) Displace 1, Ang. Displace RGB, Rad. (Radial) Displace 1 and Rad. Displace RGB.

Light

Use this advanced non-linear light compositing mode to combine the effect with the image. The result that is produced is similar in appearance to how light is distributed in the real world.

Object

This function transforms the element shape into an object and simply overlaps the underlying image with the shape and color of the element.

Tint

This button allows the element to influence the tint of the underlying rendering.

Add

With this function, the element adds its colors to the rendered image.

Subtract

Use this to subtract the color of the element from the rendered image.

Negative

This function inverts the underlying area of the rendering.

Blur I

Use Blur I to allow the element to blur the underlying area of the rendering.

Blur RGB

This function blurs only the colors in the image that are present in the element. For example, setting an element to pure red will blur all red hues in the underlying image.

Angular Displace I

This function twists the underlying image.

Angular Displace RGB

Similar to Angular Displace I, this function twists only the channels of the image color present in the element.

Radial Displacement I

This function expands the underlying image as if it were being looked at through an optical lens. One application of this function is with a particle system to create an underwater scene with simulated bubbles.

Radial Displacement RGB

Use Radial Displacement RGB to displace only image colors that are present in the element.

Image Warp I

This function displaces an image based solely on the intensity of the color of the element. By adding noise to the element, you can achieve good distortions with this displacement map.

Image Warp RGB

The Image Warp RGB function affects only image colors that are present in the element.

Transition I

This function allows the transfer of the specified source image on the screen. Transfer is based on the luminance intensity of the effect color. The brighter the effect, the more visible the transition element will be. Used with noise transitions, this function can be randomly distorted.

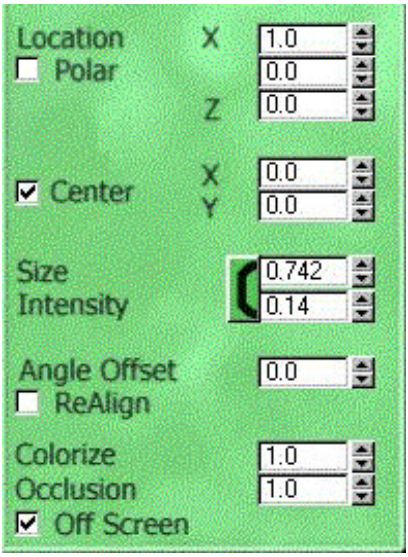
Transition RGB

This function affects only image colors that are present in the element.

Transition + Resize

This transition mode is similar to Transition I. However, before transferring the source image on the screen, Genesis scales it to fit the element. One useful application of this mode is for fitting or compositing multiple images on the screen.

Note well: Overlapping elements will strengthen the intensity of the effect. When using additive or light modes, this phenomenon can cause effects to be oversaturated. Therefore, in these cases it is desirable to use the global intensity parameter setting to mute all the effects at once. Finally, transition and object modes do not cause oversaturation when elements are overlapped.



Location

Determines the position of the selected elements. The standard location mode in Genesis is using the optical axis to position elements. This means that a position of X = 1 and Y = 0 would be at the source position, and X = -1, Y = 0 would be exactly opposite to the source position, passing through the optical center. For standard Lens flares, the optical center would be in the center of the screen.

✓ Polar

When Polar coordinates are selected, the three values are x, angle, z. When Polar coordinates are not selected, the values are x , y and z.

If you switch to polar coordinates, the Y value, rather than determining the perpendicular distance determines the angle around the optical center.

If you now switch the Center mode off, the placement of elements is not determined in the same way. Rather the coordinate system is based around the source of the effect.

✓ Center

This checkbox determines if the axes used for the positioning of elements will be the optical center.

The Center X, Y values determine where this center is placed. Moving objects along the x axis moves them through the light range. The Y axis determines the distance perpendicular to the light axis. Standard Flares would only have elements on this optical axis.

Mini Coordinate Tutorial

To understand these coordinate systems, place new elements at these positions with the standard settings: Element 1 : [1,0]; Element 2 : [-1,0]; Element 3 : [0.5,0.1]; Element 4 : [0.5,-0.1].

Move the light source using a Shift - Left mouse button drag.

Play around with the x, y values and see how they cause the elements to be placed relative to the light source.

Try selecting all elements and moving the Center position. Now select all these elements and switch Polar Coordinates On. Play once again with the different values .

Now Click New System and create the same elements as before. Select them all and switch Center to Off. Now use Shift - Left mouse button drag to move the elements. The behavior is completely different. You should also try changing the element Z Values in all modes to see its effect.

Size

The Size spinner controls the size of the object.

Intensity

The Intensity spinner lets you determine the intensity of light reflected from an element. It should be noted that if the Size and the Intensity values are locked together, the total light output remains constant, i.e. the intensity of light will be reduce as the size of the element increases and vice versa.

You can unlock the Size and Intensity values by clicking on the padlock icon. When these values are unlocked you have independent control over each.

Angle Offset

These values set the angle of the current element.

✓ Re-align

The Re-align option ensures that the currently selected elements remain aligned towards the center position irrespective of their placement

Colorise

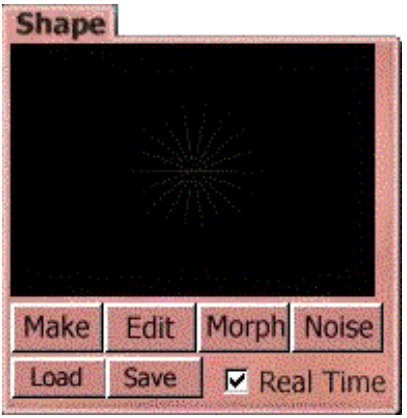
This option determines the degree to which the selected elements are colorized by the source color. A value of 0 means that the element does not change color if the light source is colored. A value of 1 means that the element is completely colored.

Occlusion

This option determines the degree to which the selected elements are obscured by objects in front of them in the scene.

✓ Off Screen

Enabling the Off Screen option allows the selected elements to be rendered when the light source is placed outside the screen.



Shape Folder

The Shape Folder provides for complete control over the creation and modification of Genesis elements.

Make

The Make button allows simple construction of the most common elements in Genesis. Clicking on the Make button launches the Make an Element submenu, which is discussed in detail in Chapter 4.

Edit

Clicking the Edit button launches the Edit an Element submenu from which complete control over each element's shape and color is achieved. A complete description of how to use the Edit an Element submenu can be found in Chapter 5.

Morph

Use the Morph button to create multiple sets of elements by morphing between a single element or pairs of elements. Clicking the Morph button launches the Morph Elements submenu, which is covered in Chapter 6.

Noise

The Noise button launches the Fractal Noise submenu. Use the Fractal Noise submenu to deform your elements in unique and interesting ways. A detailed discussion of how to use the Fractal Noise submenu can be found in Chapter 7.

Load

Use the Load button to load a system into the current system.

Save

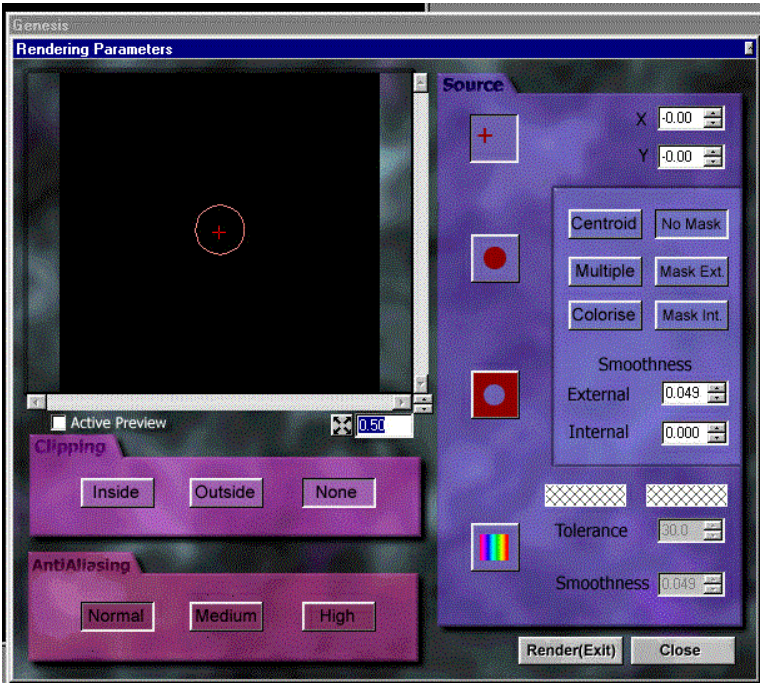
Use the save button to save the currently selected elements as a separate system.

✓ Real Time

Checking the Real Time box allows real time updating of the shape mini-preview

Chapter 3

Rendering Parameters Submenu



The Rendering Parameters submenu is the only submenu in Genesis that is different between the Photoshop and 3DStudio Max versions of the program. Genesis users working with 3DStudio Max should study the 3DStudio Max-specific tips at the end of this chapter. Photoshop users can ignore the 3DStudio Max material.

