



Advanced Guide
for Macintosh® and Windows®

Trademarks

Trademarks MetaCreations Painter 3D, MetaCreations Painter, MetaCreations Ray Dream Studio, MetaCreations Ray Dream 3D, MetaCreations Poser, MetaCreations Bryce 3D and MetaCreations Detailer are trademarks of MetaCreations Corporation.

Natural-Media is a trademark of MetaCreations Corporation which may be registered in certain jurisdictions. Apple and Power Macintosh are registered trademarks of Apple Computer, Inc. Windows is a registered trademark of Microsoft Corp. 3D Studio MAX is a registered trademarks of Autodesk, Inc. All other trademarks or registered trademarks are the property of their respective owners.

Copyright

This manual, as well as the software described in it is furnished under license and may only be used or copied in accordance with the terms of such license. Program ©1998 MetaCreations Corporation, including the look and feel of the product. MetaCreations Painter 3D Advanced Guide ©1998 MetaCreations Corporation. No part of this guide may be reproduced in any form or by any means without the prior written permission of MetaCreations Corporation.

MetaCreations Painter 3D is covered by U.S. Patent No. 5,347,620. Licensed under U.S. Patent No. 4,558,302 and foreign counterparts. This product is covered by one or more patents owned by Scitex Corporation LTD.

Notice

Before using this software or reading this user guide, make sure you have read, understood and agreed to the license contained in the back of the Painter 3D Advanced Guide.

Credits

Fractal Design Detailer was originally created by Mark Zimmer, Tom Hedges, Glenn Reid, Vahé Avedissian, Seath Ahrens, and John Derry. From the Painter team: Priscilla Shih, Christina Hall, Erik Johnson and Scott Cooper.

Quality Assurance testing by Michael Cinque, Adam Croston, Caitlyn Meeks, Stanley Vealé and Rob Thorne.

Painter 3D was created by Pascal Belloncle, Vahé Avedissian, Nicolas Barry, Pascal Fonté, Damien Saint-Macary, Thierry Buffenoir, and Emil Valkov and Mark Yang.

Product Management: Jerry Granucci.

Quality Assurance testing by Stanley Veale, Randy Hollingsworth, Quiche Wood and Dan Huver.

The Painter 3D Advanced Guide was written by Beth Chargin and Lionel Kirsher; edited by Beth Chargin and Teresa Frazier-Andrews; project management Stephanie Workman, Rafael Rodriguez, Erick Vera, and Beth Chargin; art directed by Brian Moose; illustrated by Heather Chargin, Brent Houston, Mojdeh Marashi, and Aaron Begley; production by Lauren Ferguson; prepress production by Rich O'Reilly.

Thanks to our friends at Zygote Media Group, Viewpoint Datalabs and Vivid Details for providing us with great 3D models and beautiful photographic images and patterns.





Welcome to the Painter 3D™ Advanced Guide

MetaCreations Painter 3D is the latest development in the MetaCreations Painter family. Painter 3D is the best way to create realistic or artistic looks for 3D models. It contains hundreds of Natural-Media® tools and effects, which let you create surface maps that control the appearance of your 3D objects. With Painter 3D, you can interactively create texture, bump, reflection, highlight, glow, and environment maps, with all the control and flexibility MetaCreations products are known for.

Painter 3D is a new product from MetaCreations, but its roots are strong. A natural evolution from Fractal Design Detailer™, Painter 3D marries the proven technology from its predecessor with the richness of Painter 5 to create an exciting new application for 3D artists.



What Is Painter 3D?

Painter 3D is a paint program abundantly filled with artistic tools and effects for 3D models. With Painter 3D, you can express your artistic vision by painting directly on 3D models with Natural-Media tools. You

can easily transform your models from the ordinary to the spectacular by adding color, texture, shine, reflection, glow, and environment effects. It's the closest thing to actually holding an object in your hand and painting on it.



About the Advanced Guide

This manual provides information not included in the Painter 3D Users Guide. It will help you learn the more advanced features of Painter 3D. The guide provides reference information, and is a valuable resource for exploring Painter 3D in depth.

This guide assumes you are already familiar with basic Macintosh® and Windows® concepts—menus, dialogs, and mouse operations, such as clicking and dragging. If you need more information on these subjects, or on the Macintosh Finder or the Windows Desktop, refer to the Macintosh User's Manual or the Microsoft Windows User's Guide, respectively.

It also assumes that you're familiar with the basics of working in Painter 3D. If you're not, refer to the "Getting Acquainted with Painter 3D" and "Painter 3D Basics" sections in the *Painter 3D Users Guide*.

Conventions

The Painter 3D Advanced Guide is for both Macintosh and Windows. By convention, Macintosh commands precede Windows commands in the text. For example, Command/Ctrl+I, is equivalent to the Macintosh Command-I and the Windows Ctrl+I. For simplicity, the term folder refers to directories as well as folders. The Painter 3D interface for Macintosh and Windows platforms is identical, unless otherwise specified.

There are also several conventions used to identify paths to certain tools and controls. The convention to a menu follows the rules of the **menu name> menu item**. The convention to a palette follows the rules of the **palette name: subpalette name**. The convention to a palette menu follows the rule of **palette name: palette menu> menu item**.

Modifier Keys

When a modifier key differs between the Macintosh and Windows platform, the Macintosh modifier is listed first followed by a slash and the Windows modifier key. **Option/Alt** means Macintosh users press the **Option** key and Windows users press **Alt**.



Who Is MetaCreations?

MetaCreations is a major force in 2D and 3D graphic software, developing and marketing next generation products that unite traditional art, and design techniques with digital technology. MetaCreations products are engineered to deliver real-time interaction, intuitive functionality, and creativity to design professionals, graphics hobbyists, and consumers who work on desktop computers.

MetaCreations' focus is maintained by three product values:

- Faithfully replicate Natural-Media and real world looks in the digital medium.
- Facilitate and extend the range of creativity by allowing artists to do things they couldn't do before.
- Capture human expression and allow the artist's perspective and intent to show through.



For More Information

For more information about MetaCreations' products, see our Web site on the Internet:

<http://www.metacreations.com>



Advanced Painting



Customizing Painter 3D's Brushes

All the Painter 3D brushes are adjustable in a myriad of ways. In fact, the default variants in the Brushes palette are just saved settings from Painter 3D's vast collection of brush controls.

While these default brushes do excellent work, you'll probably want to adapt them to a particular need or refine them to your own style. You can change brush size, shape, angle, how color flows from it, and much, much more. This chapter describes the many features for customizing Painter 3D's brushes.

Changes you make to brush variants, including the basic controls like size and opacity, apply only as long as that variant is selected—they disappear as soon as you

switch to another variant. This ensures that the brushes are “clean” every time you reach for them. *If you want to keep the changes, you must save them.* Painter 3D allows you to save customized brushes as either the default variants or as new brush variants.



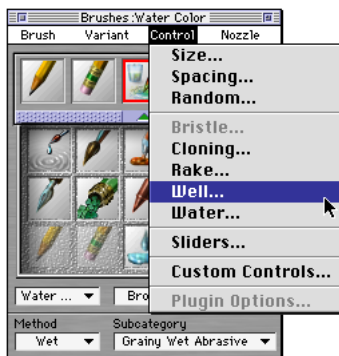
Caution: Adding variants to a library increases memory requirements. The size limit for a brush library is 15MB. For efficiency, and to avoid problems, save your custom brushes to secondary brush libraries. It's easy to load alternate libraries, so your favorite brushes are always nearby.



Brush Control Palettes

The Brushes palette: Control menu provides a selection of palettes that can be used to customize brush variants

depending on their method. These palettes are referred to as Brush Control palettes.



Brush Controls are found in the Controls menu.

For example the Water palette works exclusively with the Water Color brush. You can also add brush controls to the Controls palette for any brush variant. This allows you to create a custom set of controls for that brush. For more information on adding controls to the Controls palette, refer to “Customizing the Controls Palette” on page 207.

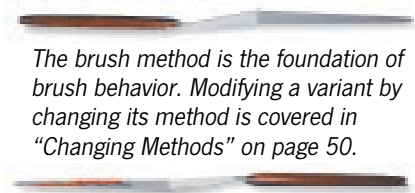
- The Size and Bristle palettes control the size and shape of the “dabs.” Although brush strokes appear as a continuous swatch of color, they are

actually created by laying down a series of closely spaced individual dabs.

- The Spacing and Rake palettes control the way the dabs are repeated in the stroke.
- The Random palette has one control for the stroke and several for the medium.
- The Cloning palette has special controls for brushes of the cloning method.
- The Well palette controls the medium (usually color) that flows from the brush.
- The Water palette has special controls for brushes of the wet method (water color).
- The Sliders palette can be used in many ways to affect the dab, stroke, and medium.

Remember that the most basic setting for a brush variant is its Method. Some palettes and controls don't apply in some variant methods. Certain other brush dab and stroke settings preclude other controls. In most cases, controls that don't apply for the current method appear dimmed.

Methods and method subcategories are selected from the bottom of the expanded Brushes palette. The pop-up menus display the options available for the selected brush.



The brush method is the foundation of brush behavior. Modifying a variant by changing its method is covered in “Changing Methods” on page 50.

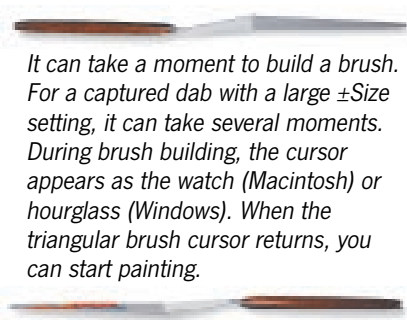
Building the Brush

When you make changes to the dab—choosing a different brush tip or resizing a dab type—Painter 3D may need to compile the changes, which is done in a process called “building.”

The Size palette has a Build button. You can also build a brush with Command-B/ Ctrl+B, or with Brushes palette: Brush menu> Build. If you try to paint with a brush that hasn't been built, Painter 3D informs you and gives you a chance to build it.

You might want Painter 3D to take care of brush building automatically. If so, choose Brushes palette: Brush menu> Auto Build Brush. When this option is enabled, Painter 3D builds the brush after each parameter change.

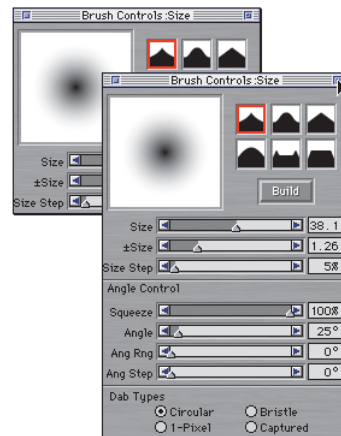
If you are designing brushes and only want to build the brush when you are finished, disable Auto Build Brush.



It can take a moment to build a brush. For a captured dab with a large ±Size setting, it can take several moments. During brush building, the cursor appears as the watch (Macintosh) or hourglass (Windows). When the triangular brush cursor returns, you can start painting.

Size Palette

The Size palette accessed from the Brushes palette: Control menu lets you control the brush dab.



The Brush Controls: Size palette allows you to control the size and angle of brush dabs. Click the grow box to expand the palette.

Preview

The Preview window in the center of the palette shows how your changes affect the brush dab. Clicking in the Preview window lets you toggle between “hard” and “soft” views of the dab.



Hard view



Soft view

Click in the Preview window to toggle between hard view and soft view.

In the *hard view*, concentric circles show the minimum and maximum size of a brush. The inner (black) circle shows the minimum dab width. The outer (gray) circle shows the maximum dab width. Remember that some brushes vary the line width based on pressure or stroke speed. The difference between the diameter of the two circles shows the range in which the stroke width will vary.

In the *soft view*, shading shows the density distribution of the brush tip. The density distribution describes how much of the medium is conveyed by a given point on the brush dab. For example, an individual dab made by an airbrush produces a soft-edged circular mark with minimum density at the outer edge of the dab. Density increases inward to a maximum value at the exact center of the dab.

Brush Tips

The brush tip profile shows a cross section of density distribution across the diameter of the dab. You can think of a brush tip profile as a bell curve graph representing the density spread across the brush dab.

Different mediums have different density distributions. Changes in the density distribution produce different marking qualities in a brush stroke.

To change the density distribution, click the icon for the brush tip profile you want.



Pointed profile

Pointed profile provides maximum density at the center with rapid fall-off to the edge.



Medium profile

Medium profile has a wide area of greater density at the center with rapid fall-off to the edge.



Linear profile

Linear profile provides maximum density at the center with an even fall-off to the edge.



Dull profile

Dull profile provides maximum density at the center with a high density weighting to the edge.



Watercolor profile

Watercolor profile provides maximum density at the outer edge in a ringlike fashion with medium internal density.



1-Pixel Edge

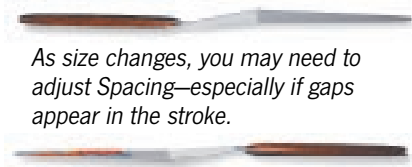
1-Pixel Edge provides maximum density throughout with a rapid fall-off at the edge, producing a one-pixel, anti-aliased edge.

Size

The Size slider controls the width of the brush dab and, therefore, the brush stroke. Moving the slider to the right makes a brush wider. Moving it to the left makes it narrower.



The Size slider controls the width of the brush dab.



As size changes, you may need to adjust Spacing—especially if gaps appear in the stroke.

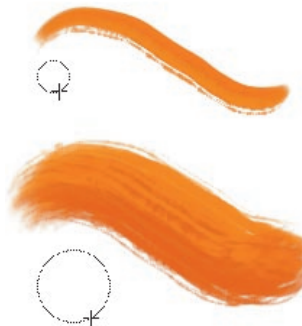
You don't need to open the Brush Controls: Size palette to adjust the size of a brush. You can use the Size slider on the Controls palette: Brush tool or use the brush sizing shortcut.



To use the brush sizing shortcut:

1. Hold down the Command-Option/Ctrl+Alt keys and drag in the Image window. A circle that represents the brush diameter appears beneath the cursor.
2. When you've dragged the circle to the size you want, release the button.

In some cases, the brush must be "built." Press Command-B/Ctrl+B to build the brush. If you try to paint with an "un-built" brush, Painter 3D alerts you.



To size your brush dab, press the Command-Option/Ctrl+Alt keys and drag.

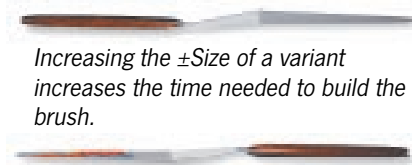
±Size

The ±Size slider controls the difference between the minimum and maximum width of a stroke. Remember that some brushes vary the line width based on pressure or stroke speed. The difference between the diameter of the two circles shows the range the stroke width will vary.

Moving the slider to the right increases the difference between the narrowest and widest portions of a stroke.



The ±Size slider controls the difference between the minimum and maximum width of a stroke.



Size Step

The Size Step slider controls the transition between the narrow and wide sections of a stroke. Moving the slider to the right

makes the transition appear more abrupt. Moving it to the left makes the transition smoother.



The Size Step slider controls the transition between the narrow and wide sections of a stroke.

Build



When you finish making changes on the Brush Controls: Size palette, you may need to click Build (if the button is raised and highlighted) to create the brush shape. Pressing Command-B/Ctrl+B or choosing Brushes palette: Brushes menu> Build Brush types also builds the brush.

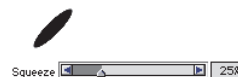
Angle Controls

Expand the Brush Controls: Size palette by clicking the grow box. The Angle Control sliders and Dab Type buttons appear.

Squeeze

The Squeeze slider controls the shape of the brush dab. Squeezing a brush changes it from round to elliptical. Moving the slider to the left makes a dab more elliptical and moving it to the right makes a dab more round.

Squeezing and angle control are not valid for Bristle and 1-Pixel dab types.



The Squeeze slider controls the shape of the brush dab.

Angle

The Angle slider controls the angle of an elliptical brush dab. Moving the slider to the right rotates the dab clockwise. Moving the slider to the left rotates the brush counterclockwise.



Angle



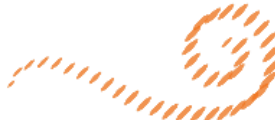
Angle

The Angle slider controls the angle of an elliptical brush dab—it is only significant for dabs with Squeeze below 100%.

Ang Rng

The Angle Range slider lets you specify a range of dab angles in a brush stroke. Setting this slider to 180° means you can get every angle between 0° and 180° in your stroke.

To take advantage of this feature, you'll need to set up the brush to base the angle on some factor, like stroke direction or randomness. You'll do this in the Sliders palette, discussed in "Sliders Palette" on page 205.



Ang Rng



Ang Rng

The Angle Range slider controls the range of dab angles that may appear in a brush stroke.

Ang Step

The Angle Step slider controls the increment of change for brushes with an Angle Range greater than 0°. For example, setting the Angle Step to 5° means that you get a brush dab every 5° within the current angle range setting. Moving the slider to the right results in fewer brush dab angles. Moving the slider to the left creates more brush dab angles.



Ang Step



Ang Step

The Angle Step slider controls the increment of change for brushes with an Angle Range greater than 0°.

Dab Types

Brushes use one of the following dab types: Circular, 1-Pixel, Bristle, or Captured.



There are four different dab types available in the Size palette.

Circular

Circular dabs are controlled by the Size palette.

1-Pixel

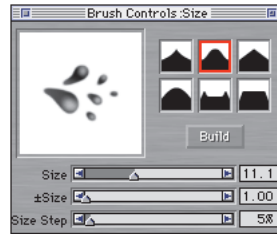
A 1-Pixel dab consists of one pixel. You can't change its size. You'll use 1-pixel brushes mostly when you zoom in to edit at the pixel level.

Bristle

Bristle dabs are controlled by the sliders in the Brushes palette: Controls menu > Bristle palette. When you select Bristle Dab, the soft view of the Preview window on the Size palette displays a bristly dab.

Captured

Captured dabs are dab shapes that you create and capture with Brushes palette: Brushes menu > Capture Brush, described in "Capturing Brush Dabs" on page 209.

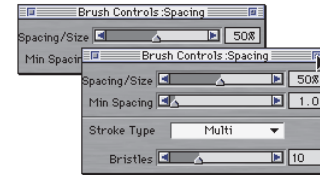


A captured dab is for a captured brush. It lets you paint with specific shapes and designs.

You can choose the dab type for a variant you're creating at the bottom of the expanded Size palette.

Spacing Palette

A brush stroke is created with a series of dabs. By adjusting the spacing between dabs, you can control the continuity of the brush stroke.

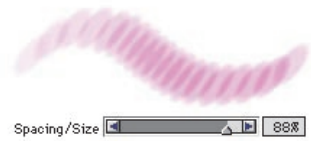


Use the Spacing palette to control the spacing of the dabs. Click the grow box to expand the palette.

Spacing/Size

The Spacing/Size slider controls the distance between the brush dabs in a stroke. When the Spacing/Size slider is at 100%, the size of the dab equals the spacing. For example, a dab that's 10 pixels across is repeated every 10 pixels. As the Spacing/Size slider is moved to the left, the distance between dabs is less and

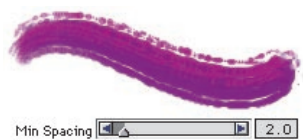
they begin to overlap. Overlapping increases the density of the stroke and makes it look more continuous.



The Spacing/Size slider controls the distance between the brush dabs in a stroke.

Min Spacing

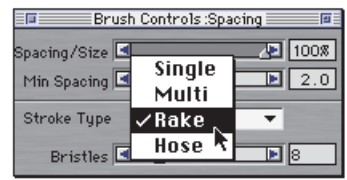
The Minimum Spacing slider specifies the minimum number of pixels between dabs. If you don't want a continuous stroke, move the Minimum Spacing slider to the right. In this way, you can create a dotted or dashed line. Each dot or dash is made by one brush dab.



The Minimum Spacing slider controls the minimum number of pixels between dabs.

Stroke Types

Expanding the Brush Controls: Spacing palette reveals the Stroke Type pop-up. The Bristles slider, at the bottom of the palette, controls the number of dabs used for Multi-stroke and Rake brushes.



The Stroke Type slider is used to select the type of stroke used in the spacing.

Single

A Single stroke brush has one dab path.



The single stroke brush has one dab path.

You can use Bristle and Captured dabs with the Single stroke option to create the effect of multiple bristles.

Multi

A Multi-stroke is made by dragging a set of randomly distributed dabs. The several dabs leave strokes that are not parallel, and that might overlap. Each time you apply a multi-stroke brush, the result may differ.



The multi-stroke brush is made by dragging a set of randomly distributed dabs.

Each stroke in a Rake or Multi-stroke brush can have a different color. Increase Color Variability on the Art Materials: Color palette to color the strokes differently.

Multi-stroke brushes must be precomputed, which delays their appearance on the screen. Because of this delay, Multi-stroke brushes, such as the Van Gogh brush, work best when you apply them in short strokes.

Rake

A Rake stroke is made by dragging a set of evenly distributed dabs. The several strokes in a rake brush are parallel. All other rake control is done with the Brushes palette: Controls menu > Rake palette.



The rake brush is made by dragging a set of evenly distributed dabs.

Hose

The Hose is a single stroke composed of the current Image Nozzle file. To learn more about the Image Hose and Nozzle files, refer to Chapter 7, “The Image Hose.”



The Hose stroke type uses the current Nozzle file images as its dabs.

Bristles

The Bristles slider controls the number of bristles or dabs used for Multi-stroke and Rake brushes.



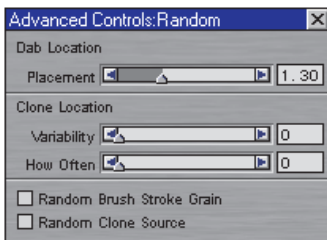
If you set a Rake brush for a certain number of bristles, but don't see that many bristles, one of two possible things is happening: either the dabs are overlapping or some of them are not in contact with the paper. You can adjust the Brush Scale and Contact Angle for the rake in the Rake palette. For more information on the Rake palette, refer to “Rake Palette” on page 200.



Random Palette

Painter 3D uses randomness to introduce an “accidental” quality in color and stroke. Randomness contributes to the

appealing, unique look of artwork done in Painter 3D. You can control brush randomness with the Random palette.



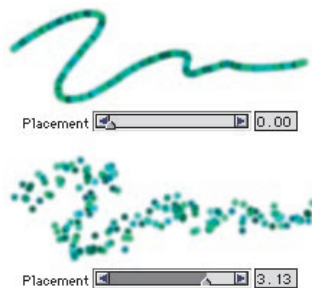
Use the Random palette to create a sense of randomness to your artwork.

Randomness of the primary color is controlled from the Art Materials: Color palette.

Dab Location Placement

The Dab Location Placement slider introduces a randomized jitter to the brush stroke. Instead of appearing directly along the stroke, dabs appear randomly

outside the brush stroke path. Move the slider to the right to increase deviation from the stroke path.



The Placement slider creates a randomized jitter in the brush stroke.

Clone Location

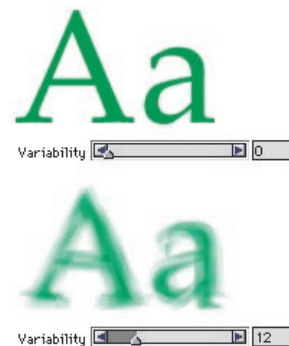
The two Clone Location sliders work with brushes of the Cloning method.

A cloning brush takes color information from a source image and applies it to a destination image.

One of the popular uses for cloning is translating a photographic image into a painted image. The type of brush you use determines the paint medium.

Variability

When Variability is zero, the pixels of the source and destination images correspond precisely—using a cover brush at full opacity (and no grain) simply re-creates the source image.



The Variability slider controls the offset of the clone based on the location of the source image.

Introducing a degree of randomness disturbs the pixel-to-pixel correspondence. The resultant variations in the image distance the clone from its photographic source, which can contribute to the Natural-Media appearance.

The Variability slider lets you randomly offset the location where the clone brush samples the source. Moving the slider to the right increases the range (distance) the sample may be offset.

How Often

The How Often slider controls the period between random offsets. Moving the slider all the way to the left sets the period to zero—every sample is offset. This gives the clone image a rough, distorted look.



How Often



How Often

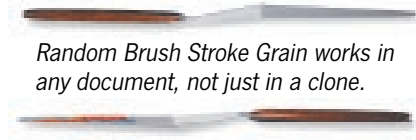
The How Often slider controls the period between random offsets.

Moving the How Often slider to the right increases the period—samples are offset less frequently. This keeps the clone image closer to the source.

Random Brush Stroke Grain

Normally, when you make a brush stroke, the paper grain is fixed. Strokes repeated over an area will bring out the same grain.

The Random Brush Stroke Grain option randomly moves the paper grain for each stroke. The Spatter Airbrush is an example of a variant that uses Random Brush Stroke Grain.



Random Brush Stroke Grain



Random Brush Stroke Grain

The Random Brush Stroke Grain option randomly moves the paper grain for each stroke.

Random Clone Source

Random Clone Source randomly samples the source document. There's no correspondence between the samples taken from the source and where they are placed on the clone. The result is a random pattern of the predominant colors in the source. The brush and stroke determine the nature of the pattern.

If you use Random Clone Source with a faint stipple brush to add “noise” to an image, the clone source image merely contains the noise colors you want to add.



Random Clone Source

Random Clone Source

The Random Clone Source option randomly samples the source document.

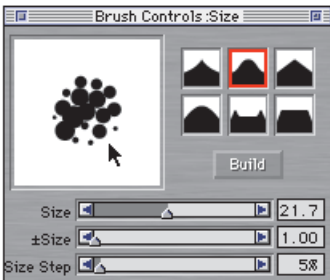
Bristle Palette

Bristles create the look of a real brush, complete with the striations that hairs on a real brush make. Use the sliders on the Bristle palette to design the many individual painting tips in a single brush dab.

To see the effect of the Bristle sliders, keep the Size palette open. Click in the preview window to show the “soft” view of the dab. The bristled dab changes as you move the sliders.



The Bristle palette controls the brush's bristle appearance.



To view the effect of the Bristle palette sliders, click the Preview on the Size palette.

Thickness

The Thickness slider controls the diameter of the separate bristles.

Moving the Thickness slider to the left reduces the density of the medium left by the stroke. When the slider is fully to the left, the brush leaves a faint stroke—even if Opacity is 100%.



The Thickness slider controls the diameter of the individual bristles.

Clumpiness

The Clumpiness slider applies a random proportional variance across the bristles. This produces an effect that looks like some of the bristles have clumped together.



The Clumpiness slider controls how bristles clump together.

Hair Scale

The Hair Scale slider controls the density of bristles in the brush dab. If you want a fine-hair brush, move the Hair Scale slider left.



The Hair Scale slider controls the density of bristles in the brush dab.

Scale/Size

The Scale/Size slider controls the degree of size variation applied to a bristle set. At 0% there is no size change applied to the bristle set. Setting this slider to a value greater than 0% creates a set of scaled iterations of the bristles dab.

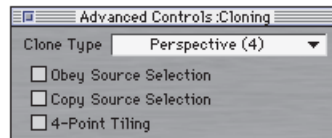
The Scale/Size control is invalid if the Size palette is set at the minimum value of 1.00.



The Scale/Size slider controls the degree of size variation applied to a bristle set.

Cloning Palette

The Cloning palette offers controls specific to cloning method brushes and other brushes when the Color palette's Clone Color option is enabled.



The Cloning palette controls options specific to cloning.

Clone Type

The Clone Type pop-up lets you choose between several cloning variations. These variations are arranged according to the number of reference points used. With two or more reference points, you can apply a transform (rotate, skew, scale, mirror, perspective) during cloning. For complete information on using the different clone types, refer to Chapter 5, "Cloning and Tracing."

All the Clone Type variations are valid for any brush that uses the Color palette's Clone Color option.

Obey Source Selection

With this option enabled, any selection in the clone source region is used to constrain painting in the destination. If a transform Clone Type is used, the selection is appropriately transformed. This option is valid only with the Cloning method.

Copy Source Selection

With this option enabled, the Cloning brush reproduces the source selection information in the destination selection. This option is valid only with the Cloning method.

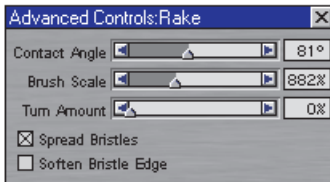
4-Point Tiling

With this option enabled, your clone source is tiled in a repeating pattern.

Rake Palette

The Rake palette lets you control the sophisticated features of a Rake stroke, which maintains the angle of the brush head as the stroke changes direction. As the brush turns, bristles come in and out of contact.

The number of dabs in a Rake brush variant is set in the Spacing palette.

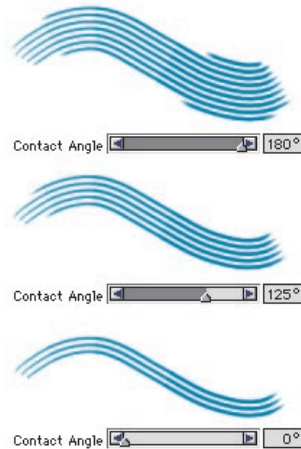


The Rake palette controls options specific to the Rake stroke.

Contact Angle

The Contact Angle slider adjusts how much of the brush touches the painting surface. Moving the slider to the left creates a low contact angle—few of the dabs are in contact with the paper.

Moving the slider all the way to the right creates a high contact angle—all the dabs contact the paper.



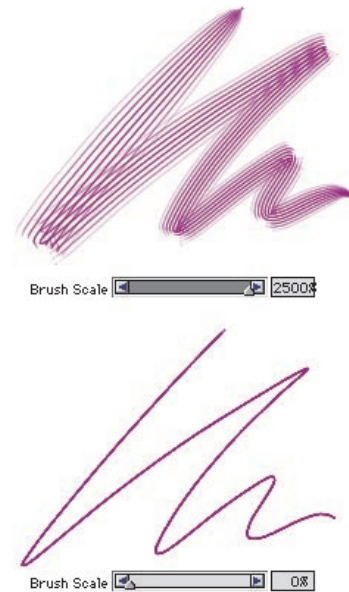
The Contact Angle slider controls how much of the brush contacts the painting surface.

Brush Scale

The Brush Scale slider controls the spacing between the individual dabs that comprise the Rake (the size of each dab is determined in the Brushes palette: Controls menu > Size palette).

When the scale is 100%, the stroke width is equal to the dab width multiplied by the number of dabs. When the scale is less than 100%, the dabs overlap. Overlapping

dabs create a natural, subtle stroke when used with Turn Amount and Soften Bristle Edge.



The Brush Scale slider controls the spacing between the individual dabs in the rake. Higher Brush Scale settings spread the dabs.

Turn Amount

When you turn a real brush to paint a curve, bristles at the edges move in and out of contact with the painting surface, depending on the brush's location on the curve (inside or outside).

The Turn Amount slider simulates this bristle displacement. As the turn amount increases, the rake bristles displacement changes based on the direction of the brush.



Turn Amount 0%



Turn Amount 150%

The Turn Amount slider controls the displacement of inside and outside bristles.

Spread Bristles

The Spread Bristles option dynamically adjusts the brush scale based on pressure. The harder you press, the more the brush fans out.



The Spread Bristles option controls the spacing of the bristles. The harder you press, the more the bristles spread. If you want the Spread constant, disable this option.

Soften Bristle Edge

This option makes a brush's outer dabs semi-transparent. This option is particularly nice when used with Turn Amount.



Soften Bristle Edge



Soften Bristle Edge

The Soften Bristle Edge option turns the outer dabs semi-transparent.

Well Palette

The Well palette controls how a brush conveys its medium (color) to the paper. The Resaturation, Bleed, and Dryout controls work together to determine how much color a brush has at the start and finish of a stroke.

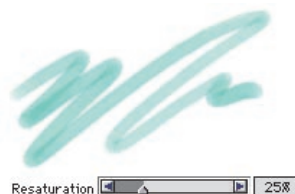
The Well settings have no effect on brushes that only move existing color.



The Well palette controls how a brush conveys its medium to the paper. [0462pw redo for resolution]

Resaturation

Resaturation controls the amount that color is replenished in a stroke. If Resaturation is zero, the brush will never get any color. When Resaturation is below 10% (and Bleed is less), the brush stroke fades in gently.

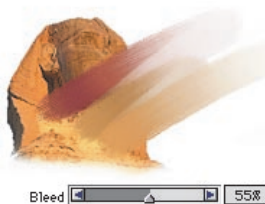


The Resaturation slider controls the amount of color replenished in the stroke.

Bleed

The Bleed slider controls how much the brush colors mix with the underlying colors—including the paper color. Moving the slider to the right increases the extent of bleed.

When Bleed is higher than resaturation, more color bleeds than covers, so the stroke will never reach full opacity.



The Bleed slider controls the amount of underlying color mixed in with the selected color.

Dryout

The Dryout slider determines how quickly a brush runs out of its medium. Dryout is measured in pixels. Moving the slider to

the left makes a brush's reservoir empty more quickly. This can lead to brush strokes that fade out gently.

When the slider is set to the far right, the brush never runs out of color.

Dryout works in conjunction with Bleed, so Bleed must be above zero to take advantage of Dryout. You can modulate the Dryout effect by changing the Bleed setting.



The Dryout slider controls how fast the brush runs out of medium.

Water Palette

The Water palette works with Painter 3D's wet layer. The wet layer adds a color layer to an image that allows for transparent washes of color without overwriting the underlying image. The Wet Layer is used only when you paint with a wet method brush, like Water Color.

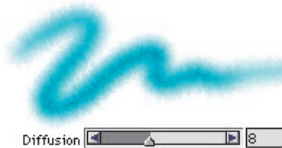


Use the Water palette to control the wet layer.

Diffusion

Diffusion controls the amount a stroke spreads out and blurs. High diffusion creates wonderful, soft edges that feather into the grain. In terms of natural watercolors, low Diffusion is like painting on dry paper and high Diffusion is like painting on wet, absorbent paper.

You can “post-diffuse” the wet layer by selecting the area you want to diffuse further and then using the Shift-D keyboard shortcut. Repeat the command until you’re satisfied with the result.



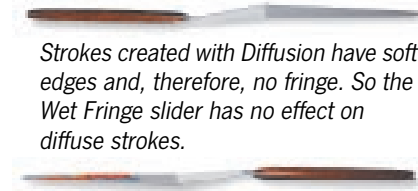
Use the Diffusion slider to control the spread of the stroke.

Wet Fringe

Wet Fringe controls the pooling of colors. When you paint with the Water Color variants, you’ll notice that color collects at the edges of the stroke. This follows the behavior of natural watercolor.

By adjusting the Wet Fringe slider you can control the amount of color at the edge for all strokes in the wet layer. You can’t adjust pooling after you dry strokes.

Watch the edges of your watercolor strokes darken as you drag the slider to the right. To minimize pooling, move the slider to the left.



Strokes created with Diffusion have soft edges and, therefore, no fringe. So the Wet Fringe slider has no effect on diffuse strokes.

To get different pooling amounts for individual strokes, adjust the Wet Fringe slider for one or more strokes, then dry them. Paint more watercolor strokes, and adjust the Wet Fringe slider again.