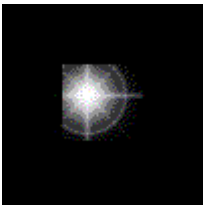
By clicking on the Config. button in the System Operations folder, you launch the Rendering Parameters submenu. The

Genesis rendering system is based on the idea of flare sources. A source is simply the point at which a Genesis effect is placed.

In the top left hand corner of the dialog box is the Preview Window. This window cannot only display a completely accurate preview of the final Genesis output at any scale, but it also can allows the user to place flares interactively in the image. Just below the preview window on the right hand side are the scale controls. These consist of a spinner to set the image scale and a button to rescale the image to fit the preview window. Like all Genesis spinners, a click and drag can be used to set the value and a right click will reset to the default scale of one.

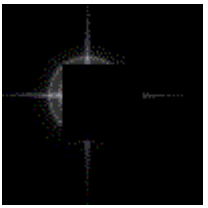
Clipping Folder

The clipping controls affect the way in which the Photoshop selection mask is applied to the final output from Genesis.



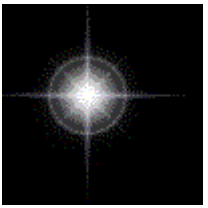
Inside

Choose Inside to allow Genesis to render only within the Photoshop selection mask as in the above image.



Outside

Choose Outside to allow Genesis to render only outside of the Photoshop selection mask as in the above image.



None

Choose None to not allow the application of the Photoshop selection mask.

The Occlusion parameter found on the Position Folder in the Master Genesis Window affects how the selection mask covers each element of the flare. In effect, the selection mask is in front of the flare. The occlusion parameter allows an element of the flare to show partially or fully through the mask.

In the above image, the flare has been masked out in the lower right corner, but the Occlusion values for all elements of the flare

have been set to 0.25. Because of this Occlusion value, 25 percent of the flare shows through the mask. The occlusion is set on an element-by-element basis, so one element can be set to show through while another may not.

Anti Aliasing

The Anti Aliasing folder provides access to control over the level of anti-aliasing in the final render. Under almost all normal circumstances, the quality of the result of normal anti-aliasing is every bit as good as the other options. Increasing the anti-aliasing is only necessary when using very large elements that are a long way from the center. However, you should be aware that using the medium and high anti-alias settings increases the time required to render.

Normal

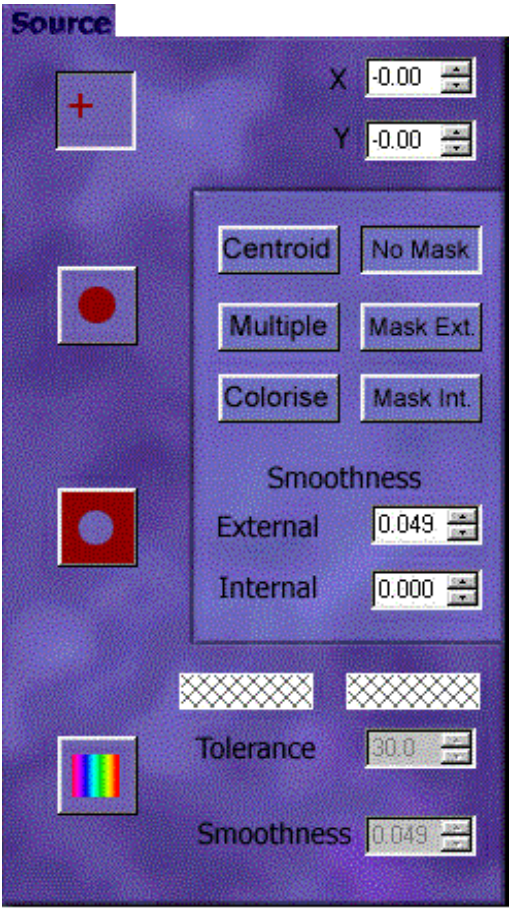
The Normal anti-alias setting will be sufficient under almost every circumstance.

Medium

Medium is an intermediate step to the highest anti-aliasing available.

High

The highest degree of anti-aliasing, which is only necessary when using large elements that are a long way from the center.



Source

The Genesis rendering system is based on the idea of flare sources. A source is simply the point at which a Genesis effect is placed. For a lens-style flare, this typically would be the light that causes the flare. For other types of effect it might be the center of the effect. When the flare is rendered each element is placed relative to the source.

Unlike other programs, Genesis can render effects from multiple sources at the same time. Clicking on the source mode buttons on the left side of the Source Folder will allow you to create effects such as warped flares, glows, bevels, fire effects and many more.

The Preview window shows all source pixels shaded red rather than showing an outline of the flare. Rendering effects from multiple sources requires considerably more memory and time than for a single point.

✚

Use this button to activate the Interactive Placement mode. Once active, you can place the source using the mouse and the left mouse button. A single click sets the position of the effect source.

Dragging the mouse with the left button down lets you set the source position off the screen. When the source is located off screen, only the elements that have the Off Screen property set in the main Genesis window will be drawn.

When setting the source position interactively, an outline preview is drawn to show the position of all the elements. A right click in the preview window will show the final output.

●

This mode uses all the pixels in the Photoshop selection mask as effect sources. This is used generally to produce effects on the outside of an object, such as glows and flares.

❍

This mode uses all the pixels outside the selection mask as sources. Typically this mode is useful for producing effects inside objects, such as inside letters.

Colorbar Button

This mode uses image colors to generate sources. The pixels used as sources are those that have a color between the two colors in the color selector boxes next to the mode button.

X

This spinner controls and displays the X position of the source.

Y

This spinner controls and displays the Y position of the source.

Centroid

The Centroid button allows you to render an area of source pixels with one effect placed at the middle of all the points. In other words it converts multiple source pixels to a single source at the center.

Multiple

The Multiple button provides a way of rendering multiple source regions separately. When Multiple button is active, the sources are split into groups based on a flood fill. Each group is then rendered separately.

Colorise

The Colorise button allows the effect to be colored according the color of its source. If the source is red for example, the flare will also be tinted red. The smoothness of this effect is controlled by the spinner to the right of the Color Source option.

No Mask

All of the Masking buttons help to determine how the points that are sources will be rendered. Choosing the No Mask button allows all of the points in the image to be rendered.

Mask Ext.

Choosing the Mask Ext. will render the source points but leave the non-source points non-rendered.

Mask Int.

Selecting the Mask Int. button will leave the source points in a non-rendered, blank state.

Internal and External Smoothness

These spinners control the internal and external smoothness of the glow from the source pixels.

Tolerance

The tolerance spinner controls the sensitivity of the selection. This works much like the Photoshop magic wand. This mode can be used to create a flare from a highlight or to select pixels previously marked in a special color.

Smoothness

The smoothness spinner controls the overall smoothness of the effect.

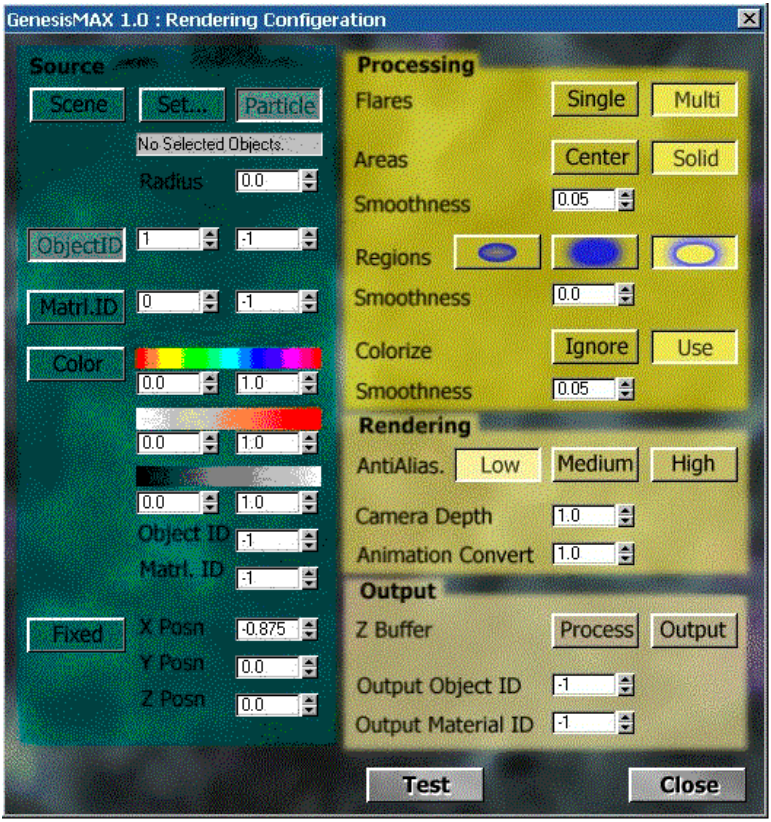
Render

Renders and exits you from Genesis.

Close

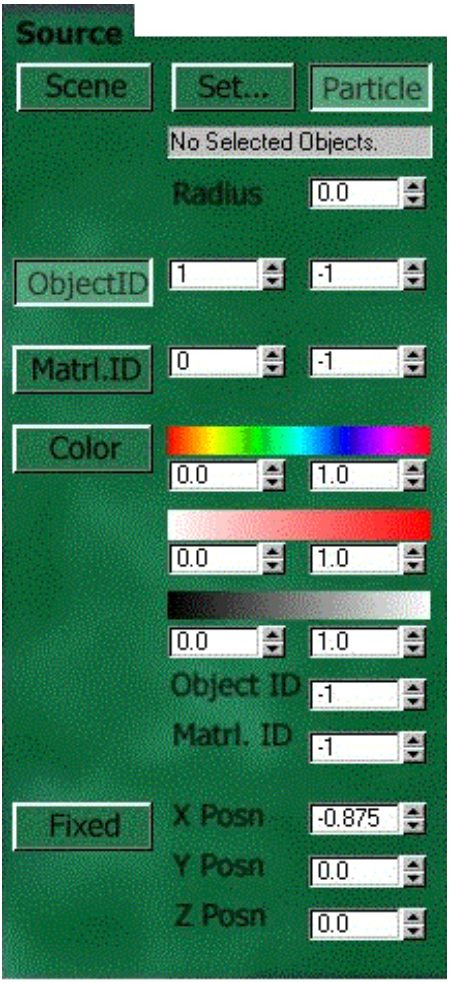
Closes the submenu and takes you back to the Master Genesis Window.

Rendering Parameters In 3DStudio Max



In 3DStudio Max, all processing has a number of stages. The way in which Genesis works with these processing stages is described below.

By clicking on the Config. button in the System Operations folder, you launch the Genesis Rendering Configuration submenu for the 3DStudio Max version of the program.



Source

The Source folder on the left side of the Rendering Configuration submenu allows you to identify the source to which the Genesis effect will be applied.

Object Link

First, you must select the source of the Genesis effect. To do so, you must set up an Object Link.

The Object Link instructs Genesis to attach itself to one or more scene objects. These can be of any type, but there are some special case.

Lights

Genesis inherits the color of the light specified in 3D Studio Max.

Objects

Genesis inherits the Diffuse color of the texture. If you tell Genesis to Process Z values, the object can easily self-obscure the effect. For this reason, the Radius parameter in Genesis allows you to bring the effect's X world units closer to the camera.

Particles

Genesis renders a copy of the effect on each particle. If the Radius is a non-0 value, Genesis determines the particle size in world units. This allows particles to get bigger as they approach the camera.

When Particle Locking is used, the Genesis frame number is not determined by the Max frame number but by the age of the particle being rendered. Thus, a Genesis animation in which a white glow turns into a red glow over 30 frames can be used in a particle system. In this example, when particles are created they are white. As their age approaches 30 frames, they become more red, which is a very powerful effect.

The Particle option tells Genesis whether the whole effect should become invisible if the source is obscured. Try rendering a large white glow behind a sphere with Process Z selected with and without this parameter.

Object ID and Material ID

You can link to a pair of Object or Material ID channels. Values of -1 tell Genesis to do nothing. Thus, if you lock to Material ID 1 and -1, Genesis sources from pixels of Material ID 1 only. If you set 5, 655 then Genesis sources from pixels of Material ID 5 and 655.

Color Locking

Color Locking is fairly straightforward. The only thing to note is that the Value component of the HSV range is in the range 0-10. Values that are greater than 1 mean that the pixel is brighter than pure white. This can be used to automatically lock onto Highlights.

You can tell Genesis to consider only color values on a particular Object ID or Material ID channel. Once again, values of -1 will be ignored.

Fixed Locking

Fixed Locking is also simple. The center of the screen is [0, 0]. The top right corner is [1,-1]; bottom left is [-1,1].

Once the source has been determined, there are a number of processing options that are made. These are not strictly relevant for any point source Genesis events, such as Fixed and Scene Links.

Particle Animation

In Genesis for 3DStudio Max, you are able to use these animation features to create very powerful particle animations.

To do so, lock Genesis for 3DStudio Max onto a particle system using the scene link options in the Configuration window. At every particle, an entire Genesis system is rendered. In 3DStudio

Max each particle has an age. This age represents how long the particle has been in existence within 3D Studio Max. To understand this, it is important to realize that all particles are born at a particular time and exist for a number of frames before they die.

Each Genesis system that is rendered inherits the age of the particle rather than the current frame number in Genesis. For example, if you wanted to create a fire effect, you would create a bright yellow element in Genesis that slowly becomes red over time and eventually dies out to black. These changes can be created using the Shape key frame function.

If you now create a particle system in 3DStudio Max and lock Genesis to it, particles will be bright yellow when they are created, and as they move away from the emitter they first turn red and fade out.

Obviously you can do much more than just changing color as the particles become older, you can change their positions and shape.

For the successful rendering or particles in the Config window, you should select the Process Z option so that particles pass behind other objects.

You should also select the Particle box in the top left corner of window. In the radius control, specify the radius of the particles to be rendered in world units. Using this method, Genesis computes the correct size of all elements according to their distance from the camera.

If the internal Genesis element size is 0.1, when it is rendered as a particle of x world units, it will render exactly x world units in radius. If the internal Genesis element size is 0.2, it would render with radius 2x.

If you wish Genesis to replace the entire 3DStudio Max particle rendering, set the particle size within Max for the particular system to 0.0. If you do not set this to 0.0, the particles are rendered as flares (that is, the size of the elements is not related to the distance of the particle from the camera.)

Transitions Using Animation

Using Genesis for 3DStudio Max, you can use animations to create transitions between a pair of video images. This is implemented using a new Transition mode.

If you wished to create a spinning star that slowly fades into a second image source -assuming that you have already set up the Video Post queue correctly- you would create a star element in Genesis and assign it in Transition rendering mode.

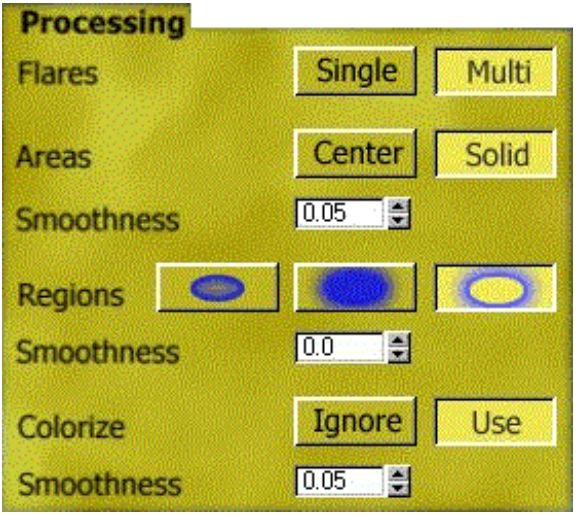
At time step 0, you would place it at position [0, 0, 0], with size 0.01, intensity 0, and angle offset 0.0. If at frame 100, you added a key frame with size 1, intensity 1 and angle offset 5.0, as you go through the 100 frames the element will spin, become brighter and increase in size.

When rendered into an animation, this would allow the secondary image source to be uncovered by this spinning element.

Although this use of a secondary source of images can be used for video transitions, it also can be used for other effects. For instance, you could use a stationary bitmap, such as a cloud texture, in the second source, and a rendered scene event as the first source. If you then use a Transition element in your flare, it can uncover this cloud bitmap as you desire.

If Genesis is used for Transitions and the two input sources on the Video Post queue are input events rather than render events, the only rendering mode that can be used is the Fixed Position. In any

case, Fixed Position is the only reasonable mode for transition effects.



Processing

The Processing folder on the right side of the Rendering Configuration submenu allows you to define how Genesis effect will be applied.

Single and Multi Buttons

These buttons instruct Genesis to treat disjointed sets of pixels either as Multi (multiple) separate objects or as a Single object in multiple parts.

Center and Solid Buttons

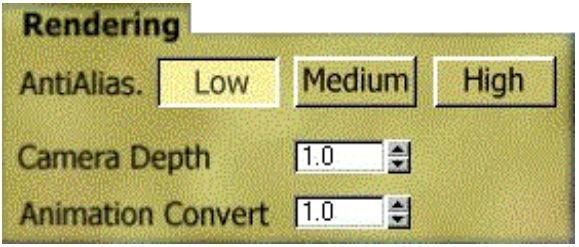
These buttons instruct Genesis to place a point source at the center of each set of pixels or to treat the effect as a Solid glow effect. If you choose a solid glow, a Smoothness parameter is used to determine how smoothly the flare is wrapped around the shape. Try a value of 0 and increase slowly.

Region Buttons

The Region buttons determine where the effect will be rendered. These options include Inside, Outside and Filled Outside. There is a Smoothness value for the Inside and Outside modes that determines the sharpness of the edge between the interior and exterior of the object.