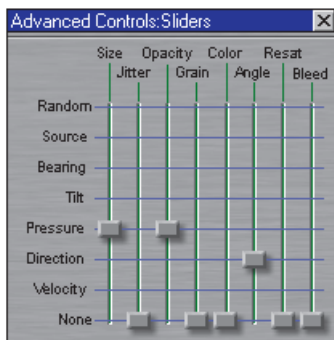


Use the Wet Fringe slider to control the pooling of colors at the edge of a stroke.

Sliders Palette

The Sliders palette lets you control brush effects based on a number of input factors. For example, many brushes vary their opacity or width in response to changes in stylus pressure. This is merely their default setting. You can use the

sliders to vary these effects in response to other factors, like stroke direction or velocity. This is the kind of modification you'll want to make if you're using a mouse to draw with and don't have access to pressure information.



Use the Sliders palette to define more control over brush behavior.

But the sliders have far more sophisticated uses--for example, you can base the dab angle on the clone source. This is particularly interesting when the stroke has enough spacing to separate the dabs. As you stroke the brush in the clone document, Painter 3D sets the dab angle based on luminance of the source. The dabs look like paint strokes that are contoured to the image.

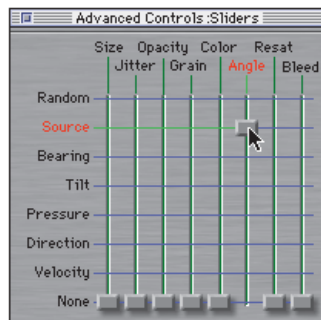
For information on dab angles and setting the Angle Range, refer to "Size Palette" on page 189. For information on cloning, refer to Chapter 5, "Cloning and Tracing."

The Sliders palette is set up as a matrix. Drag the slider for one of the eight main brush components to link it to one of the eight control factors.

Control Factors

Random

Random adjusts the component at random.



The Sliders palette is a component matrix, controlling eight different brush factors.

Source

Source adjusts the component based on the luminance of the clone source. Higher luminance (closer to white) increases the setting for that component—for example, a wider stroke.

If you set a component to Source, but the brush effect is opposite of what you want; invert the source image. Choose Effects menu > Tonal Control > Negative.

Bearing

Bearing adjusts the component based on the direction in which the stylus points. Not all stylus models convey this information.

Tilt

Tilt adjusts the component based on the angle of the stylus from the tablet. Not all stylus models convey this information.

Pressure

Pressure adjusts the component based on stylus pressure. Greater pressure increases the setting for that component.

Direction

Direction adjusts the selected brush component based on the direction of the stroke.

Velocity

Velocity adjusts the component based on the dragging speed. Dragging quickly minimizes the setting. Dragging slower increases it.

None

None applies no adjustment to the component.

Brush Components

Size

The Size slider determines how Painter 3D should vary the width of the brush stroke. The range from minimum to maximum is determined by the \pm Size control in the Brushes palette: Controls menu > Size palette. The most common source for size variance is Pressure. The Scratchboard tool is a good example of a brush with Size based on Pressure.

Jitter

The Jitter slider determines when (how often) Painter 3D should jitter the brush stroke. The amount of jitter is controlled by the Dab Location Placement slider on the Brushes palette: Controls menu > Random palette. A typical source for controlling jitter is Velocity. Jitter will reduce as the brush speeds up.

Opacity

The Opacity slider determines how Painter 3D should vary the density of the medium. The Opacity slider in the Controls palette: Brush tool will establish

the maximum opacity of the brush. The opacity of the Airbrush is determined by pressure. More pressure yields more opaque strokes.

Grain

The Grain slider determines where Painter 3D should reveal paper texture in a brush stroke. The Grain slider in the Controls palette: Brush tool sets the maximum amount of grain in the brush. The Colored Pencil variant has its Grain component determined by pressure. Increasing pressure causes the pencil to “dig into” the paper.

Color

The Color slider determines where Painter 3D should use the primary or secondary color. You can create a duotone effect by setting color to Original Luminance and painting into a clone. The color of the brush will be determined by the light and dark areas of the source.

Angle

The Angle slider determines how Painter 3D orients the brush dabs. The Ang Rng setting in the Brushes palette: Controls menu > Size palette must be greater than 0.0 and Squeeze must be less than 100% in order for brush angles to vary. The

Impressionist and Oil Pastel variants will change dab angles based on the direction of the stroke.

Resat

The Resaturation slider determines how Painter 3D controls resaturation—how much color is replenished in a stroke. Resaturation amount is set in the Brushes palette: Controls menu > Well palette. When used in conjunction with Bleed, setting the Resat component to Pressure can create a brush that behaves like a drying marker.

Bleed

The Bleed slider determines how Painter 3D controls bleed—how much colors mix. Bleed amount is set in the Brushes palette: Controls menu > Well palette. When used in conjunction with Resat, setting the Bleed component to Pressure can create a brush that behaves like a drying marker.



Customizing the Controls Palette

The Controls palette: Brush tool holds basic brush controls, including size, opacity, and grain. If you like, you can add controls to the palette for specific variants.

The controls you add are copies of the sliders and check boxes from the relevant Brushes palette: Controls menu palettes.

For example, as you work, you may find that you frequently use the Well palette variant. You can customize the Controls palette: Brush tool to hold the Well palette sliders (Resaturation, Bleed, Dryout) whenever you choose the Felt Marker.



To customize the Controls palette: Brush tool:

1. Choose the variant whose Controls palette display you want to customize.
2. Choose **Brushes palette: Controls menu > Custom Controls**.
3. Use the Category pop-up to choose the palette that holds the features you want to add. The dialog updates to list the features for the selected category.
4. Enable the check box for each feature you want.

The Controls palette can hold a limited number of items. Add only the most important features.



The Controls palette: Brush tool customized for the Felt Marker Variant. These added controls are only a suggestion. You can add any relevant controls you like.



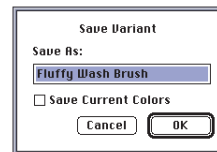
Saving Customized Brush Variants

When you've customized a variant the way you like it, you can use it immediately. Unless you save them, changes you make to brushes disappear as soon as you switch to another variant or brush. If you want to keep a customized variant, save it as a new variant or save changes to the current variant.



To save the current settings as a variant of the selected brush:


1. Choose **Brushes palette: Variant menu > Save Variant**. The Save Variant dialog appears:



Use the Save Variant dialog to save any changes you make to a brush variant.

2. Painter 3D prompts you to name the variant. If you want the primary and secondary current colors saved with the variant, enable Save Current Colors.
3. Type a name for the new variant, then click OK.

Your new variant appears on the variant pop-up for the current brush category.



Each brush can hold up to 32 variants. It's easier to find the variant you're looking for when the list is shorter. You can manage the number of variants under a brush by creating new brushes and saving the variants you create there.

Adding variants to a brush library increases memory requirements. There is a limit to the memory allowed in a brush library, and hence, a limit to the number of variants allowed. Avoid problems by creating new libraries and saving variants there.

Hot Tip: If you have an item on a custom palette from a secondary library, choosing it will automatically load the other library. You can use this feature to create shortcuts to your other brush libraries.



To save changes to an existing variant:

Choose **Brushes palette: Variant menu > Save Built Variant**. Your changes are incorporated in the variant.

To return the current variant to the factory settings:

You might change one of Painter 3D's default variants, then decide that you want the original back.

1. Choose the variant from the **Brush palette: Variant pop-up**.
2. Choose **Brushes palette: Variant menu > Restore Default Variant**.



To delete a variant:

1. Choose the variant from the **Brush palette: Variant pop-up**.
2. Choose **Brushes palette: Variant menu > Delete Variant**. Painter 3D asks you to confirm that you want to delete the variant. Click Yes to delete the variant.

Copying Variants between Brushes

If you create a variant, then decide you want it under a different brush, you can copy it there. After copying, you can delete the original.

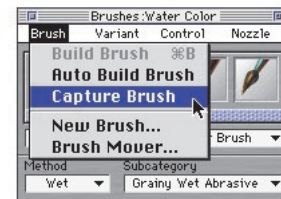
To copy a variant to a different brush:

1. Choose the variant you want to copy from the **Brush palette: Variant pop-up**.
2. Choose **Brushes palette: Variant menu > Copy Variant**.
3. In the dialog, choose the destination Brush from the pop-up. Then click OK.



Capturing Brush Dabs

You can create your own brush dab shapes. Any shape is possible.



When you've created a shape you like, select and capture it.



To create a brush dab shape:

1. On a white background, draw the brush shape in black. Use shades of gray to define partially transparent areas of the brush.



A captured brush that is set to follow stroke direction must face 3 o'clock or the right hand side.

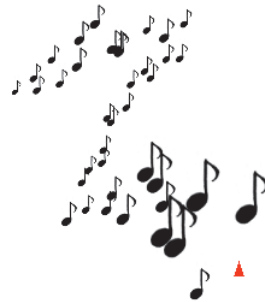
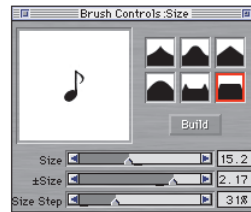


2. Choose the Rectangular Selection tool. Hold down the Shift key and drag across your brush shape to create a square selection.

Painter 3D uses the selected area to map the brush size. When the brush is built, this area is sampled to compute each brush dab. When the original area must be scaled to the size of the brush dab, sampling can appear aliased. The greater the scaling, the more aliasing will be apparent. To prevent this, create a shape with soft (grayscale) edges and draw it close to the size at which you'll use it.

3. Choose the brush where you'll want to save a variant for the captured dab shape.

4. Choose **Brushes palette: Brushes menu > Capture Brush**.
5. Take a look at the brush dab in the **Brushes palette: Controls menu > Size palette**. Change its size, squeeze, and angle, if necessary. Click Build if Painter 3D doesn't automatically build your brush.
6. Draw with the brush. If you like the results, save it as a new variant.



You can paint with a captured brush as you would with other brushes.



Creating a New Brush

The brushes that appear with icons in the Brushes palette are containers for collections of similar variants. You can add your own brush categories to Painter 3D's Brushes palette.

You might want to create a brush if you've customized a medium and you want to keep its tools organized.




To create a new brush:

1. Draw a small image to use as the palette icon for the new brush.
2. Choose the Rectangular Selection tool. Hold down the Shift key and drag across the image to create a square selection.
3. Choose **Brushes palette: Brushes menu > New Brush**. Painter 3D prompts you to name the brush.
4. Type a name, then click OK.

Your new brush and its icon now appear on the Brushes palette.

When you create a new brush, the first thing you'll want to do is save some variants to it.



For efficiency on systems with limited RAM, keep brush libraries small. Painter 3D will be more efficient if you store the brush variants you create into several libraries. When you want to use these special brushes, load the alternate libraries.



Cloning and Tracing



Understanding Cloning and Tracing

Cloning is a feature that will help you create great 2D image maps quickly and easily. Cloning is the process of taking imagery from one area (the source) and re-creating it in another (the destination). Cloning is a two-step process: First you set the clone source, then you set and work in the destination. The source and destination can be in separate images or in different places of the same image.

You can use cloning to create various surface effects in the map channels for a single object, and you can use cloning to apply similar looks across objects in a complex model.

The cloning method brush variants are the most common way to develop imagery in the clone destination. These variants effectively “filter” the source imagery, reproducing it in an artistic style—like pastel chalk or water colors. Advanced, multi-point cloning lets you transform the imagery you clone in a variety of ways (rotate, scale, slant, perspective).

Painter 3D offers other interesting ways to take advantage of the clone source-destination relationship. Tracing paper is one.

Cloning has several levels of complexity. This chapter begins with basic work, then moves into advanced territory.



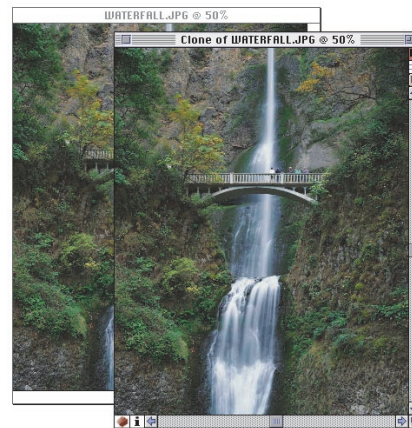
Cloning is the easiest way to create Natural-Media renderings.

Cloning a Document

The easiest way to create the clone source-destination relationship between two images is to clone a file.

To clone a document:

1. Open an image file. This image is the source document. A good source document contains well defined imagery.
2. Choose **File menu > Clone**. Painter 3D creates a duplicate (clone) of the document. This file appears with the words “Clone of” preceding the original document’s name in the title bar.



Choose the Clone command to create a clone file.

If your source image has floaters, cloning creates a fully composited copy. You can take advantage of this to automatically drop all your floaters or flatten your image. A flattened image will download faster to your laserprinter.

The clone file is more than a copy. It maintains a pixel-for-pixel correspondence with its source document. For this reason, the source must remain open while you work in the clone.

There are several ways you can take advantage of the clone-source relationship:

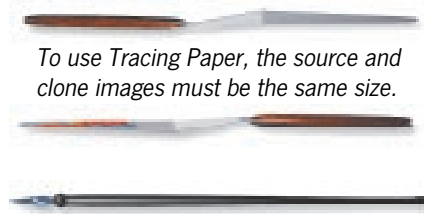
- To draw using Tracing Paper. See “Using Tracing Paper” on page 210.
- To paint with Cloner brushes, as described later in this chapter.
- To load noncloning brushes with colors from the clone source (using the Clone Color option on the Color palette).
- To control image effects (with the Using pop-up set to Original Luminance).
- To control brush variables for painting (using the Source setting in the Sliders palette).
- To develop a selection/user mask. Refer to Chapter 9, “Selections and Masks.”

Using Tracing Paper

After cloning a document, you use Painter 3D’s Tracing Paper feature.

Tracing paper is useful because it lets you create independent yet interrelated images. For example, you could set up a clone relationship between a texture map

and a bump map. Using tracing paper, you could develop images in the bump map that correspond to areas in the texture map. The images in the bump map could be created with different brushes than the ones in the texture map, giving an artistic effect.



To use Tracing Paper, the source and clone images must be the same size.

To trace an image:

1. After cloning the image you want to trace (**File menu > Clone**), choose **Select menu > Select All** and press the Delete/Backspace key to clear the entire canvas.
2. Choose **Canvas menu > Tracing Paper**. You can also press Command-T/Ctrl+T or click the

Tracing Paper icon in the vertical scroll bar. A 50% ghost of the source image appears.



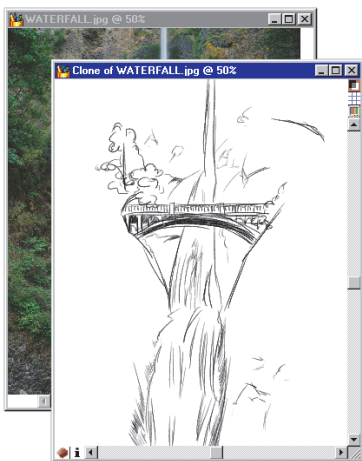
Click the Tracing Paper icon to toggle tracing paper on and off.

Now it’s easy to trace over the image. You can use any brush. Your brush strokes appear at 50% opacity when Tracing Paper is turned on.



Use the Tracing Paper feature to view the clone source for tracing.

3. After tracing the image, turn Tracing Paper off. Choose **Canvas menu > Tracing Paper**, press Command-T/ Ctrl+T, or click the Tracing Paper icon again. The faint original image disappears and your brush strokes appear at 100% opacity. If you want to keep tracing, just turn Tracing Paper on again.



When you turn Tracing Paper off, you see your tracing.

Point-to-Point Cloning

Point-to-point cloning (also called offset cloning) lets you clone within an image and between different areas of separate images.

To clone point-to-point within a document:

1. Choose a cloning brush or enable the **Color palette: Clone Color** option for a regular brush.
2. With the Control/Shift key held down, click the reference point for the source area.
3. Go to the destination area and begin painting. Refer to [“Painting in the Clone” on page 37](#) for more on painting with a Cloner.

You can also set the clone destination before painting by clicking with the Control-Shift/Ctrl+Shift keys.



Cloning within a document with the source region crosshairs showing.

To clone point-to-point between images:

1. Choose a cloning brush or enable the **Color palette: Clone Color** option for a regular brush.
2. Select the source document. With the Control/Shift key held down, click the reference point in the source area.
3. Select the destination document. Start painting at the point you want to correspond to the source reference. Refer to [“Painting in the Clone” on page 37](#) for more on painting with a Cloner.

By default, you will see a marker on the source area being cloned. This preference is found in the General

Preferences dialog (Edit menu> Preferences> General). When the "Indicate clone source with crosshairs while cloning" check box is checked (enabled), a crosshairs appears over the source to indicate what part of the image you're painting with.



Changing Clone Sources

After you've worked with cloning a bit, you'll want more flexibility in setting up cloning relationships. Painter 3D lets you set any open image as the clone source.

You can use this technique to re-establish the source-destination relationship between files. You might also do this to choose special source imagery for controlling an image effect.



To set an open image as the clone source:

1. Open the image you want to clone (**File menu> Open Image**).
2. Choose **File menu> Clone Source** and choose the name of the image you want to clone.

Whichever image you work in becomes the destination.

If you ever lose track of which file is the clone source, you can choose **File menu> Clone Source** to see which file name is checked.



If you have an image open, you can make it the clone source for the next file you open: Hold down the Command/Ctrl key and choose **File menu> Clone**. The **Open dialog** appears. Use it to choose the file that will be the clone destination document.



Painting in the Clone

Painting with the cloning brushes is similar to painting with any of Painter 3D's tools, except the cloning variants take their color information from the clone source instead of the Color palette.

Offset cloning and other more advanced techniques are covered in "Point-to-Point Cloning" on page 214.