Colorize

Colorize overrides the element-by-element colorizing options when switched off. If this option is on, a smoothness value determines how smooth the colors for the colorize effect will be.



Rendering

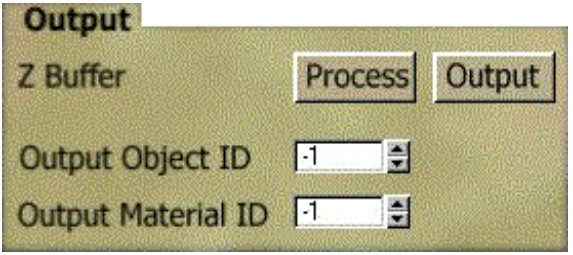
The Rendering folder provides for control over the rendering of Genesis effects, including the degree of anti-aliasing applied to the effect.

Camera Depth

Camera Depth determines the amount of perspective distortion used in Genesis element Z value computations.

Animation Conversion

The Animation conversion in Genesis is Genesis Frame = Animation Conversion x Max Frame.



Output

The Output folder allows you to set the output options that will be applied to your animated Genesis effect.

Process Z

This tells Genesis to take account of Z values to determine occlusion.

Output Z

This instructs Genesis to output into the Z buffer values for its elements depth.

Output Object ID and Material ID

Output Material ID and Object ID tells Genesis to output Material or Object ID values for its elements. Values of -1 do nothing.

Chapter 4

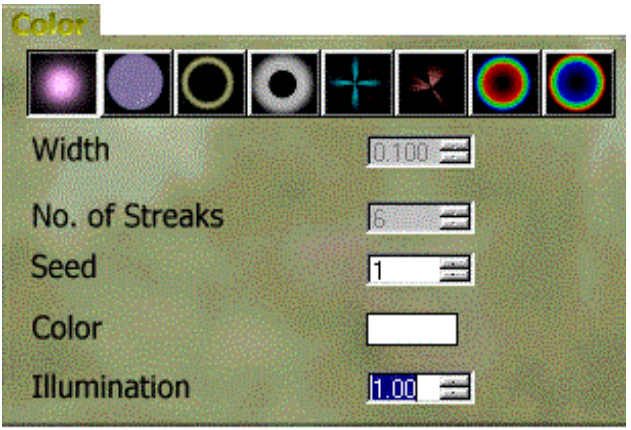
Make An Element Submenu

Preview

In the left half of the Make An Element submenu is displayed a preview of the current parameters.

Preview Window Mouse Controls

Right mouse button - click Renders preview



Color Pattern

The Color Pattern buttons allow you to select one of eight color patterns for the element you are building

Width (spinner)

Select the width of the selected color pattern.

No. of Streaks

Select the number of streaks used in regular and random streak creation.

Seed

The random seed used in generation of the color pattern.

Color

Use Color to change the color range of the element that's being made.

Illumination

Set the illumination of the current element.

Shape

Select the basic shape of the elements you are building by depressing the circular, oval, polyhedral or star shape button.

No. of Sides

The number of sides in n-gon / star shapes

Factor

The selected factor determines the sharpness of star spikes.

Aspect Ratio

This determines the aspect ratio of ellipses.

✓ Active Preview (checkbox)

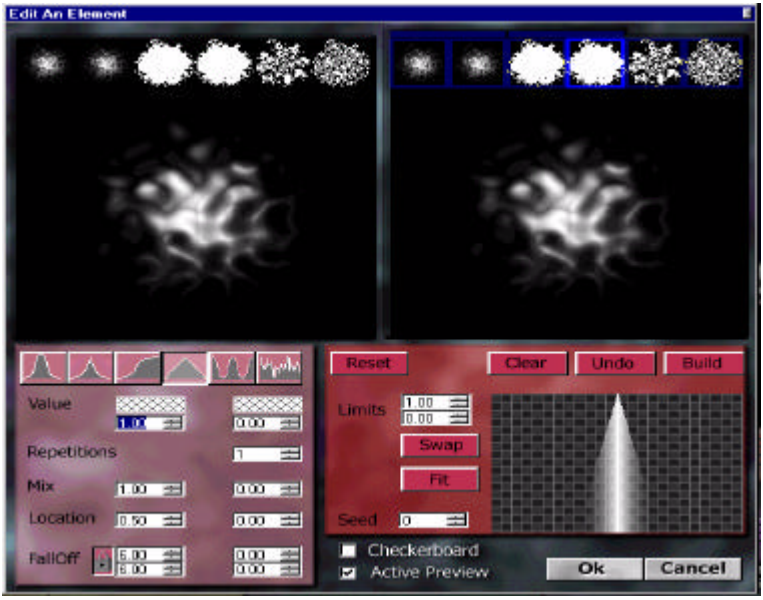
Enables/disables the active previewing of parameter changes respectively.

✓ Checkerboard (checkbox)

Enables/disables the checkerboard pattern in the preview.

Chapter 5

The Edit An Element Submenu



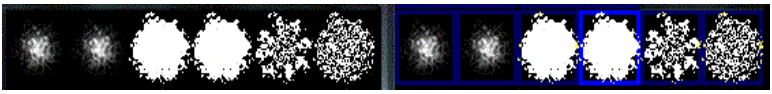
The Edit an Element submenu provides you with complete control over the shape and color of an element that you have already created.

This submenu is divided into four basic areas. Along the top of the top of the submenu is the radial and angular Curve and Distortion Selector, which is used to define RGB, Alpha and shape distortions to be edited. Immediately below this selector are two preview areas.

The Edit Mix area in the lower left-hand portion of the Make an Edit Window allows you to mix various RGB and Alpha curves and shape distortions to modify a Genesis element. The Cross-

Section area in the lower right portion of the Window displays a cross-section of how the modified curve will be mixed with the current curve.

Curve and Distortion Selector



Directly above the Preview Windows are six different types of curves and distortions used to construct every element in Genesis. From left to right, these are: radial RGB curve, radial Alpha curve, angular RBG curve, angular Alpha curve, radial shape distortion and angular shape distortion.

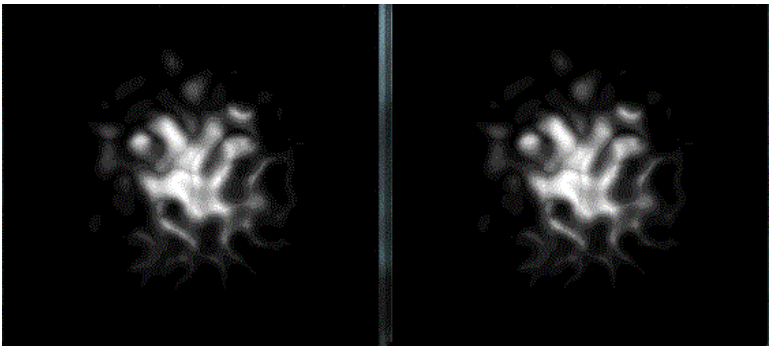
Note that the radial Alpha curve and the radial Alpha distortion are ignored by the light mode and that the curves are rendered in order from left to right.

The tab bars above the radial and angular RGB and Alpha curves allow you to lock changes so that they remain identical between the Alpha and RGB curves.

Curve Mouse Controls

Right mouse button - click	Renders Preview
Left mouse button - click	Select curve for modification.

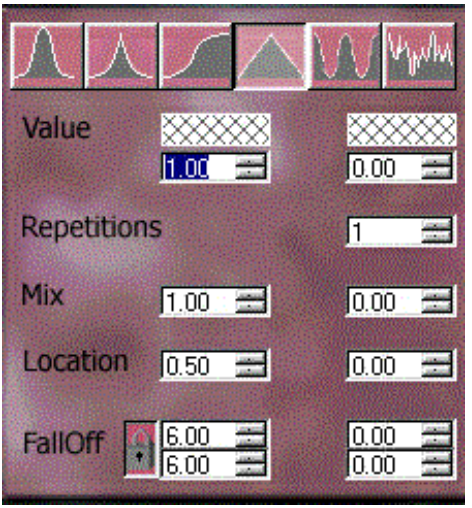
Mixing these six curves and distortions is explained in the discussion of the Edit Mix area below.



Preview Windows

The upper half of the Edit an Element submenu contains two Preview Windows. The window on the left displays the current state of the Genesis element that has been created. The window on the right shows what it will look like if the current effects modification curve is applied.

Preview Window Mouse Controls	
Right mouse button - click	Renders preview



Edit Mix Area

The six buttons at the top of the Edit Mix area allow you to select the shape of the modification curves that will be applied to your element.

Throughout the Edit Mix Area you will notice two columns of numbers that can be entered to set values. This is true for the Value, Mix, Location and FallOff parameters. These values are used to quantify the modification that will happen to these parameters. Where there are two values, the operation will be X + or - Y. In other words, Y is a random value added to the X value when a new curve is added.