To paint with the cloning brushes:

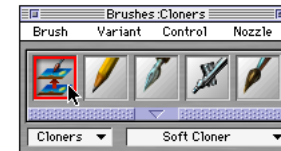
1. After cloning the image you want to paint (**File menu> Clone**), choose **Edit menu> Select All** and press the **Delete/Backspace** key to clear the entire canvas.



Some artists use **Edit menu> Fade** after clearing the canvas to bring back some of the imagery.

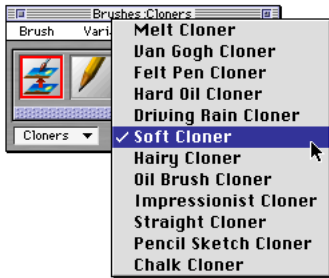


2. Choose the Cloners brush from the Brushes palette.



Use the Cloners brush variants to clone imagery one stroke at a time.

3. Select a Cloners brush variant from the Variant pop-up menu.



You can select a variant for the Cloners brush from the Variant pop-up.

The Straight Cloner variant reproduces the source imagery directly. The Soft Cloner variant reproduces with low opacity and soft edges. Other variants use paper grain and specialized dabs for particular media effects. For example, the Chalk Cloner copies the source image in the style of pastel chalk. Most of these other Cloner variants use the Color palette Clone Color option, not the cloning method.

All the brush variants, including the clone variants, are illustrated in Appendix A, "Painter Brush Variants."



The Oil Brush Cloner is just one of the cool cloning variants.

4. Mark in the image. As with all of Painter 3D's brushes, you can also adjust the size, opacity, and grain penetration on the **Controls palette: Brush tool**.

When you paint, the Cloners brushes pick up color from the original, while you control the size and direction of brush strokes. It's the best way to get Natural-Media renderings from photographic source material.

If you haven't set a clone source, Cloner brushes paint with imagery from the current Pattern.

You can add to and refine the Cloner variants with Painter 3D's other customizing functions described in Chapter 4, "Advanced Painting."

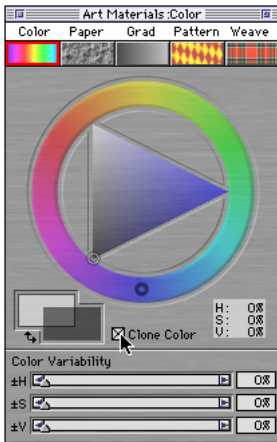
Painter 3D's Brushes that have Buildup methods, like pencils and felt pens, build toward black. If you clone with one of these tools in a dark area of your image, you may not achieve the desired results. Use the Opacity slider on the Controls palette: Brush tool to control how fast it builds up to black. You can also choose chalk or one of the other tools that cover underlying colors.

Turning Painter 3D's Other Brushes into Cloners

Painter 3D offers two ways to get other brushes to act like cloners: setting the Clone Color option and switching to the Cloning method.

Clone Color

You can turn almost any brush into a Cloner by setting the Clone Color option in the Color palette. This lets a brush pick up color from the source image while staying true to its own stroke nature.



Choose a regular brush and paint with colors from the clone source (instead of the current color) by enabling Clone Color on the Color palette.

The Clone Color option uses a single, averaged color from the source for each brush dab. This results in an approximation of the original. The Clone Color option can be used to create an artistic impression of the source.

Cloning Method

You can turn almost any brush into a Cloner by setting its method to Cloning and choosing the cloning method subcategory appropriate to the intended media style.



Use any brush as a cloner by selecting Cloning from the Method pop-up.

Because the cloning methods use a full set of pixels from the original document for each brush dab, you get a truer copy of the original than you do with the Clone Color option. Also, unlike using clone color, cloning methods preserve the original image's texture in the clone. Cloning methods are good to use when you want to re-create portions of the source image precisely.

Here's a brief description of the cloning method subcategories. For a more in-depth discussion of methods, refer to "Changing Methods" on page 50.

Hard Cover Cloning

Gives you semi-anti-aliased brush strokes that hide underlying strokes.

Soft Cover Cloning

Produces anti-aliased brush strokes that cover layered ones.

Grainy Hard Cover Cloning

Works like Hard Cover Cloning but brush strokes also interact with paper grain.

Grainy Soft Cover Cloning

Works like Soft Cover Cloning but brush strokes also interact with paper grain.

Drip Cloning

Pushes color around as if it were wet, cloning the original with distortion based on your stroke.

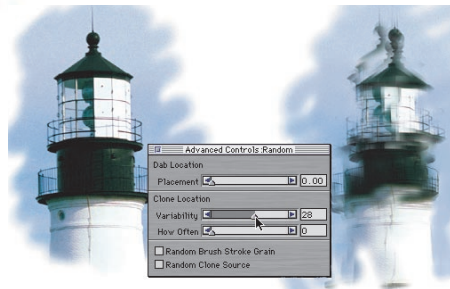


Fine-Tuning the Cloning Methods

You can customize and fine-tune your cloning methods from within the Brushes palette.

To fine-tune the cloning methods:

1. Choose **Brushes palette: Controls menu> Random**.



The Random palette can be used to fine-tune cloning behavior.

2. Adjust the sliders to change the character of the variant. You have the following options:
 - Variability softens brush strokes, increasing its effect as the slider is moved to the right. This option works best with the bristle brushes for creating an impressionistic effect. If the Variability slider is moved a bit to the right and the How Often slider is moved to the left, your drawing tools take on a “sketchy” look and feel.
 - Random Clone Source makes the cloning methods randomly pick up pieces from the source

document. What you get with your brush is random snippets of the image.

- Random Brush Stroke Grain makes the cloning methods pick up paper grain at random from the current paper grain.

For more information about the Random palette, see “Random Palette” on page 63.



Advanced Cloning

This section describes cloning with transformations and special features for cloning with an active selection.

The Super Cloner Brush



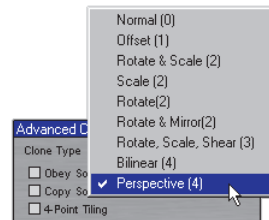
The Super Cloner brush holds variants that use multi-point cloning to apply a transform to the source imagery when you clone it. You can load the Super Cloner brush from the Shortcut to New Brushes Custom palette by clicking its icon. You can access the Custom palette by choosing Window menu> Custom Palette> Shortcut to New Brushes.

You can also load the Super Cloner brush by choosing Brushes palette: Brush pop-up> Load Library.

Multi-point cloning requires you to set multiple source and destination reference points. The following sections describe the multi-point cloning types and how to use them.

The Cloning Control Palette

You can choose the type of cloning and other features on the Brushes palette: Controls menu> Cloning.



The Cloning palette offers advanced cloning features.

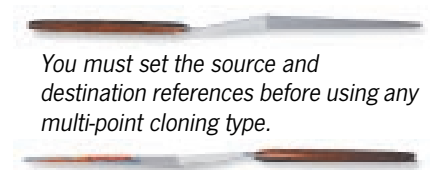
The following section describes the Cloning palette features: You can use this palette to give any cloning brush Super Cloner power.

Cloning Types

Painter 3D lets you establish several different relationships between the clone source and destination. These are characterized by the number of reference points used.

For each number of reference points, different transformations are possible. All these cloning types are valid for cloning method brushes and for brushes that use the Clone Color option or the clone source (such as Fill).

For each item in the Clone Type pop-up, the number of source and destination reference points required is shown in parentheses.



Normal (0)

The reference is between the top left corners of the source and destination documents and patterns. This means that the pixels of the destination document correspond directly with the pixels in the source document. This type of cloning is valid only between documents. No transformations occur.

Zero-point cloning is the basic cloning between documents (File menu> Clone) described in “Cloning a Document” on page 209.

Offset (1)

The brush offsets the imagery. The source and destination areas can be separate places in the same or different documents.

Offset cloning is the basic point-to-point cloning described in “Point-to-Point Cloning” on page 214. Offset cloning is useful for retouching photographs.

Rotate & Scale (2)

The brush rotates and scales the source imagery.



Cloning with rotate and scale. Note that the source and destination reference points are numbered and connected by a line.

Scale (2)

The brush scales the source imagery. The distance between the two destination points in relation to the distance between the two source points determines the scaling transformation.



Cloning with scale.

Rotate (2)

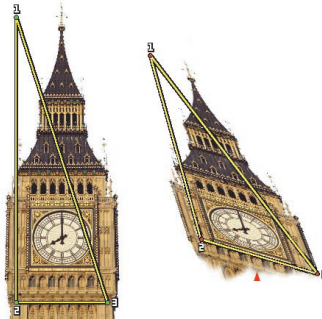
The brush rotates the source imagery. The line between the two destination points in relation to the line between the two source points determines the rotation transformation.



Cloning with rotating.

Rotate, Scale, & Shear (3)

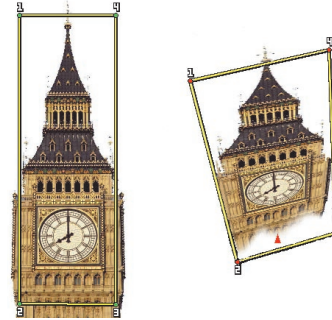
The brush rotates, scales, and shears (slants) the source imagery. The relative positions of the three source and destination reference points determine the transformation effect.



Cloning with rotate, scale, and shear.

Bilinear (4)

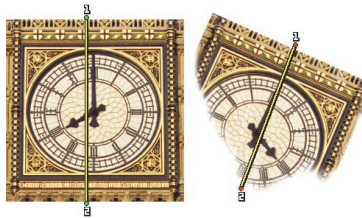
The brush applies a bilinear warp to the source imagery. The relative positions of the four source and destination points describe the bilinear transformation.



Cloning with bilinear.

Rotate & Mirror (2)

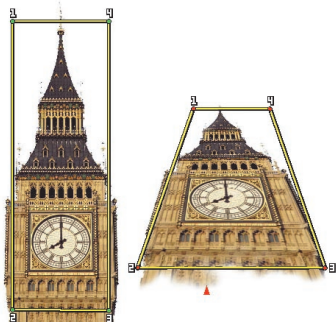
The brush rotates and mirrors (flips) the source imagery.



Cloning with rotate and mirror.

Perspective (4)

The brush applies perspective to the source imagery. The relative positions of the four source and destination points describe the perspective transformation.



Cloning with perspective.

Setting Source and Destination Reference Points

You must set the correct number of source and destination points before you can paint with any multi-point cloner brush.

The source and destination points can either be in the same document or in different documents.

You set the source and destination reference points by clicking with key combinations. After you set the source and destination reference points, you can start painting.

To set the source reference points:

1. Choose a Super Cloner brush variant or select the cloning type you want for another cloning variant.

You can load the Super Cloner brush by clicking its icon on the Shortcut to New Brushes Custom palette or by loading its brush library from the New Brushes folder.

2. Note the number of reference points required for the selected cloning type. The number is shown in parentheses in the Clone Type pop-up. For example, scale requires two reference points.

3. Hold down the Control/Shift key and click in the source area you want. Click once for each reference point required in the selected cloning type.

The points appear with numbers beside them (1 through 4). You can drag these points (holding the Control/Shift key down) to reposition them.



Setting two source reference points in preparation for Rotate & Scale cloning.

Painter 3D automatically places source points in the corners of clone source files and patterns. These corner source points are ideal for perspective cloning with 4-point tiling. If you don't want to use the defaults, you can move them or set your own source points. To move the points in a pattern, you'll need to check out the pattern. Choose Art Materials palette: Pattern menu > Check Out Pattern and set the source points in the "checked out pattern" window. For more information on Check Out Pattern, refer to "Editing the Pattern tile with Check Out Pattern" on page 143.

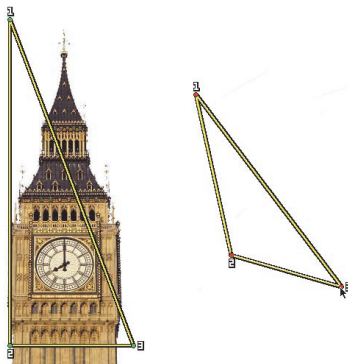
To set the destination reference points:

1. If the destination is in a different document, move to that document.
2. Hold down Control-Shift/Ctrl+Shift and click in the destination area you want. Click once for each reference point required in the selected cloning type.

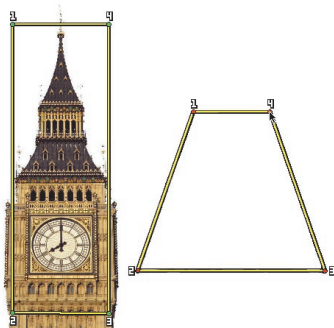
The points appear with numbers beside them (1 through 4). You can drag these points (with the Control-Shift/Ctrl+Shift keys down) to reposition them.



Setting two destination reference points in preparation for Rotate & Scale cloning.



Sample source-destination reference points for Rotate, Scale, & Shear cloning.



Sample source-destination reference points for Perspective cloning.

Using the Source Selection in the Clone Destination

The Brushes palette: Controls menu > Cloning palette offers two options for using the active selection from the source region.

Using the source selection requires the cloning method. It does not work for brushes of other methods that use the Clone Color option in the Color palette.

Obey Source Selection

Obey Source Selection makes your brush strokes respect an active selection in the source region. When you paint in the destination, your strokes are constrained to a region that corresponds to the source selection. For cloning types that apply a transform, the selection is correctly transformed.

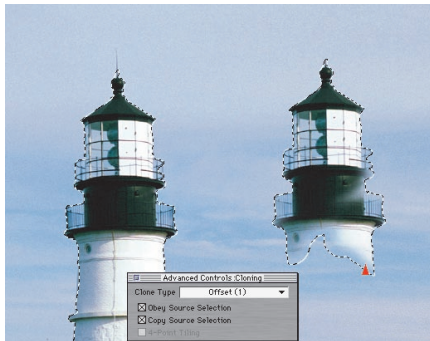


Use Obey Source Selection when you don't want to clone imagery that surrounds your subject.

Copy Source Selection

Copy Source Selection copies an active selection in the source region. When you paint in the destination, your strokes clone the selection's pixels as well as the RGB pixels. For cloning types that apply a transform, the copied selection has the transform.

Copy Source Selection is often used together with Obey Source Selection.



Use Copy Source Selection when you want to clone the selection as well as the image. Notice the marching ants.

To clone using the source selection:

1. Set up a selection for the source region. The selection should closely outline the region you want to use.

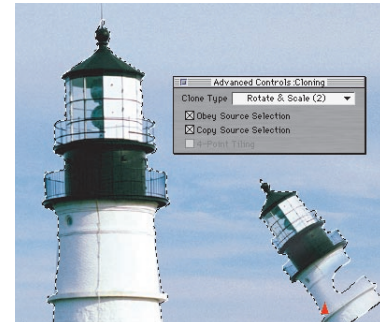
For information on setting up a selection, refer to Chapter 9, "Selections and Masks."

2. Choose the cloning brush you want to use. If necessary, choose a Clone Type from the Cloning palette.
3. Enable the Cloning palette source selection options you want—Obey, Copy, or both.
4. Set your source reference points. Set your destination reference points—either in the same or a different file.
5. Set the drawing mode to Draw Anywhere. This is important.

When you create a selection, Painter 3D sets the Drawing Mode to Draw Inside. If you try to clone in this mode, your strokes will be prevented from reaching the canvas.

6. Proceed to paint in the destination.
 - With Obey Source Selection enabled, the brush paints only in the area that corresponds to the source selection.

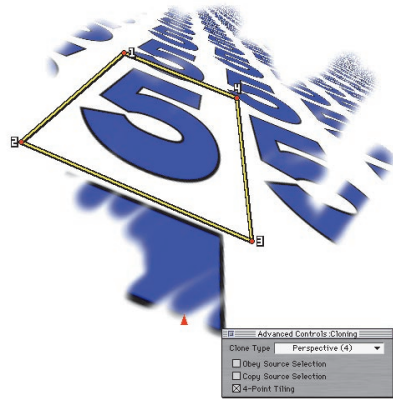
- With Copy Source Selection enabled, the brush clones the selection along with the color.



This image uses Rotate & Scale cloning with both Obey and Copy Source Selection enabled.

4-Point Tiling

The 4-point tiling option is available only for Bilinear or Perspective cloning. Tiling allows you to repeat the source imagery across a larger area in the destination. The quadrilateral set by the four clone source points defines the image tile. In the clone destination, the tile is warped according to the relative positions of the source and destination reference points and repeated as necessary to cover the area. This feature is particularly useful when filling an area with the Clone Source.



With 4-Point Tiling, your source area repeats.

Filling an Area with Warped Cloning

Instead of using the Brush tool to produce transformed imagery in the destination, you can use the Paint Bucket tool or Effects menu > Fill command. Filling is preferred when covering a large area

evenly. Filling is particularly useful when using Perspective cloning with 4-point tiling and a seamless pattern as the source.



To fill with transformed clone imagery:

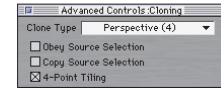
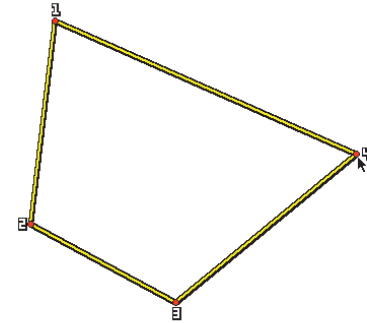
1. Choose the Brush tool and one of the cloning variants.
2. Choose **Brushes palette: Control menu > Cloning** to open the **Advanced Controls: Cloning palette**.
3. Choose the transformation you want from the Clone Type pop-up.
4. Set up your clone source reference points.