To modify an element in the Edit Mix area, select a color (for RGB curves) or a value (for Alpha and shape deformation curves) that will be mixed into the currently selected curve. The amount of the mixture of the new color or value and the currently selected curve is determined by the values you enter into the Mix spinners.

Value

Sets the value you wish to mix into the curves. Colors are mixed in for RGB curves, and numeric values are mixed in for the Alpha and Shape curves. To define multiple values for multiple curves, use Repetitions.

Repetitions

This button allows you to apply a number of similar modification curves at once. For every value, you can set a range of noise. For each curve that is created, the values are randomly selected based upon the selected amounts of noise.

Mix

This value determines the amount that the current modification curve that is mixed into the selected curve. (For an explanation of using a second value, see Repetitions.)

Location

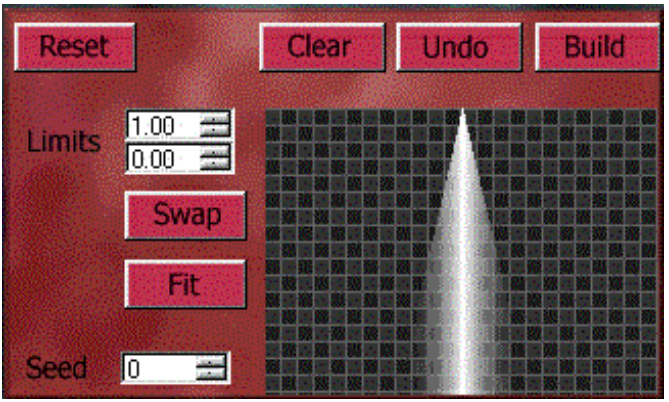
This sets the location of the modification curve. (For an explanation of using a second value, see Repetitions.)

FallOff

These set the degree of falloff of the selected modification curve mode. There are separate values for the positive and negative falloffs. These values can be locked together. (For an explanation of using a second value, see Repetitions.)

Edit Mix Mouse Controls

Left button - click	Interactive setting of mix and location values
Right button - click	Preview curve in main window



Cross-Section Window

This window represents a cross-section of the way in which the modification curve will be mixed with current curve

Reset

This button lets you reset the values of curve parameters to their default values.

Clear

This button clears the selected curve.

Undo

The Undo button undoes the last changes. Up to 16 levels of undo are supported.

Build

This builds the current modification curve into the current element.

Limits

This specifies the range of values to use in the modification value.

Swap

Swap modifies the values of the valid modification curve range by inverting the curve. It fits the current curve to the valid range.

Fit

These buttons modify the values of the valid modification curve range by fitting the current curve to the valid range.

Seed

This sets the random seed for use in multiple curve construction.

✓ Checkerboard

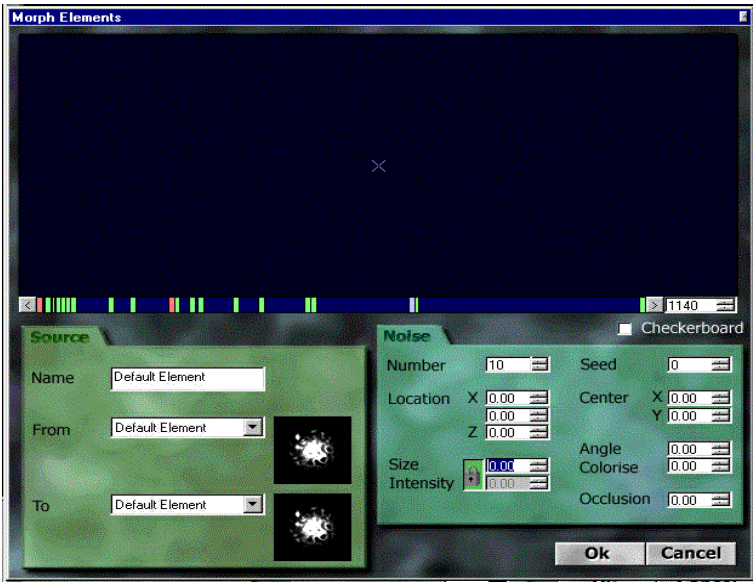
Check to enables the checkerboard pattern in the preview and the active previewing of parameter changes, respectively.

✓ Active Preview

Check to enables the active preview.

Chapter 6

The Morph Elements Submenu



The Morph Elements submenu is used to create multiple sets of elements by morphing between a single element or pairs of elements.

Morph Elements Mouse Controls

Right mouse button - click	Renders preview
Left mouse button - drag	Moves selected element(s) visually
Shift + Left mouse button - drag	Moves light source

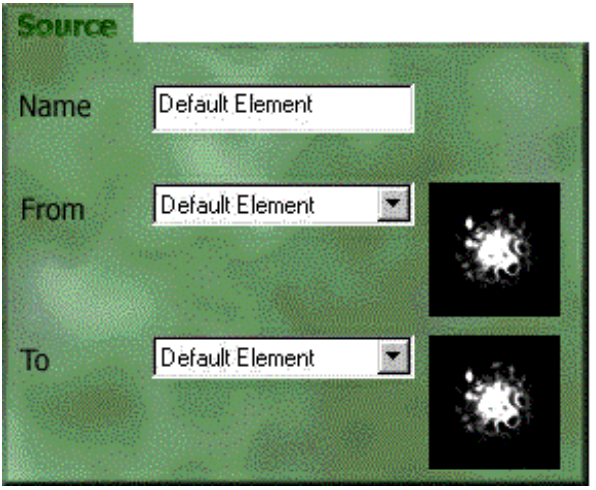
The Time Line

The Time Line located immediately below the Preview Window used to display information about the current animation.

The light blue position marks the current time frame in the animation; green lines represent key frames of position, and red lines represent key frames of shape. Bright lines indicate selected element key frames and dark lines show unselected elements.

Time Line Mouse Controls

Left mouse button - drag	Moves through animation
Right mouse button - click	Moves to nearest key frame for selected elements
Shift + Left mouse button - drag	Select time range



Source

Select the source and destination elements to use in the morph. These can be the same element.

Name

Use this description to name the morph elements that you create.

From

The source element name.

To

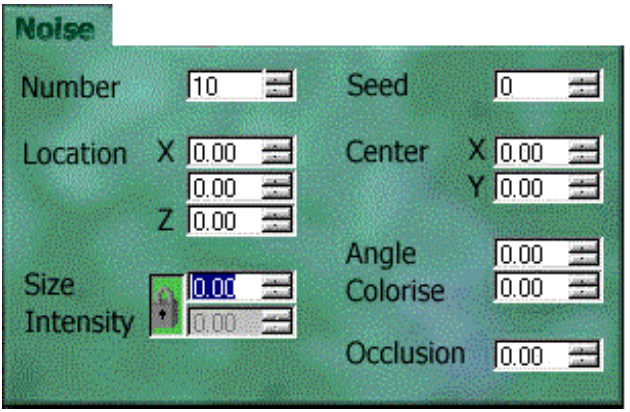
The destination element name

Number

The number of elements created in the morphing process.

Seed

The random number seed used in the morph.



Noise

Use the Noise folder to modify fractal noise parameters for selected elements. The Location Size, Intensity, Center, Angle and Colorise values collectively determine the amount of random noise added to each of these quantities for each element of the morph. For details of each of these parameters, look at the master window help.

Number

The number of elements created in the morphing process.

Location

Determines the position of the selected elements.

Size

The Size spinner controls the size of the object.

Intensity

The Intensity spinner lets you determine the intensity of light reflected from an element. It should be noted that if the Size and the Intensity values are locked together, the total light output

remains constant, i.e. the intensity of light will be reduce as the size of the element increases and vice versa.

You can unlock the Size and Intensity values by clicking on the padlock icon. When these values are unlocked you have independent control over each.

Seed

The random number seed used in the morph.

Center

Center determines the x and y position of the axes used for the positioning of elements.

Angle

These values set the angle of the current element.

Colorise

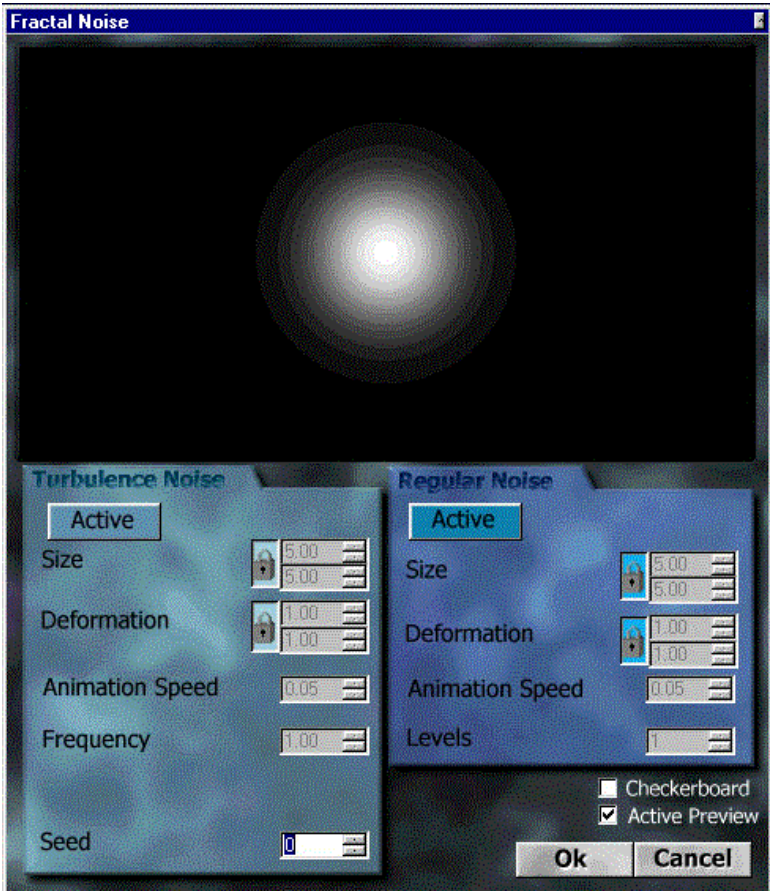
This option determines the degree to which the selected elements are colorised by the source color. A value of 0 means that the element does not change color if the light source is colored. A value of 1 means that the element is completely colored.

Occlusion

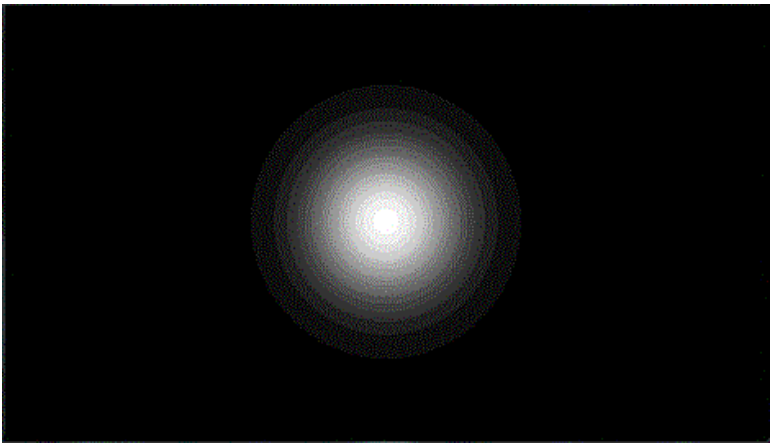
This option determines the degree to which the selected elements are obscured by objects in front of them in the scene.

Chapter 7

The Fractal Noise Submenu



Use the Fractal Noise submenu to deform your elements in unique and interesting ways.

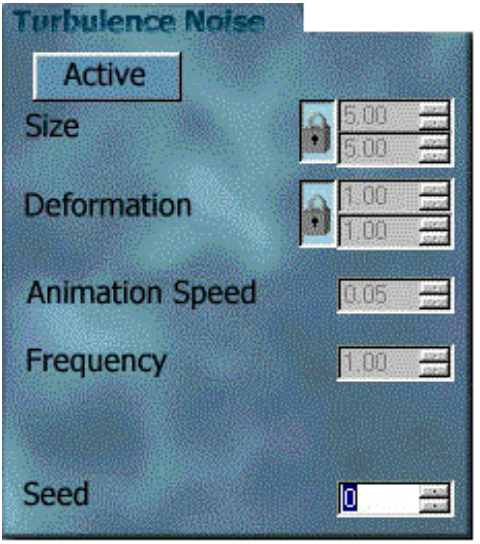


The Preview Window

Allows you to preview your current parameters

Preview Window Mouse Controls

Right mouse button - click	Renders preview



Turbulence Noise

Using the settings in the Turbulence Noise Folder will allow you to create a fractal noise effect that is useful for creating water- and gas-style effects.

Active

Click on the Active but to activate the fractal noise functions.

Size

Select the overall scale in the x and y directions of the fractal effect. These values can be locked together.

Deformation

Set the amount of deformation in the x and y directions the element undergoes. These values can be locked together.

Animation Speed

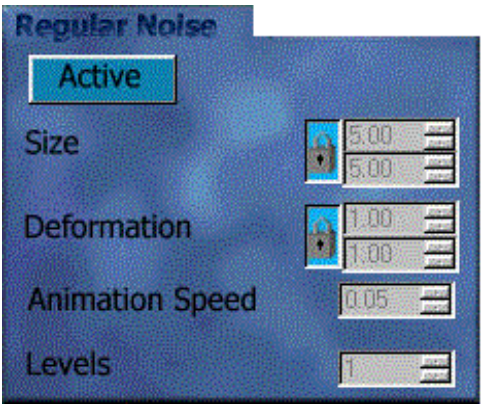
These parameters determine the speed with which the fractal effect changes in animations. A value of 0 is a stationary effect.

Frequency

The Frequency is an algorithm-specific parameter that modifies the overall look of each kind of fractal noise.

Seed

The random seed used in generation of all fractal curves.



Regular Noise

Using the Regular Noise folder will allow you to use a fractal noise effect that is useful for creating smoke-style effects.

Active

Use the Active button to turn on the fractal noise functions.

Size

Enter values to determine the overall scale in the x and y directions of the fractal effect. These values can be locked together

Deformation

Set the amount of deformation applied to the element in the x and y directions. These values can be locked.

Animation Speed

These parameters determine the speed with which the fractal effect changes in animations. A value of 0 is a stationary effect.

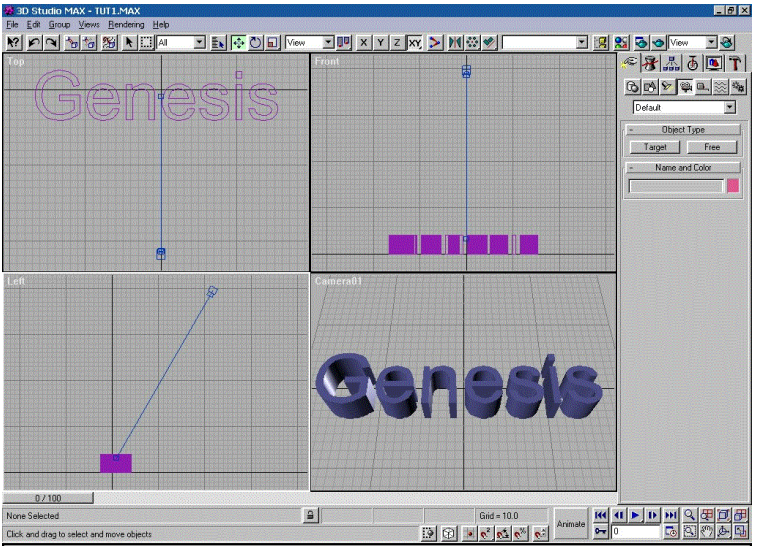
Levels

Algorithm specific parameters that modify the overall look of each kind of fractal noise.

Chapter 8

Tutorial: Glows in Genesis for 3DStudio Max

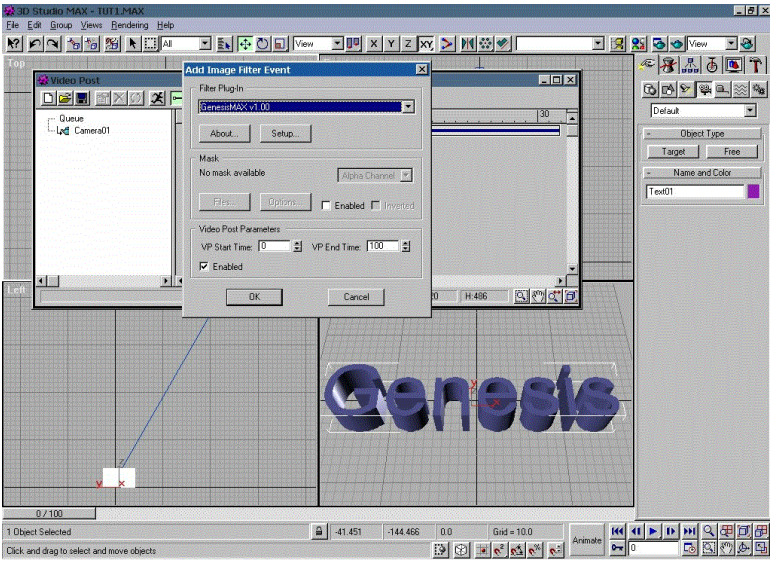
This tutorial is designed to introduce users of the Genesis plug-in for 3DStudio Max to the advanced glow effects that are available. By following this tutorial you will learn basic techniques and then move to an explanation of the more complex parameters associated with glows. Finally, this tutorial explains the parameters in the Rendering Parameters dialog box that are associated with the glow effect.



Start 3D Studio MAX and load the scene Tut1.max. This scene is set up with a 3D model of the word Genesis. To make this text Glow, you must assign G-Buffer Object ID No. 1 to the object of interest.