If you're using 4-point cloning with a pattern, you don't need to set source reference points. Painter 3D automatically puts reference points in the corners of the pattern, starting in the upper left (0, 0) and moving clockwise. This is ideal for most uses of Bilinear or Perspective cloning.

If you want to set the source references of a pattern to points other than the corners, you can choose **Art Materials palette: Pattern menu > Check Out Pattern** and set the source points in the "checked out pattern" window. For more information on

Check Out Pattern, refer to "Editing the Pattern Tile with Check Out Pattern" on page 143.

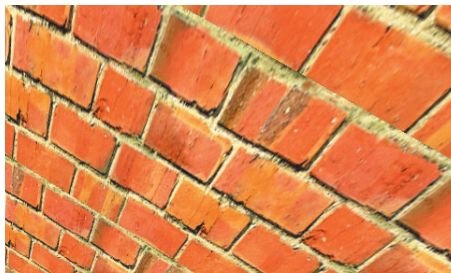
5. Set up your destination points.



The destination points describe the transformation.

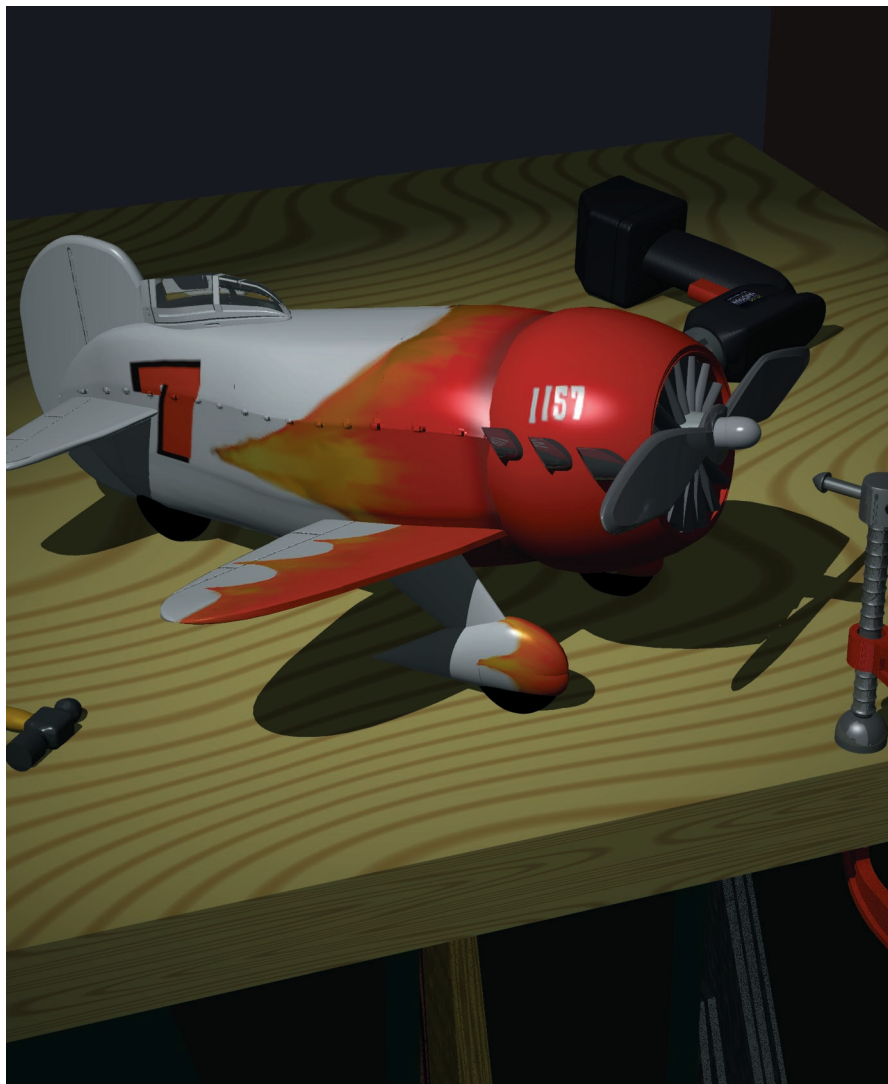
6. If you want, create a selection to constrain the fill.

7. Use either the Paint Bucket tool or the **Effects menu > Fill** command to fill with the Clone Source or Pattern. The filled area will have the described transformation.



The brick pattern becomes a steep wall.





The Image Hose



Using the Image Hose

The Image Hose is a milestone in the evolution of art tools. Instead of painting with color, the Image Hose paints with images; and not just one or two images at a stroke, but a variety of changing images.

The images flowing from the hose change as you make a brush stroke. Painter 3D gives you complete control of the image output. For example, by increasing stylus pressure, you can hose larger images—or more colorful ones. Or, by changing the direction of the stroke, you can change the angle of the images. This chapter


offers just a sampling of the possible controls. By creating your own sets of images, anything is possible.




Painter 3D's Image Hose feature allows you to paint with images.

The Image Hose deposits 24-bit images with an 8-bit mask. The mask enables you to layer the images gently, without aliased edges or artifacts.

You can load the Image Hose with leaves, bark, grass, stones—images of any description. When you paint with these image elements, you can build them into coherent surfaces—bricks covered with nasturtiums, a marble column covered with ivy, or an environment map full of clouds.



The Image Hose is a powerful tool, but that power can come at a price. If you use the Image Hose in multiple maps for an object, it can affect your computer's speed and performance. To avoid this, consider limiting your use of the Image Hose across multiple map channels.



How It Works

The Image Hose is a brush. To use it, you must first load it with images. The images are kept in special nozzle files.

A nozzle is what you attach to a garden hose to control the flow of water. So a nozzle is what you attach to the Image Hose to control its medium—images.

A nozzle file can contain any number of images. Usually, the images are similar and form a logical series—that is, the images progress along some order. For example, the images might increase in size, or advance in angle.

It is not a requirement for images to progress in a logical series, but the Image Hose is more powerful if they do. Progression allows you to control the images that flow from the hose.

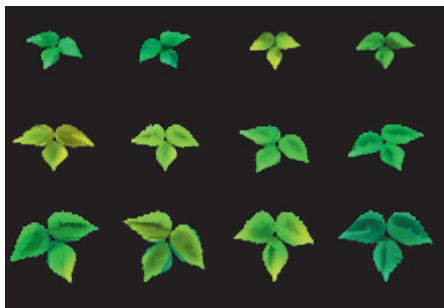
The images are indexed so that Painter 3D can locate and hose specific images on request. As you paint with the Image Hose, you can request specific images from the nozzle index by varying your input. Increasing an input value takes images from later in the series. For example, you can set up the nozzle so that by pressing harder with a pressure-sensitive stylus, you paint with larger images.

The term *indexing* refers to the method Painter 3D uses to select particular images from the many images in a nozzle file. You control which input factor to use for indexing on the Nozzle palette (Brushes palette: Nozzle menu > Nozzle). You can hose images sequentially, at random, based on pressure or stroke direction, or according to several other factors.

You control the images themselves in the nozzle file. If you want more variety in the images, create more images in the nozzle file. Designing and creating nozzle files is covered in “Creating Nozzles for the Image Hose” on page 274.

As your Image Hose requirements become more exacting, you can create complex nozzles that involve two progressions—for example, images can get larger and change angle. In this case, you use two

input factors: one to determine image size and another to determine image angle. This creates a 2-Rank Nozzle.



A 2-Rank Nozzle progresses in two dimensions. In this example, the first rank changes angle, the second rank changes size.



Using the Image Hose

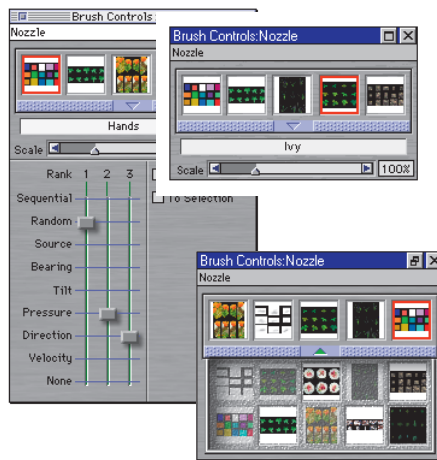
The Image Hose is easy to use and provides a number of options for the behavior of “nozzle spray.”



To select a nozzle and use the Image Hose:

1. Choose the Brush tool from the Tools palette.

2. Choose the Image Hose from the Brushes palette. You may need to open the drawer to display the icon. You can also select Image Hose from the Brushes Library pop-up menu.
3. Choose **Brushes palette: Nozzle menu > Nozzles**. The Nozzle palette appears.



The Nozzle palette controls the images used on the nozzle.

4. Select a nozzle from the Nozzle palette.
5. Choose an Image Hose variant from the **Brush palette: Variant pop-up**. Each variant delivers the images differently.

6. Make a brush stroke in either the Image window or the Model window.

Loading Nozzle Files

If you’ve created a separate nozzle file that isn’t part of a library, you can load it.



To load a nozzle file:

1. Choose **Brushes palette: Nozzle menu > Load Nozzle**. A standard Open dialog appears.
2. Open a nozzle file by double-clicking its name in the window or by highlighting the file name and clicking Open.

The first time you load a nozzle, Painter 3D may ask for some information on the image’s construction. This is covered in “Creating Nozzles for the Image Hose” on page 274.

Choosing an Image Hose Brush Variant

After loading a nozzle file, all you have to do to start painting is to choose the Image Hose brush and one of its variants from the Brushes palette.

About the Variants

Like Painter 3D's other brushes, the Image Hose has several variants. These built-in variants combine nozzle control factors with brush settings to create different hose effects.

The following descriptions will give you an idea of the effect of each variant.

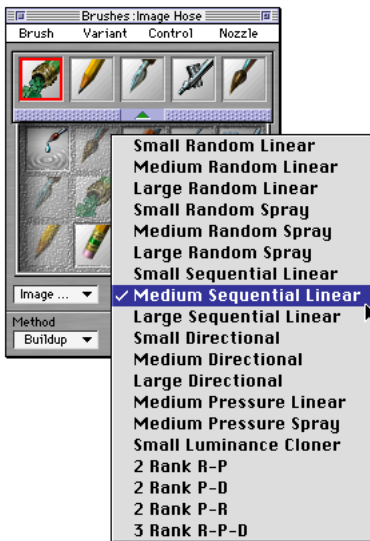


Image Hose variants can be understood by the vocabulary. Some Image Hose variants scatter the images, others hose a tight stream.

Small, Medium, and Large refer to image spacing. Small variants space images closely. Large variants space images

widely. For more information on spacing images, refer to “Controlling the Image Hose Brush” on page 270.

Random, Sequential, Directional, Pressure, and (Source) Luminance refer to the indexing rule by which images are selected from the nozzle file. For more information, refer to “Controlling the Nozzle” on page 271.

Spray and Linear refer to the placement of images in relation to the stroke. Spray variants scatter images. Linear variants place images directly on the stroke path. For more information, refer to “Controlling the Image Hose Brush” on page 53.

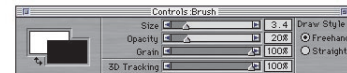
The R, P, and D refer to random, pressure, and direction.

You can use these variants as a starting point, then adjust the brush and nozzle controls to hose the images just the way you want them.

The Controls Palette: Brush Tool

You can use the sliders on the Controls palette: Brush tool to adjust the opacity of nozzle images and to mix them with the secondary color.

The Opacity slider allows you to make nozzle images semi-transparent. If you move the slider all the way to the left, the images become invisible.



You can change the opacity of Image Hose strokes.

The Grain slider allows you to mix the secondary color with the nozzle images. If the slider is set to 100%, the nozzle images remain pure. As you move the slider to the left, more of the secondary color appears in the images. If the slider is set to 90%, Painter 3D mixes 10% of the secondary

color to 90% of the image. This is a handy way to adjust the shading of image elements.



You can turn down the Grain to mix-in the secondary color.



Controlling the Image Hose

The Image Hose has three components of control: The Image Hose brush, the nozzle controls, and the nozzle file.

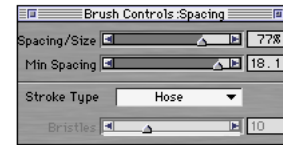
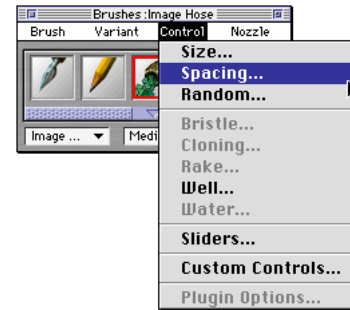
- You use the Nozzle palette control sliders to change the scale and to set the rules for indexing.

Controlling the Image Hose Brush

Brush controls for the Image Hose primarily affect where the images appear in the stroke. For example, you can control whether the images are scattered or closely spaced.

Spacing Images

You control the space between images with the Spacing/Size slider in the Brushes palette: Control menu > Spacing palette). Moving the slider to the right increases the spacing between image elements.



The Spacing/Size slider in the Spacing palette controls the space between images.



The Spacing slider controls the spacing of the image.

Because spacing is based on the diameter of the brush, the Size slider in the Brush palette: Controls menu> Size palette also affects image spacing. Increasing the brush size adds space between hosed images.

The Size slider does not affect the size of the image elements themselves. For this control, use the Scale slider on the Nozzle palette.

Randomizing placement

You control the proximity of images to the stroke path with the Dab Location Placement slider on the Brush palette: Controls menu> Random palette. When the slider is all the way to the left, images are hosed directly in the stroke. Moving the slider to the right increases the scattering of the images.

For more information on the Random palette, refer to “Random Palette” on page 63.

The Sliders Palette

The Brush palette: Controls menu> Sliders palette offers dynamic control over the brush settings described above. This can lead to a very complex brush.

When you’ve mastered the controls for the Image Hose brush and the Sliders palette, you might find a useful way to combine the tools.

Not all features of the Sliders palette apply to the Image Hose brush.

For more information on the Sliders palette, refer to “Sliders Palette” on page 71.

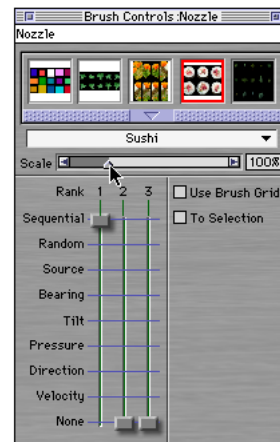
Controlling the Nozzle

You can control the size of the nozzle images and the rules for delivering them with the sliders in the Nozzle palette (Brushes palette: Nozzle menu> Nozzles).

Scale

Using nozzles in the current library, the Scale slider lets you control the size of image elements delivered by the Image Hose.

Drag the slider to the left to shrink the images. Drag it to the right to grow them. At 100%, the images equal their size in the nozzle file.



The Nozzle palette contains the Scale slider.



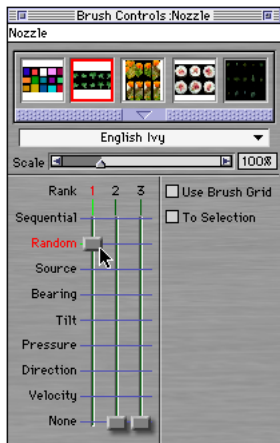
The Scale slider controls the size of the nozzle images.

Indexing

As you paint with the Image Hose, Painter 3D selects images from the nozzle file based on one or more rules. This selection process is called indexing. The Nozzle palette lets you change the rules for indexing the images.

You can create image nozzle files with one, two, or three image progressions (called “ranks”). Painter 3D offers these three dimensions of progression, so each nozzle file can be identified as a 1-, 2-, or 3-Rank nozzle.

For more information about the rank system, refer to “Designing Nozzles: 1, 2, or 3 Ranks” on page 275.



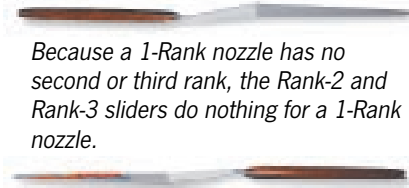
Rank 1 set to Random instructs Painter 3D to select items from the first rank at random.

The Rank-1, Rank-2, and Rank-3 sliders set the rules for indexing in their respective dimensions. This indexing determines which nozzle-file images are delivered from the Image Hose.

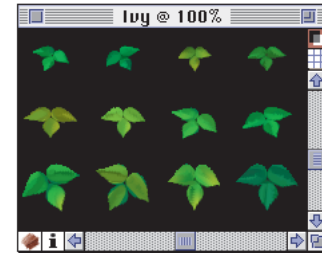


To change the indexing rule:

1. Choose **Brushes palette: Nozzle menu > Nozzles**. The Nozzle palette appears.
2. If the Rank sliders don't appear in the Nozzle palette, click the grow box in the upper right corner to expand the palette.
3. Move the Rank slider to the control factor you want for that rank. The control factors are described in the text that follows.



Because a 1-Rank nozzle has no second or third rank, the Rank-2 and Rank-3 sliders do nothing for a 1-Rank nozzle.



This nozzle file shows all the images in the nozzle that is used in the following indexing examples.

Sequential

Sequential indexes images in the same order they appear in the rank—moving from the left to the right, and from the top down, just as you read English.



An example of Sequential indexing.

Random

Random indexes images from the rank at random.

Randomness can add irregularity of color and texture to the areas you paint with the Image Hose. This mimics the way objects appear in nature, and helps create a natural look.



An example of Random indexing.

Source

Source indexes images based on the luminance of pixels in the clone source (or current pattern if you have not set a clone source). As the luminance increases, Source delivers images from later in the rank.



The top image is the specified clone source. The bottom image shows the result of indexing based on Source.

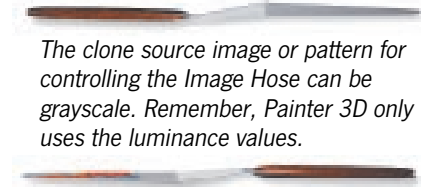
Source is used in association with a clone source. Remember that the pixels of the working document have a direct correspondence with the pixels of the clone source image. For more information on setting up and using a clone source, refer to “Changing Clone Sources” on page 81.

For best results, the clone source should have the same dimensions as the document in which you’re working.

Depending on the nozzle you’re using, Source can be quite useful. You can start with a black background and lighten areas where you want to index images from later in the rank. For example, if the source image is black on the left and

progresses through gradations to white on the right, the Image Hose delivers images from the start of the rank at the left of the document, in the dark area. As the brush moves to the right into the lighter area, the Image Hose delivers images from later in the rank.

To take advantage of this feature, you might want to create a special source image for the single purpose of controlling the Image Hose.



The clone source image or pattern for controlling the Image Hose can be grayscale. Remember, Painter 3D only uses the luminance values.

Bearing

Bearing indexes images based on the bearing of the stylus. Not all stylus models convey this information. This control does not work with a mouse.

Tilt

Tilt indexes images based on the tilt of the stylus. Not all stylus models convey this information. This control does not work with a mouse.

Pressure

Pressure indexes images based on stylus pressure; it works only with pressure-sensitive tablets. Greater pressure selects images from later in the rank.

Pressure is a great control for requesting images from a nozzle. For example, if you set up your nozzle file to progress from small to larger images, heavier strokes deliver larger images.

Direction

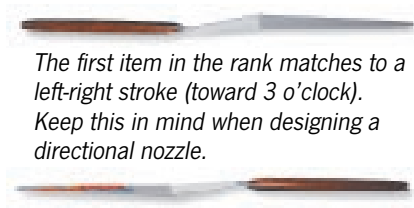
Direction indexes images from the rank based on the direction of the stroke. A left-to-right, horizontal stroke delivers the first element in the rank. As the stroke direction progresses counter-clockwise, the Image Hose delivers subsequent images from the rank.



This Arrow nozzle is an example of indexing based on Direction.

The number of elements in the rank determines the directional change required to index a different element. For example, a nozzle file that contains 72

images at progressive angles delivers a different item at every 5° of stroke direction ($360^\circ/72=5^\circ$).



The first item in the rank matches to a left-right stroke (toward 3 o'clock). Keep this in mind when designing a directional nozzle.

Velocity

Velocity indexes images from the rank based on the speed of the stroke. A faster stroke delivers elements from later in the rank. Velocity is often used with a mouse to mimic pressure.

Velocity can be difficult to control. For this reason, you might want to use it in a rank with few elements.

None

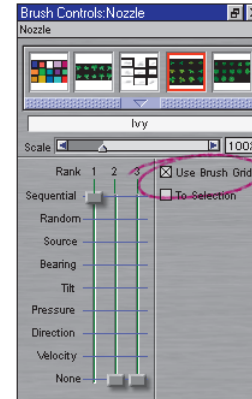
None returns one element only—the last in the rank.

Nozzle Options

The Brush Controls: Nozzle palette has two check box options for the Image Hose—Use Brush Grid and To Selection.

Use Brush Grid

When Use Brush Grid is enabled, the Image Hose places images in a regular grid pattern. The grid size follows the grid in the nozzle file.



The Use Brush Grid option is on the expanded Nozzle palette.



Enable Use Brush Grid to place images on a perfect grid.

To Selection

When To Selection is enabled, the images you paint with the Image Hose are painted to the selection layer as well. That is, the mask of each nozzle image is added to the selection.



When To Selection is enabled, images painted with the Image Hose create an automatic selection.



Creating Nozzles for the Image Hose

You can create your own nozzles for the Image Hose. Using images you create in other applications or in Painter 3D, you can set up simple or sophisticated nozzles using a system of ranks.

Designing Nozzles: 1, 2, or 3 Ranks

A nozzle file contains a series of images arranged in a regular grid. Usually, the images are progressive in terms of size,

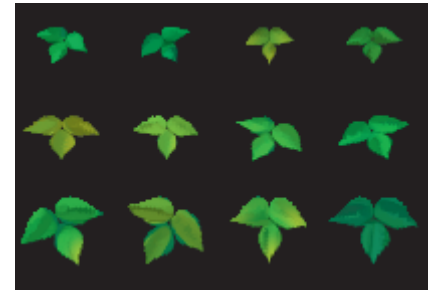
shape, angle, or color. Progression is not necessary, but it increases the sophistication of the Image Hose. For example, a nozzle file with images progressing in size can be set up so that greater stylus pressure paints incrementally larger images.



A 1-Rank Nozzle progresses in one dimension. In this example, changing angle is the first rank.

What if you want a two-dimensional progression? For example, image elements increasing in size and/or changing angle. To do this, you'll need to set up your images as a 2-Rank Nozzle file. Painting with a 2-Rank Nozzle, you can control where your image comes from in terms of *both* progressions. In this case, you use a different input factor to control the location in each rank.

In this example, Rank 1 is a progression in angle. The following image shows Rank 2 as a progression in size. It would make sense to use direction to control Rank 1 and pressure to control Rank 2.



A 2-Rank Nozzle progresses in two dimensions. In this example, changing angle is the first rank and size is the second rank.

For information on setting the control factor for each rank, refer to “Controlling the Nozzle” on page 271.

You can extend the nozzle to a third progression, creating a 3-Rank Nozzle. Again, you use a separate input factor to control the location in each rank.

In the following example, Rank 3 is a progression in color. You might control this final rank with randomness, velocity, or source—depending on your plans for the image.



Color is the third rank in this 3-Rank Nozzle.

If you use one input factor to control two ranks, some image elements become unavailable.

Consider the way you will control each rank before you build a nozzle. The way you lay out the images can limit the ways you can control the indexing.

Before you begin building a nozzle, you'll need to decide what rank level you need, and how many elements you want in each progression.

Understanding the Ranking System

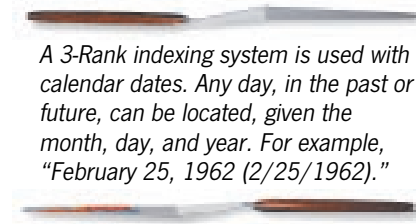
A 1-Rank indexing system is simply a numbered sequence. You can locate any element in the sequence by giving its number. For example, "Item 3" is the third element.

In Painter 3D, you locate items by varying input—for instance, by pressing harder with the stylus or changing the direction of the stroke. For information on the input factors you can use to control indexing, refer to "Controlling the Nozzle" on page 271.

A 2-Rank indexing system uses two perpendicular indexes. The first rank extends horizontally and the second extends vertically. Again, you'll vary input to locate an item for either rank. You can think of indexing in the two ranks as "selecting a column" and "selecting a row." The Image Hose delivers the image from the nozzle where the selected column and row intersect. In order for

this to work properly, you'll need to use different input factors for selecting in each rank.

A 3-Rank indexing system extends the 2-Rank model. The third rank is created by repeating the 2-Rank "set." In this case, you index in the third rank by varying input to locate which set you want. Within the selected set, the 1-Rank and 2-Rank indexing (described above) is used. For this to work properly, you'll need to use different input factors for selecting in each rank.



A 3-Rank indexing system is used with calendar dates. Any day, in the past or future, can be located, given the month, day, and year. For example, "February 25, 1962 (2/25/1962)."

Preparing Images

Regardless of the rank level of the nozzle you are making or the method you use to build it, the following tips will help you develop the individual images.

Each element in an Image Hose nozzle must be selected. The selection allows you to paint with images of irregular shape. Only what is inside the selection will flow from the Image Hose.

You might want to work by creating a silhouette of the image shape as a selection, then fill in the color information later.

When the selection has soft edges, you can hose images that are automatically anti-aliased. This improves the continuity across an area of hosed images.

You can create Image Hose nozzles from floaters. As you create image elements, turn them into floaters. If the floater looks good when it's dropped on different backgrounds, the image will look good as a nozzle element.



If you're working in 2D, you might want to float the image on a black background and add a drop shadow. This enhances the three-dimensionality as image elements build up in layers. When all elements have the shadow in the same position, it appears the light source is the same across the painted area.

Note that drop shadows are more of a 2D effect; they aren't affected by your 3D model light.



Using Painter 3D to Create Nozzle Images

You can create impressive nozzles from 3D images you render in Painter 3D. If you have interesting models that you've detailed in Painter 3D, you can render them and save them as graphic image files that you turn into nozzles.

For example, you could render a group of related models individually to create an interesting series. Or, you could render a single model at various rotations to get a series of interesting images.

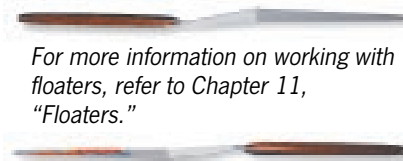
Be sure you set up the lighting conditions you want in the Model window before rendering. You should also set a background color (black works well), and check that the mask—not the image—is anti-aliased. When the image is rendered, save it as a RIFF file to preserve the selection.

Creating a 1-Rank Nozzle from a Group of Floaters



To create a 1-Rank nozzle from floaters:

1. Create the image elements of the nozzle you want as floaters.



For more information on working with floaters, refer to Chapter 11, "Floaters."

2. When you've created the images, float all of them in the same file. It doesn't matter where the images float in the document.
3. Open the **Objects palette: Floater menu > Floater portfolio** and inspect the list of floaters.

The top floater on the list will be the first element in the nozzle sequence. Moving down the list advances through the progression.
4. Drag the name of the floater to the location in the list that reflects the progression order you want in the nozzle.



Creating a nozzle from floaters.

5. If any of the floaters is a group, click the name of the floater to select it. Then click Collapse to turn the group into a single floater.

Painter 3D can make a nozzle from a group of floaters, but not from a “group of groups.”

6. Hold down the Shift key and select each item in the list. You may also choose **Edit menu> Select All** when the Adjuster tool is selected.
7. Click Group. All the items are now part of the same group.
8. In the Floater List palette, click Trim. This shrinks the floater rectangle to its minimum size.
9. Choose **Brushes palette: Nozzle menu> Make Nozzle From Group**. Painter 3D creates a new, untitled image. This is your nozzle file.
10. Choose **File menu> Save**. Give the file a descriptive name and save it as a RIFF file. Keeping your nozzle files in one place makes them easy to locate.

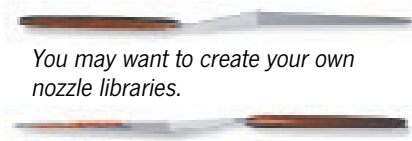


To load your nozzle and add it to the current library:

1. Choose **Brushes palette: Nozzle menu> Load Nozzle**.

2. Choose **Brushes palette: Nozzle menu> Add Nozzle to Library**.
3. Name the nozzle and click OK.

You can now choose an indexing rule and paint with your 1-rank nozzle.



You may want to create your own nozzle libraries.



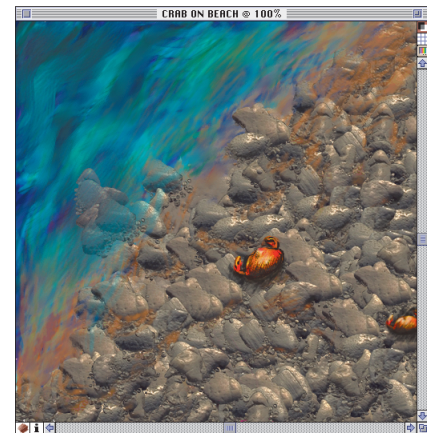
Painting with a nozzle created from floaters.



A 1-Rank nozzle doesn't mean the images must be in one line. Painter 3D wraps images onto several lines to create an image of reasonable shape.

This follows how printed words of a sentence may wrap from one line to the next, moving down the page.

The wrapping of words on the page doesn't damage the sentence—you know when it ends by your knowledge of language and the rules of punctuation. Likewise, Painter 3D follows a mathematical rule in reconstructing the rank of images. This rule is contained in the nozzle definition. You'll learn more about this in “Building the Nozzle” on page 279.



Nozzles are most useful when they deliver similar images with some irregularity, like these pebbles on a beach.



Creating a 2-Rank Nozzle on a Grid

Nozzles of two and three ranks cannot be created from a floater group. You must build these nozzles manually.

The indexing system requires the nozzle images to fit in a regular grid. You can create a nozzle file by setting up a grid and placing an image element at the center of each cell.

Determining the Grid Cell Size

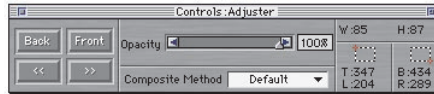
The cell size is based on the smallest rectangle that will hold the largest image element (including its selection).



To determine the grid cell size:

1. Float your largest image element.

2. In the **Objects palette: Floater List**, click Trim. This reduces the floater to the minimum rectangle.



Float your largest image element to determine grid cell size.

3. In the **Controls palette: Adjuster tool**, Painter 3D displays the selected floater's width and height in pixels. Jot these measurements down so you can refer to them later; you might want to use slightly larger values as the grid size.

For this example, the grid size will be 85 pixels wide by 87 pixels high.

4. Determine the number of elements you want in each rank.

This example uses six items in Rank-1.

For the second rank progression, use size. The different sizes in the nozzle allow you to control the image size

within a stroke. Since this example uses three sizes, the nozzle should have three items in the second rank.

5. Multiply the number of items in Rank-1 by the cell width. This value is the image width.

For this example, $6 \times 85 = 510$ pixels.

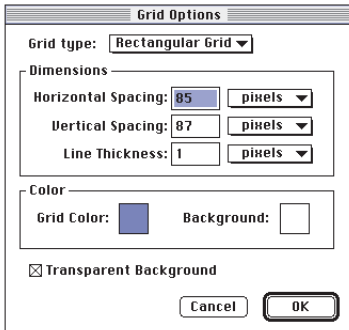
6. Multiply the number of items in Rank-2 by the cell height. This value is the image height.

For this example, $3 \times 87 = 261$ pixels.

7. Create a new document that has the appropriate width and height dimensions.

For this example, the image is set to 510 pixels wide by 261 pixels high.

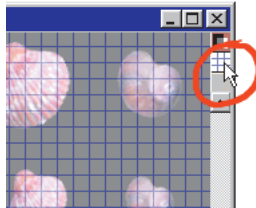
- Choose **Canvas menu > Grid > Grid Options**. The Grid Options dialog appears.



Use the Grid Options dialog to set the grid spacing.

- Set the Horizontal and Vertical Spacing to the values of the cell width and height. Click OK.
For this example, the spacing is 85 by 87.
- Display the grid by clicking the Grid button above the vertical scroll bar on the Image window. The grid will

describe the number of elements you want in each rank—Rank 1 horizontally, and Rank 2 vertically.



Click the Grid button to display a grid in the Image window. (Note: This grid doesn't match the grid you'll see when you follow the steps; that grid will be 6 horizontal cells x 3 vertical cells.)'

Building the Nozzle

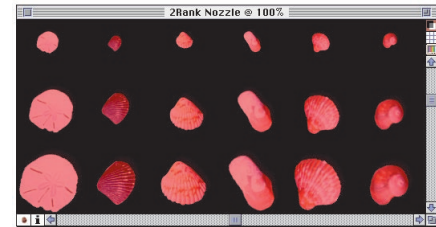
Once you have set up the nozzle images in the grid, you can build your nozzle.



To build and load a nozzle:

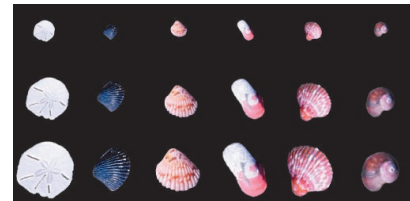
- Place one image element in the center of each grid cell. The easiest way to do this is with floaters. Follow an appropriate progression, based on your intentions for controlling this nozzle.
- For more information on setting up the nozzle progression, refer to “Controlling the Image Hose” on page 270.

- Each image element must be included in the selection. If you bring image elements into the grid as floaters, they bring their visibility mask with them.
- Select all the floaters and choose **Objects palette: Floater menu > Drop and Select**. This is the ideal method to create the selection of all image elements.



Here the selection is shown as a user mask.

- Choose **File menu > Save As** and save the file in the RIFF format. You can now load the nozzle into the Image Hose.



The finished 2-Rank Nozzle—Shell Scales.

- Choose **Brushes palette: Nozzle menu > Load Nozzle**. A standard Open dialog appears.
- Click Open. The first time you load the nozzle file, the Nozzle Definition dialog appears. Fill in the requested information so Painter 3D can index images correctly.

Nozzle Definition					
Item width	85	pixels	Rank 1	6	items
Item height	87	pixels	Rank 2	3	items
Index rank	2		Rank 3	1	items
			<input type="button" value="Cancel"/> <input type="button" value="OK"/>		

The Nozzle Definition dialog helps Painter 3D index your nozzle images correctly. Note: A 2-Rank nozzle has 1 item in Rank 3.

Item width and height describe the cell grid size. Enter the values you set in the nozzle file.

In this example, the size is 85 by 87.

Index rank describes the number of progressions. Enter 2 for a 2-Rank nozzle.

In the Rank columns on the right, enter the number of image elements in each progression.

This example has six items in rank 1 and three items in rank 2.

- When you're done with the Nozzle Definition dialog, click OK.

If the values you enter do not describe the file, Painter 3D will not accept them. In other words, the “number of items” multiplied by the “item size” *must* equal the dimensions of the nozzle file.

Remember, you'll still need to set the sliders in the Nozzle palette to describe the control factors for each rank.