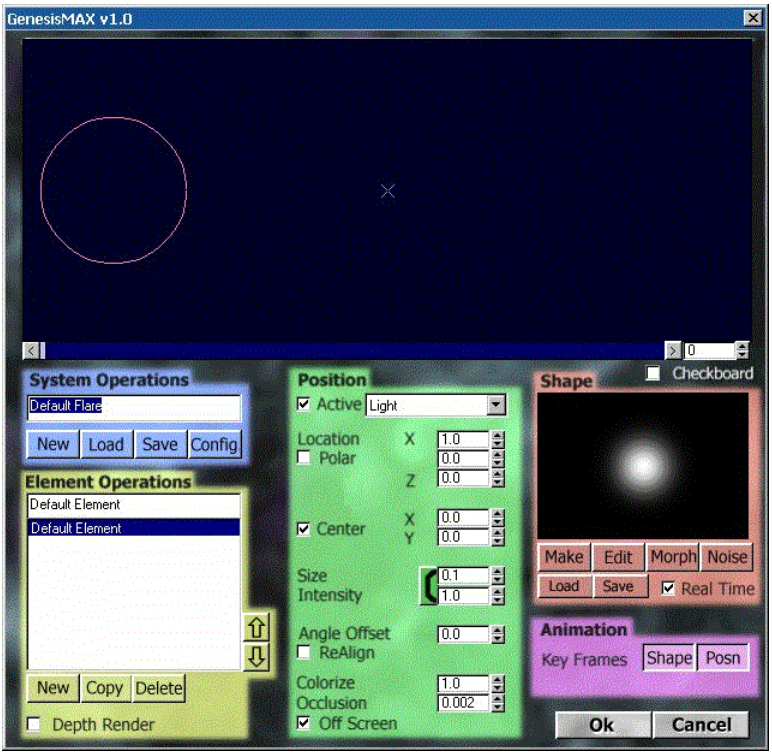
Select the text (Text01) and change its G-Buffer channel by right clicking on it. Select the Properties item in the menu that comes up and in the dialog box. Change the ID to 1.

Genesis is accessed from the Video Post queue. Start this up from the Rendering menu.

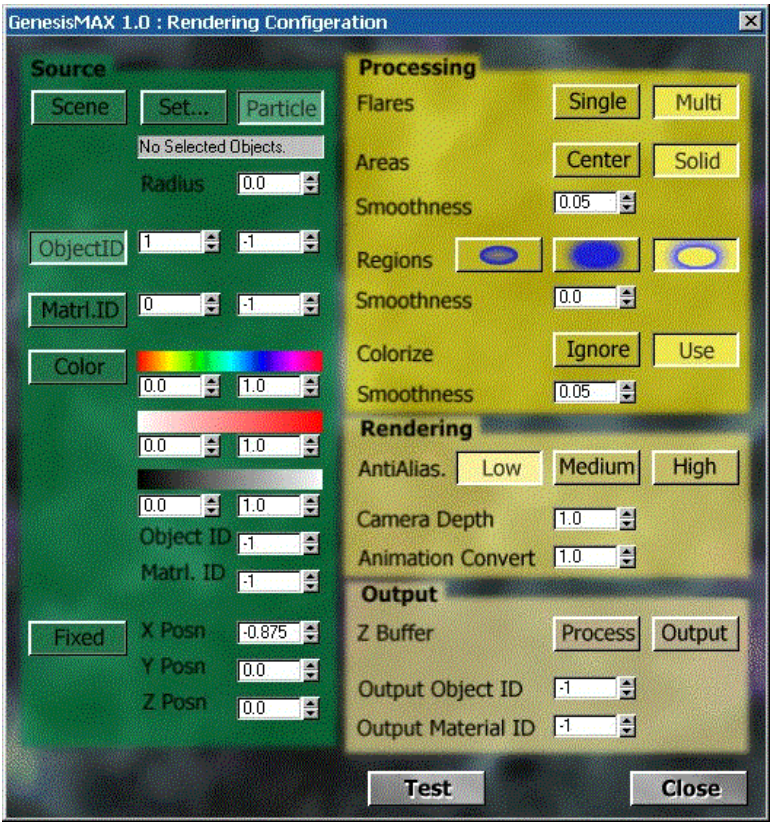


Add a Scene Event to the queue by clicking the icon above and add a scene event for view Camera01 to the queue .

Add a Genesis event to the Video Post queue by clicking on the icon above. Start Genesis by clicking on the Setup button.



Genesis will start up with a default element containing a single white glow element. This element alone with no modification can be used to create simple glows.



To achieve a glow, you must first configure Genesis in the correct way. To do this, click on the Config. button. You must tell Genesis to lock onto objects of ID No. 1. To do this, you must select the Object ID button and assign the first ID lock to channel 1.

Go back to the video post queue by first clicking Close in the Rendering Configuration Window and then OK in the Master Genesis Window. Click OK in the Video Post event queue.

Finally, click on the icon above to render. Select your desired resolution. Remember to tell Max that you only wish to render a single frame.

Rendering Using Multi

With the settings described so far, Genesis will render each letter as a separate Glow source. This has the effect of allowing each letter to glow onto the letters beside it.

Rendering Using Single

To force Genesis to render the whole text as a single object, select the Single Option (as opposed to Multi) in the Genesis Rendering Configuration window.

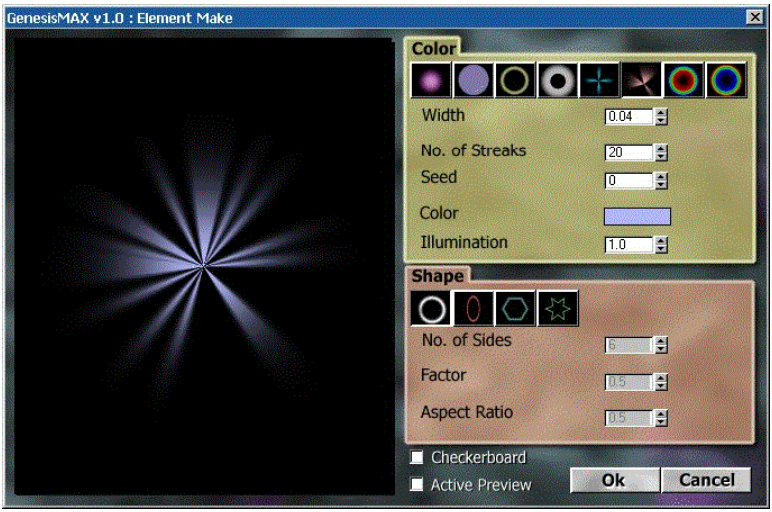
Another important effect you probably will have noticed is that the glow is colored by the letter color, and not the flare color, which is white. This is because the white element is Colorized by the color of the object.

Rendering Using Single and Ignore Colorize

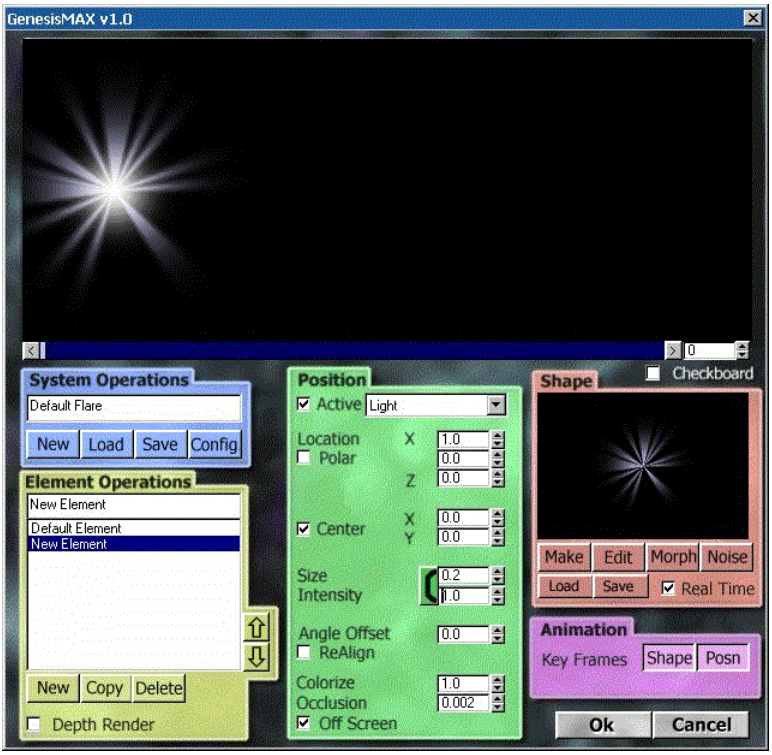
There are two ways to disable the effect of the color of the object on the glow. First, in the Genesis Rendering Configuration window you can switch the Colorise option to Ignore, as opposed to Use.

Second, on an element-by-element basis, you can change the colorise value. A value of 0.00 will tell Genesis to ignore any color inherited from the source object, while a value of 1.00 will tell it to completely tint the Genesis element using the object color. Values in between vary the effect between these two extremes.