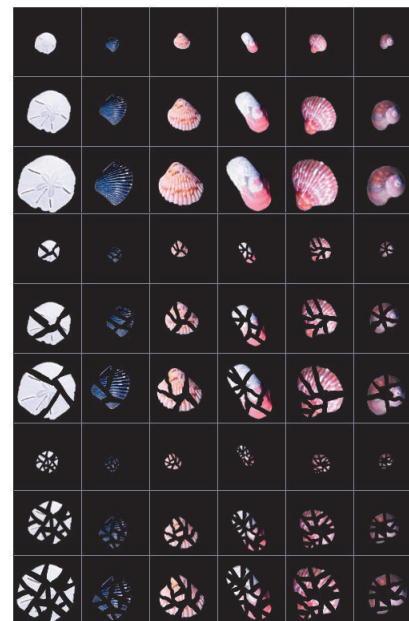
- You can add your new nozzle to the current library. Choose **Brushes palette: Nozzle menu > Add Nozzle to Library**.



Creating a 3-Rank Nozzle

You can create a 3-Rank nozzle using the grid method described above.

The following suggestions should help you build a 3-Rank nozzle with a minimum of fuss.



The Broken Shells—a 3-Rank nozzle.



To create a 3-Rank nozzle:

- Build the first two ranks using the grid method described in the previous sections. Open this 2-Rank file.

For this example, continue the 2-Rank Shell nozzle you created earlier.

The shell nozzle file has six items in rank 1 and three items in rank 2. Each item is 85 pixels wide by 87 pixels high.

2. Determine the number of elements you want in the third rank.

In this example, you'll shatter the shells. You'll use three "broken" variations to build the third rank, so this nozzle will have three items in the third rank. Each item in the third rank will be a set of images—the 2-Rank Nozzle.

3. Check the height of the current nozzle file. Press on the information "i" at the bottom of the window.
4. Multiply the number of items in the third rank by the height of the file. The result is the height of your 3-Rank nozzle file.

Since there are three items in the third rank, and since the 2-Rank Shell nozzle you created earlier is 261 pixels high, the height of your 3-Rank nozzle file is 783 pixels ($3 \times 261 = 783$).

5. Choose **Select menu** > **Reselect**.
6. Choose **Edit menu** > **Copy**.

Now you must extend this file vertically to accommodate the items in the third rank.

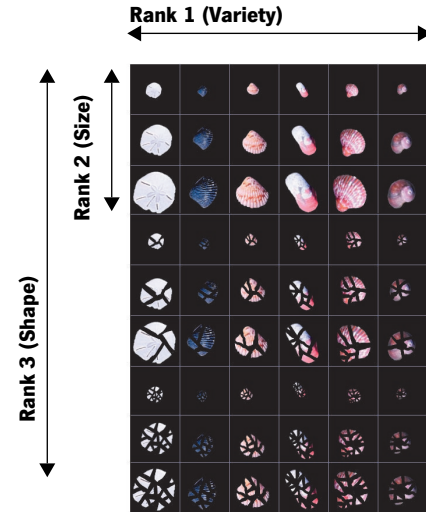
7. Choose **Canvas menu** > **Canvas Size**.

Add the correct number of pixels (to the bottom) to set the canvas to the height of your 3-Rank nozzle.

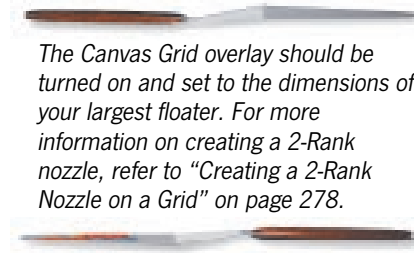
The example file is currently 261 pixels high, so add 522 pixels to the bottom to make it 783 pixels high.

Now you can develop imagery for each item (set) in the third rank.

8. The 2-Rank image should still be in the Clipboard. Choose **Edit menu** > **Paste**.
9. Position the pasted floater in the area you added. The images should be centered in the grid cells.



This nozzle file has six items in Rank 1, three items in Rank 2, and three items in Rank 3.



The Canvas Grid overlay should be turned on and set to the dimensions of your largest floater. For more information on creating a 2-Rank nozzle, refer to "Creating a 2-Rank Nozzle on a Grid" on page 278.

10. Modify the images in this floater according to the third rank progression.

In the example, the artist edited the floater mask to make cracks in the shells.

We used a change in the shape of the shells in this example. You might choose some other progression. Keep in mind that you'll use a different input factor to control image delivery in each of the three ranks.

Using color as the third rank progression is by far the easiest change to implement. You can change the color for a floater or selection using Effects menu > Tonal Control > Adjust Colors.

11. When you've finished modifying the 3-Rank floaters, put them back on the canvas. Choose **Objects palette: Floater menu > Drop and Select**.

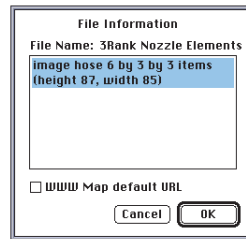
Remember, each image element must be included in the selection.

12. Save the file in RIFF format.

If this is a new file and you did not define it as a 1-Rank or 2-Rank nozzle earlier, refer to "Creating a 2-Rank Nozzle on a Grid" on page 278.

If you previously defined this file as a nozzle, you will need to edit the definition to describe the three ranks you created.

13. Choose **File menu > Get Info** or press Command-I/Ctrl+I. The File Information dialog displays the definition Painter 3D uses to index in this file.



You can edit the nozzle definition from the *File Information* dialog.

The sample file has items with a width of 85 pixels and a height of 87 pixels. It is a 3-Rank nozzle with six items in rank 1, three items in rank 2, and three items in rank 3.

Nozzle Libraries

Nozzle libraries let you save and retrieve sets of nozzle files.

For information on loading alternate libraries, creating new libraries, and moving items between libraries, refer to "Libraries and Movers" on page 10.

To add a nozzle to the library:

1. Create and save a nozzle file.
2. Choose **Brushes palette: Nozzle menu > Load Nozzle**.
3. Locate your nozzle file in the dialog and click Open.
4. If necessary, enter the values to define the number of elements, their size, and their rank.
5. Choose **Brushes palette: Nozzle menu > Add Nozzle to Library**.

To check out a nozzle:

1. In the Nozzle palette, choose the nozzle you want to work with.
2. Choose **Brushes palette: Nozzle menu > Check Out Nozzle**. Painter 3D opens the nozzle file in an Image window.
3. Edit the file if you like.
4. To put it back in the library, choose **Brushes palette: Nozzle menu > Add Nozzle to Library**.





Selections and Masks



Understanding Selections and Masks

Selections and masks are features that help you develop imagery. They increase your control over where you paint and apply effects.

Selections and masks have a close relationship. Both work by isolating areas; however, they differ in the way they're created and what you do with them. Some operations in Painter 3D require a mask, others work only with a selection. Depending on the artwork, sometimes you'll choose to work with the mask and sometimes a selection is the better choice. You can easily convert

between a mask and a selection, so no matter which way you start working, you can achieve the same result.

Selections

Selections are areas of an image that you isolate—either to copy, float, or apply effects.



You can create selections in Image windows, but not in the Model window. If you create a selection in an Image window, you can switch to the Model window and your selection will remain active.



A selection marks off areas of an image for “special treatment.” The selection can protect an area from change or delineate the area that you want to change. At any one time, there can be only one selection.

Selections are enclosed by a moving line of black and white dashes, called the selection marquee, or “marching ants.” You can exclude a region within the enclosure by creating a negative selection. Negative selections cut holes in the regular, positive selection. On screen, negative selections appear in the Image

window as red marching ants. Selection paths do not appear in the Model window.



Negative selections are generated by the Lasso tool, set to Subtract From Selection in the Controls palette.



Masks

A mask is an 8-bit overlay that protects image areas from changes, or encloses areas to be changed. When a selection is created, the mask responds to the selection according to how the Drawing Mode buttons are set, masking inside or outside the selection.

Using masks, you can store selections for later and edit them with the Brush tool and image effects. Painter 3D lets you create up to 32 user masks in a document.

Masks do not influence operations on the canvas. You can think of a user mask as a “dormant selection.”



Masks can be used as the control medium for some image effects. This is the only way they can influence an operation on the canvas.



Masks are stored in the **Objects: Mask List palette**. When you're ready to use a mask, you can easily load it into the selection.



Masks are like selections, but have no control on the canvas. You can save up to 32 masks, loading one or more of them into the selection when they are needed.

Having one selection—but multiple masks—is convenient and powerful. It's easy to save selections, then reactivate

them later. And you can create a selection from multiple masks by adding, subtracting, or intersecting them.

The background mask can also be used to control the appearance of floaters. By setting options for a floater, you can use the canvas mask to conceal or reveal part of the floater.

Each floater has its own mask. In a floater, the mask determines the visible region of the floater. By modifying the floater's mask, you can change the shape of a floater. Refer to the chapter called [“Floaters” on page 89](#) for more information on floaters and floater/mask interaction.

Selections in Painter 3D

You can use any of the selection tools or commands to create a selection in the 2D map. Each time you create a new selection, Painter 3D replaces the old one.

If you want to, you can save a selection by choosing **Select menu > Save Selection**. Saved selections go to the Mask List palette, where you can keep up to 32 user masks.

You might want to create a selection by painting with the Brush tool. To do this, you'll need to work in a user mask. Create

a new user mask by choosing **Objects palette: Mask menu > New Mask**. Paint in the mask to describe your selection area.

Whenever you want to use one of the selections from the Mask List, you can load it by choosing **Select menu > Load Selection**. Loading the selection brings it back to the canvas where it will control your painting and image effects.

Saving selections offers one more advantage. When you load a saved selection, Painter 3D gives you the chance to use Boolean operations. You can take advantage of this feature to combine selections in powerful ways. When you load a saved selection, you can add it to the current selection, subtract it from the current selection, find the intersection of the two, or replace the selection. All of these loading options are useful at one time or another.



Working With Selections

Selections can contain mask-based data types. A mask-based selection is an 8-bit image that provides 256 levels of protection to the image. Each pixel in the selection sets a selection value for its corresponding color pixel in the RGB image.

How Selections are Used

You can use a selection in several ways:

- To constrain brush strokes. This works like putting a cardboard stencil over the paper you're painting on. However, because the selection mask has 256 levels of intensity, it can protect the canvas at varying strengths. Intermediate selection values allow semi-opaque brush strokes.
- To isolate an area of the canvas for applying an image effect—**Adjust Colors**, for example. Painter changes the colors only inside the selection. Intermediate selection values create partial intensity of the effect.
- To choose the area of the canvas that you want to **Cut**, **Copy**, or **Float**. When floating the selection, intermediate values create semi-transparency in the floater.
- You can also use the selection to control display of a floater. For more information, refer to [“Image Floaters” on page 91](#)

Drawing Modes

The drawing mode determines whether the inside or outside of the selection is protected when you paint on an image. You can use the pop-up icon in the bottom left corner of the document window to change modes.

Draw Anywhere

The selection is disabled. Brush strokes are allowed anywhere on the canvas.



Click the Draw Anywhere icon to draw anywhere on the canvas.

Draw Outside

The selection protects the areas it encloses or covers. Opaque areas of the selection prevent brush strokes from reaching the canvas. Clear areas of the selection allow brush strokes to go directly to the canvas. Where the selection is shaded, a portion of the brush stroke uses a semi-transparent application.



Click the Draw Outside icon to draw outside your selection.

Draw Inside

Draw Inside effectively inverts the selection. Only the selected region accepts brush strokes. Where the selection is shaded, a portion of the brush stroke uses a semi-transparent application.



Click the Draw Inside icon to draw anywhere inside your selection.

The "Visibility Mode" controls from earlier versions of Painter or Detailer products have been replaced with more flexible selection and masking controls on the Select menu and in the Objects: Mask List palette: Mask menu.

Creating a Selection

To select the entire image, choose **Select menu > All**.

You can select a portion of the image in any of several ways:

- With one of the Selection tools: Rectangle, Oval, or Lasso.
- With the Magic Wand tool.

- By using the Auto Select or the Color Select command.
- By creating (or acquiring) a shape and converting it to a selection. For example, you can use the Pen tool to create a Bézier curve shape, then convert it to a selection.
- By loading a user mask (from the Mask List) to the selection.

You cannot create a selection inside a floater. You can get around this restriction by copying the floater to a temporary document and dropping it there.

You cannot create a selection in a user mask. You can get around this restriction by creating the selection on the canvas, then loading the user mask with the intersect operation.

Some files you open will already have a selection in them. For example, Poser and Ray Dream Studio renderings save files with a mask-based selection. This makes it easy to select the rendered subject, float it and composite it with other imagery.

If you have a selection active when you save the file in RIFF format, that selection is available the next time you open the document.

The Selection Tools

You can use the Rectangular Selection tool, the Oval Selection tool, or the Lasso tool. These tools create path-based selections in the Image window.



The Rectangular Selection tool, the Oval Selection tool, and the Lasso tool.



To select an area using the Rectangular or Oval selection tools:

1. Choose the Rectangular or Oval Selection tool from the Tools palette.
The Rectangle or Oval Selection tool icon “pops up” to let you select the other version.
2. Position the cursor in the image and drag diagonally. When the selection is the size you want, release the mouse button.

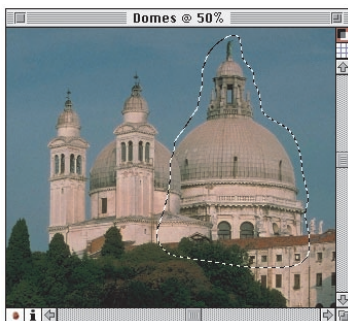
Hold down the Shift key to constrain the selection to a perfect square or circle.

The Controls palette provides information on the size and location of the selection you create.



To select an area using the Lasso tool:

1. Choose the Lasso tool from the Tools palette.
2. Draw freehand around the area you want.



Use the Lasso tool to draw freehand selections.

Adding To and Subtracting From a Selection

Normally, using a selection tool a second time replaces the first selection path. However, using a key combination, you can add to or subtract from the current selection.

Hold down the Shift key (before mouse-down) to add to the selection.

Hold down the Command/Ctrl key to subtract from a selection. The next selection path you draw “cuts out” from the current selection.

The Magic Wand

Pixels come in groups of related colors. The Magic Wand allows you to select a contiguous area based on color similarity.



To select an area using the Magic Wand tool:

1. Choose the Magic Wand tool from the Tools palette.



The Magic Wand tool.

2. The Controls palette lets you choose to create either a selection or a user mask. Click the radio button for your choice.

If you choose to create a user mask, you'll need to load it before using it as a selection.

3. Click or drag in the image on the central color of the region you want to select.

It might take a moment for Painter 3D to calculate and load the selection or display the mask.

If you've chosen to create a selection, Painter 3D displays the selection marquee.

If you've chosen to create a user mask, Painter 3D displays the mask as a red overlay.



The start of a Magic Wand user mask.

4. You can hold down the Shift key and click or drag over neighboring colors to add to the Magic Wand selection/mask.

You can hold down the Command/Ctrl key and click or drag over neighboring colors to remove from the Magic Wand selection/mask.

5. If necessary, in the **Controls palette: Magic Wand tool**, adjust the sliders for Tolerance and Color Feather. Painter 3D updates the selection automatically.

- Tolerance controls the amount of variance allowed from the last color you click on.
- Color Feather spreads the selection with soft, intermediate values.
- Anti-Alias creates intermediate selection values on the boundaries. This gives soft edges to the work you do with the selection.

6. When the marquee or mask describes the selection you want, you're ready to proceed.

If you've created a selection, you can go ahead. Or, if you like, save it to a mask now.



The Magic Wand user mask has been extended over the coat with Shift-clicking.

The default state of the Magic Wand selects contiguous pixels. To select noncontiguous pixels, hold the Control-Shift/Ctrl+Shift keys and click anywhere in your image. This mode is a toggle; click again to return to contiguous mode. If you want to restrict the selection to a rectangle, press the Control-Shift/Ctrl+Shift keys and drag a bounding rectangle in your image.

Creating an Auto Selection

Auto Select creates a selection based on your choice of image characteristics. The Invert option allows you to invert the selection you create.

To generate an Auto Selection:

1. Choose **Select menu > Auto Select**. The Auto Select dialog appears.
2. Use the Using pop-up menu to choose an image characteristic for the selection.
 - Paper creates a selection using the current paper texture.
 - 3D Brush Strokes creates a selection based on the difference between the current image and the clone source. If no Clone Source is selected, Painter 3D uses the current pattern. For information about clones, refer to Chapter 5, “Cloning and Tracing.”
 - Original Selection imports the selection from the clone source document. You can use this feature to transfer a selection from one document to another or from a pattern (if no source is specified). For best results, the dimensions of the source and working document should match. You must establish a clone source

for this option to be valid. For information about clones, refer to Chapter 5, “Cloning and Tracing.”

- Image Luminance creates a selection based on the current image’s light and dark areas.
 - Original Luminance produces a selection in the current document based on the clone source’s light and dark areas. This option lets you import an image to the selection. If no Clone Source is selected, Painter 3D uses the current pattern.
 - Current Color creates a selection of pixels of the current primary color. Enabling the Invert option means that everything but the current color will be selected.
- You might want to use the Dropper tool to pick a color from the image before using the Current Color option.
3. Click OK to generate the selection.

Selecting By Color

The Color Select feature lets you create a noncontiguous selection based on a range of colors.

To generate a color-based selection:

1. Choose **Select menu > Color Select**. The Color Select dialog appears.
2. Click in the image to pick up the central color of interest.
3. Adjust the HSV Extent sliders to control the range of colors. The colored regions of the HSV sliders describes the selected range. You can drag the limits of the range in either direction.
4. Adjust the HSV Feather sliders to control the feathering at the edges of the color space extents in hue, saturation, and value, respectively. This can help soften the selection edge.
5. The Preview window shows the selected area as a red overlay on the image. Drag in the Preview to see other parts of the document.
6. When the overlay looks the way you want it, click OK.