You will now learn how to produce more advanced glow effects. Genesis allows you to use any flare as the glow source. Return to the Genesis main window.



Click on the New Element button. This creates a new element and brings up the Element Make submenu in Genesis. In this window, you will build a simple random glows. You will use the parameters illustrated in the image above. After selecting these, click OK. In the Genesis main window, change the element size for this new element to 0.2.



In the main window if you render a quick preview, you will see a glowing element.

In the Rendering Configuration Window, use the same settings as in the previous example. Make sure that Colorise is set to Ignore. If you now render this example, you will get the image shown above.

This effect looks at the angle of the outline around the text and attempts to fit the flare to it. This fitting process can even compute secondary reflections. The mathematics behind this process is highly complex and can take correspondingly longer times to render. It is this advanced glow process that is the reason that Genesis is slower than standard glow plug-ins, which is the

trade-off for having a much higher degree of control. For instance, nothing in Genesis would stop you from using Blur or Displace elements in a glow.

In the Rendering Configuration dialog box, there are three values associated with the Glow effect. The first, which is explained below in the Area setting discussion, determines the overall smoothness of this fitting process. You may wish to experiment with values of 0.0 and 0.1 to demonstrate this process.

The second, which is found under the Regions setting, allows you to set the smoothness of the glow edges between the object and the glow. Experiment with a value of 0.02.

The third smoothness value, located under the Colorize option, determines the amount the colors in the image are smoothed before being used as a source for the glow color.

In the Rendering Configuration dialog box, there are three settings for the Areas. These are (from left to right) Inside, Outside and Outside Only.

The Inside Mode renders the glow effect within the object. It is as if the background becomes the object and the object becomes the background. It can be very useful for Refraction simulation and other internal effects.

The second is the Outside Mode, which renders the effect on the outside but overwrites the object itself with the effect. This is very useful for sparkle effects where you want the source of the sparkle to take on the sparkle color.

The third is the Outside Only Mode, which creates the traditional glow effect.

Chapter 9

Tutorial: Creating Bouncing Energy in Genesis for 3DStudio Max

Bouncing Energy Tutorial

1) Click on Standard Primitives and under Particle Systems, select Snow. Place a Snow Particle system in the Top View window with the particles facing down. In the Parameters submenu, select the Ticks option. This will allow you to see your particles better. In the Timing menu, set Start to -10 and Life to 100. Give the particles a Width and Length of 200 and leave the rest of the settings at their defaults. Select the Snow Particle System and right click on it to bring up the Properties Menu. Under the G-Buffer menu, change the Object Channel to 1. This is so you can assign Genesis to one particular object or group of objects without affecting all the objects in your scene. (Refer to G-Buffer menu in this manual).

2) Place a Deflector Space Warp below the particles. Do this by clicking on the deflector button. In the Top view port click and drag to create a Deflector Space Warp. Set Bounce to 0.62. Re-size the deflector to a width and height of 300. In the front view, select the deflector and move it down half the height of the particles at frame 100. Click the Bind button and bind the particles to the deflector. (See 3DStudio Max Manual under Bind.)

3) Click the Gravity button, and in the Top view port and click and drag to create a Gravity Space Warp. Leave all parameter settings at their defaults. Bind it to the particles.

Make a second Gravity Space Warp. In the parameters menu, under Force, set Strength to -0.7 and Decay to 0.0. Select Spherical. Bind the Gravity Space Warp to the particles.

4) Choose Video Post from the rendering menu. Click on the Add Scene Event button and make the necessary setting changes, if any, and click OK. Next, click the Add Image Filter Event button. Under Filter Plug-In, select GenesisMAX 1.00 and click on the Setup button. The Setup button launches Genesis.

5) Under the Shape menu, click on the Make button. Right click in the Preview window for a rendering of your flare. Select a color for the flare. Make sure your saturation setting is about 100, this will give the flare the realistic look as if it was coming from an actual light source. Click OK. Under the Position menu, set your intensity to 3, which helps to determine how bright your flare will look. Next, under the Element Operations menu, click the Copy button. This gives you an exact copy of your first flare. Go back to the Shape menu and click the Noise button. This will allow you to apply a noise setting to your flare (See Chapter 7 for an explanation of the noise settings). Under the Regular Noise menu, click the Active button. This applies a noise setting to your flare. Right click in the Preview window to see a rendering. Adjust the settings to your personal preference and click OK.

6) Now you have to link the object to your particles. Under the System Operations menu, click the Configure button. Click on the Object ID button and set it to 1. This will link the flares to any object with that Object ID number. Under the Processing menu, click Single for flares, Solid for Areas and click the middle button in Regions.

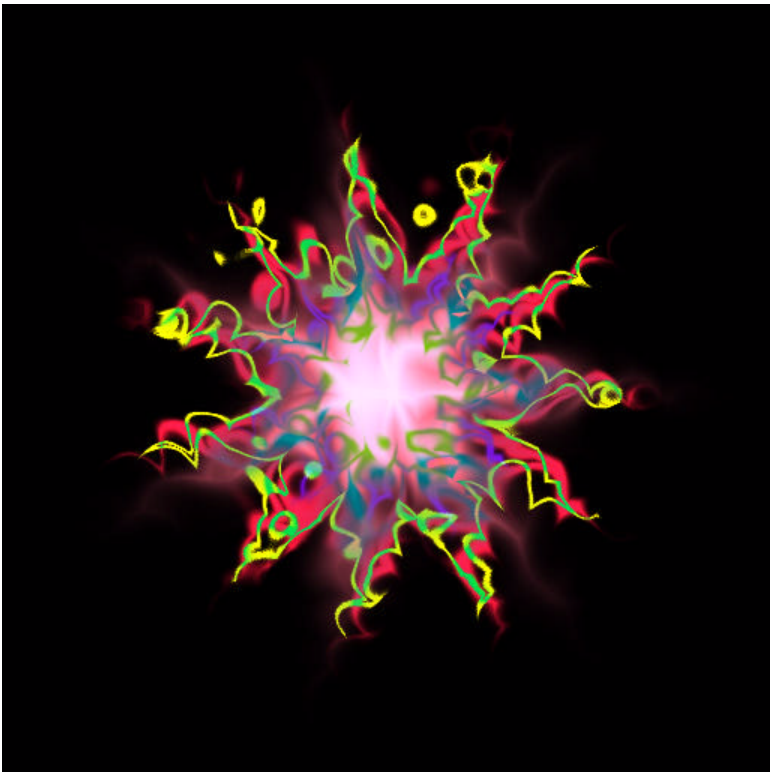
7) Click the Add Image Output Event. This will allow you to output your file to disk. Click the Files button to choose what

type of file you're saving and where you want to save it. Click OK.

8) To render your animation or still, click the Execute Sequence button. Select your Time and Size output and click the Render button. Now, sit back and watch the magic!

Chapter 10

Tutorial: Using the Make an Element Submenu in Genesis for 3DStudio Max



This tutorial is intended for users of the Genesis plug-in for Photoshop. Following the instructions in this tutorial will allow you to create the effect shown above.

Tutorial Instructions

By following these instructions, you will become familiar with how to create an interesting shape and apply turbulence and scaling.

1) Click on default element. Unlock Size/Intensity spinners in the Position menu. Set size to .332 and Intensity to 2.0.

2) Click the Make button. This takes you into the Make an Element submenu and choose the (third shape from the left, the thin circle). Click Color, and in the color picker, change settings in the RGB window to R-245, G-225, B-2. In the Shape menu, choose the Star shape on the end at the right. Enter 11 for number (No.) of sides. Click Ok.

3) Click on Noise0. In the Turbulence folder, click on Active. With the spinners locked in the Deformation selector, drag down until you reach a value of .38. Click Ok

4) See what you have done so far by clicking your right mouse button in the Preview window. Save your work as Tutorial.gfx in your .gfx folder.

5) Under Element operations, copy the default element. Its name becomes Default element [cpy]. Go into the Position menu and change the size of the new element to .228. Change the Intensity to 2.0.

6) Click the Make button, choose color and in the RGB window, enter R-66, G-3, B-131. Click in the Preview window with the right mouse button to see the result.

7) Copy the current element. The new element name becomes Default element[cpy][cpy]. In the Position menu under Size/Intensity enter .386 for size and 2.0 for Intensity.

8) Click the Make button. In the Color folder under Width enter .310. Click on Color and in the RGB window, enter R-236, G-22, B-53.

9) Copy the current element. The new element name becomes Default element[cpy][cpy][cpy]. In the Position menu in the Active window, select Negative. Under Size/Intensity enter .458 for Size and 2.0 for Intensity.

10) Click the Make button and select the sphere shape with the dithered edges at the far left. Click on Color and in the RGB window, enter R-255, G-103, B-127. In the Shape folder enter 7 for number (No.) of sides. Click Ok.

11) Click on Noise. Reduce Turbulence deformation to .14.

12) Render a Preview by clicking in the Preview with the right mouse button. Save your work once again. Click on Config. and Render a final image