Basic Selection Commands

The next few sections explain basic selection commands.

Turning the Selection On and Off

Choose Select menu> None to disable the current selection. This is equivalent to a “deselect” command because it renders a selection inactive and invisible without clearing it. The keyboard shortcut for this command is Command-D/Ctrl+D.

To retrieve the disabled selection, choose Select menu> Reselect.

Hiding and Showing the Marquee

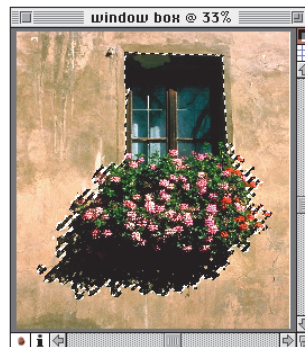
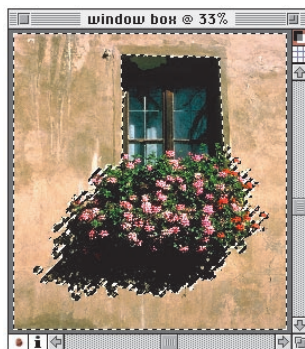
You can control display of the selection marquee (marching ants) with Select menu> Hide/Show Marquee. The selection is active even if the marquee is hidden, but the ants won't be visible.

Inverting the Selection

Inverting changes the selection to its opposite. For example, if you have an image of a boat on the water and a precise selection of the boat, you can select everything but the boat by inverting the boat selection.

If you want the selection inverted to change the control of your brush strokes, you can switch the drawing mode between Draw Inside and Draw Outside. For more information on the drawing modes, refer to “Drawing Modes” on page 288.

To invert the selection image, choose Select menu> Invert.



Because the stucco wall is of a single, basic color, it was easy to select it with the Magic Wand. By inverting the selection, only the window, flowers, and their shadow are selected.

The selection is 8-bit, like a grayscale image. Inverting the selection mask is equivalent to the negative of a grayscale image. For example, a pixel that has 80% luminance will have 20% luminance when it's inverted.

Saving the Selection to a Mask

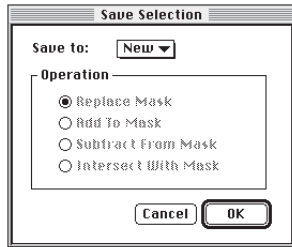
You can save the current selection to a user mask. You'd do this if you wanted to save it for later or if you wanted the additional editing control available in a mask. You can also use the current selection to modify an existing mask.

The selection must be active to save it to a mask.

To save the selection to a mask:

1. Choose **Select menu> Save Selection**. For convenience, this command also appears as a button on the **Objects: Mask List palette**.

The Save Selection dialog appears.



Use the Save Selection dialog to save your current selections.

2. Use the Save To pop-up to choose a mask to hold the saved selection.
 - New is the default. It creates a new mask from the current selection.
 - The pop-up lists any other masks in the image. You might choose to put the selection into one of these.
3. If you're saving the selection to an existing mask, choose the operation you want. The Boolean operations will, in effect, edit the mask.
 - Replace Mask eliminates what was in the mask and replaces it with the saved selection.
 - Add to Mask combines the current selection with the chosen mask.
 - Subtract from Mask removes the current selection from the chosen mask.

- Intersect with Mask determines the intersection of the selection and the chosen mask, and saves this into the mask.

4. When you've set the options you want, click OK.

You'll find more information on working with masks in "Working with Masks" on page 298.

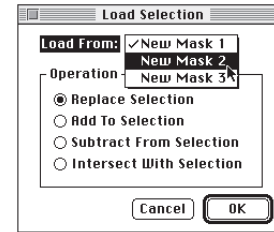
Loading the Selection from a Mask



To load the selection from a mask:

1. Choose **Select menu > Load Selection**. For convenience, this command also appears as a button on the **Objects: Mask List palette**.
2. Use the Load From pop-up to choose which mask you want.

You can select the mask you want in the Mask List before displaying the Load Selection dialog. In this case, Painter 3D chooses the mask in the pop-up for you.



Use the Load Selection dialog to load user masks

3. Select the loading operation:
 - Replace Selection eliminates the current selection and loads the chosen mask into the selection.
 - Add to Selection adds the mask to the current selection.
 - Subtract from Selection removes the loaded mask from the current selection. In other words, the mask "cuts away" from the selection.
 - Intersect with Selection determines the intersection of the mask and the current selection. This intersection becomes the new selection.
4. When you've set the options you want, click OK.

Manipulating Selections

Path-based selections support transformations. You can convert a mask selection to a path selection if you want to apply transformations to it.

To convert a mask selection to a path selection:

1. Make sure the mask you want to convert is in the active selection.
2. Choose **Select menu > Transform Selection**.

Painter 3D generates paths from the mask. You can now use the Selection Adjuster tool for transformations.

Using the Selection Adjuster Tool

The Selection Adjuster tool lets you move selections. You can also scale, rotate, and slant path-based selections in the Image window.

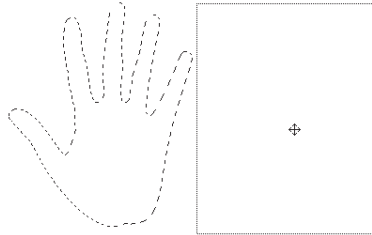
The Selection Adjuster tool shares a space on the Tools palette with the Adjuster tool.



The Selection Adjuster tool.

To move the selection:

Drag inside the selection with the Selection Adjuster tool.



Drag inside a selection with the Selection Adjuster to move it.

You can move a mask-based selection with the Selection Adjuster tool. However, the portion that moves outside the document area gets cut off.

To move a path selection with the Arrow keys:

1. Using the Selection Adjuster tool, click inside the selection once.

Square handles appear on the corners and sides of the selection bounding rectangle.

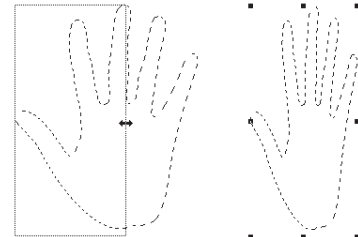
2. Press the Arrow keys to nudge the selection path in the direction you want to move it.

To scale a path selection:

1. Using the Selection Adjuster tool, click inside the selection once.

Square handles appear on the corners and sides of the selection bounding rectangle.

2. Drag a handle to scale the selection.



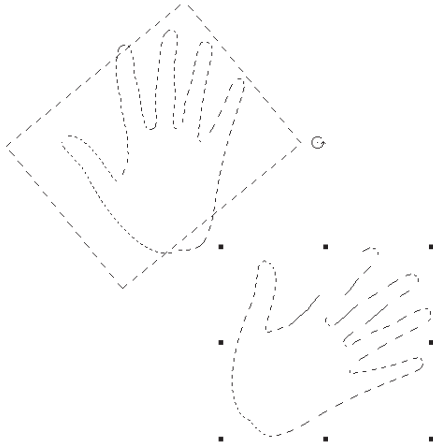
Drag a side handle to scale horizontally.

If the handles don't appear when you click the selection with the Selection Adjuster tool, the selection might be mask-based. Use Select menu > Transform Selection to make the selection path-based.



To rotate a path selection:

1. Using the Selection Adjuster tool, click inside the selection once.
2. Hold down the Command/Ctrl key and drag a corner handle.



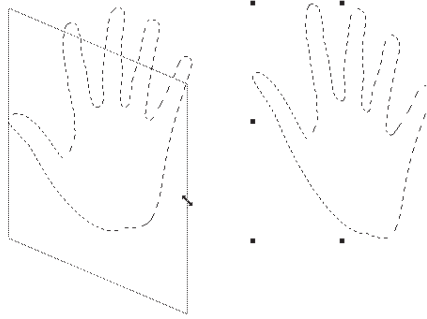
Rotate a selection.



To slant (skew) a path selection:

1. Using the Selection Adjuster tool, click inside the selection once.

2. Hold down the Command/Ctrl key and drag a side handle.



Slant a selection.

Modifying the Selection

The Select menu offers feathering and several commands for modifying a selection. Modify commands are available only for path-based selections.

Feathering a Selection

You can feather the selection to soften the transitions between selected and unselected areas.



To feather a selection:

1. Choose **Select menu > Feather**. The Feather Selection dialog appears.

2. Enter the number of pixels you want to feather your selection.
3. Click OK.

With marching ants, feathering is difficult to judge. You can see the effect of feathering much better if you save the selection to a user mask and view the mask.

If the effect is not what you intended, Undo it and try again with a different feathering radius.

Widening a Selection

Widening increases the selection path by a set number of pixels.



To widen a selection:

1. Choose **Select menu > Modify > Widen**. The Widen Selection dialog appears.
2. Enter the number of pixels to widen by.
3. Click OK.



All Modify commands require a path-based selection.



Contracting a Selection

Contracting shrinks the selection path by a set number of pixels.



To contract a selection:

1. Choose **Select menu> Modify> Contract**. The Contract Selection dialog appears.
2. Enter the number of pixels to shrink by.
3. Click OK.

Smoothing a Selection

Smooth removes sharp edges, rounds corners, and straightens out wiggles in the path of the marching ants.



To smooth a selection:

Choose **Select menu> Modify> Smooth**. You'll probably need to choose the command several times before the path is as smooth as you want it.



The selection—before and after smoothing.

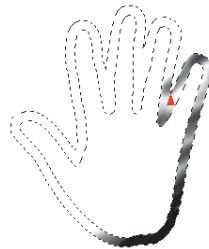
Creating a Border Selection

Border creates a selection along the path.



To create a selection border:

1. Choose **Select menu> Modify> Border**. The Border Selection dialog appears.
2. Enter the number of pixels for the width of the border swathe.
3. Click OK.



A border selection. For clarity, some Air Brush strokes were painted into the selection.

Stroking a Selection with the Brush

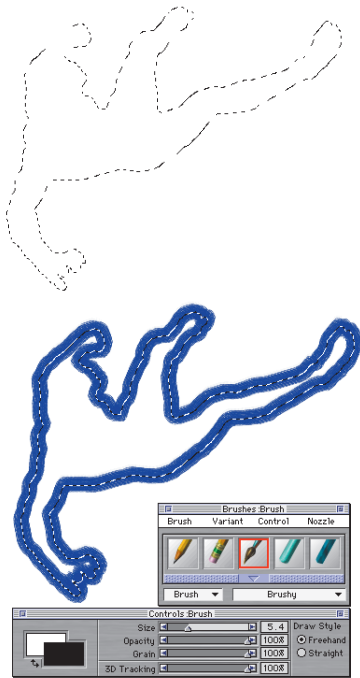
In some cases, you might want to border a selected region with a brush stroke. Painter 3D will do this for you, stroking the current brush along the selection path. This is an excellent way to get brush strokes to follow specific contours.



To use stroke selection:

1. Set up the selection paths you want to stroke. Only path-based selections can be stroked.
2. Choose the brush variant, color, and paper texture you want to use. This feature uses the current brush variant.
3. Choose the Drawing Mode you want to use. If you want the brush dab to straddle the selection path, choose the Draw Anywhere mode.
4. Choose **Select menu> Stroke Selection**. Painter 3D applies a brush stroke to the canvas, following the selection path.

You can repeat the command to build strokes. Change brushes if you like. You might want to move the path a few pixels and choose the command again.



Applying a brush stroke to a selection.

The Selections Portfolio: Storing and Retrieving Selection Paths

If you create a selection path that you'll use again, you can store it in the Selections Portfolio library. Painter 3D provides a library of sample selection paths, but you can create as many additional libraries as you need.

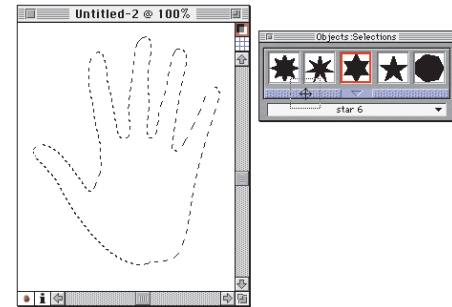
To store a selection path in the current library:

1. Create the selection you want to store.
2. Choose **Select menu > Selection Portfolio**. The Selections Portfolio palette appears.

The Selections Portfolio supports libraries. For information on working with libraries, refer to "Libraries and Movers" on page 10.

3. Choose the Selection Adjuster tool.
4. Make sure the selection is path-based. If **Select menu > Transform Selection** is grayed out on the menu, the selection is path-based.
5. Drag the selection into the Selections Portfolio palette. The Save Selection dialog appears.
6. Type a name for the selection path.

7. Click OK.




Drag a selection to the portfolio to store it for another day.



To use a selection from the portfolio:

1. Open the Selections Portfolio palette and locate the selection path you want to use.
2. Drag the icon from the palette to the Image window.


You can also double-click the icon. This places the selection in its original position (when it was dragged into the portfolio), provided the file sizes are the same.



Dragging a selection from the Selections Portfolio replaces the current active selection.




Floater use a mask to define their visibility. For information on floater visibility masks, refer to “Floater Visibility Mask” on page 215.




Creating an Auto Mask

Auto Mask creates a mask based on your choice of image characteristics. The Invert Mask option allows you to invert the mask you create.




Auto Select creates a selection. Auto Mask creates a user mask. Otherwise, the commands function identically.




Working with Masks

Like the selection, a user mask is an 8-bit image that corresponds pixel-for-pixel with the canvas RGB image.

The primary function for a user mask is to store a selection you might want later. You can save multiple selections in masks. The masks remain inactive (for canvas control) until you load them to the selection.



Although user masks are inactive on the canvas, they can be used to control certain image effects.



Painter 3D allows you to create up to 32 user masks. The masks are listed in the Objects: Mask List palette, where you can select and control them.

You can edit a mask in a number of ways, then load it as the selection.

Your stored masks remain part of the file when you save in RIFF or Photoshop format. No matter how many sessions you work on a project, the saved masks are ready any time you want them.

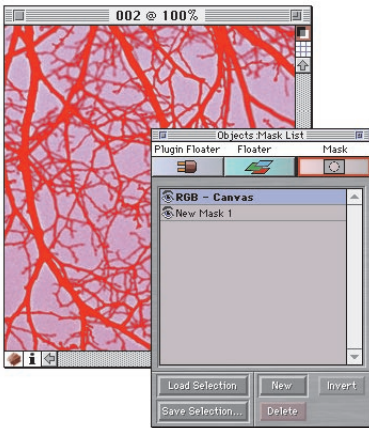
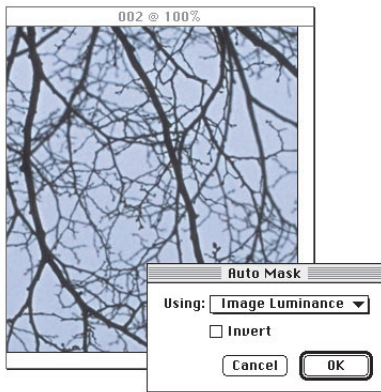
Creating a Mask

You can create masks in the following ways:

- Create a selection, then choose Select menu > Save Selection to put it into a mask. (This is the mask-creation technique you'll probably use most often.) For complete information, refer to “Saving the Selection to a Mask” on page 293.
- With a blank mask, you can use any of the editing techniques (described later) to develop imagery in it.

To generate an Auto Mask:

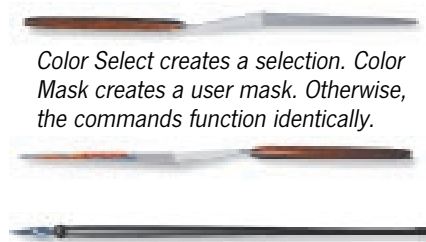
1. Select the destination for the mask.
2. Choose **Objects palette: Mask menu > Auto Mask**. The Auto Mask dialog appears.
3. Use the pop-up menu to choose which image characteristics to base the mask on—Paper, 3D Brush Strokes, Original Selection, Image Luminance, Original Luminance, or Current Color. These options are described in “Creating an Auto Selection” on page 291.
4. When you've chosen an option, click OK. Painter 3D generates the mask.



An image and the mask created with Auto Mask: Image Luminance.

Creating a Color Mask

The Color Mask feature lets you create a noncontiguous mask area based on a range of colors.



To generate a color-based mask:

1. Select the destination for the mask.
2. Choose **Objects palette: Mask menu > Color Mask**. The Color Mask dialog appears.
3. Click in the image to pick up the central color of interest.
4. Adjust the HSV Extent sliders to control the range of colors. The colored regions of the HSV sliders describes the selected range. You can drag the limits of the range in either direction.
5. Adjust the HSV Feather sliders to control the feathering at the edges of the color space extents in hue, saturation, and value, respectively. This can help soften the mask edge.

6. The Preview window shows the masked area as a red overlay on the image. Drag in the Preview to see other parts of the document.
7. When the overlay looks the way you want it, click OK. Painter 3D generates a mask of the selected color range.

Bringing in Masks from Other Programs

RGB Photoshop documents saved in the Photoshop format can also be opened in Painter 3D. Anything in the alpha channels (#4 and above) will appear as masks in Painter 3D.

Conversely, when you save your Painter 3D file in Photoshop format, the saved masks will go into channels #4 and above.

Controlling Masks in the Mask List Palette

The Mask List palette lists the RGB color image and each user mask you've saved. The Mask List palette also lists the visibility mask of a selected floater. For information on working with a floater mask, refer to "Image Floaters" on page 211.

To display the Mask List palette, open the Objects palette and click the Mask button.

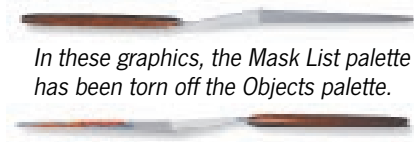


The Mask List palette lets you select and control masks in the document.

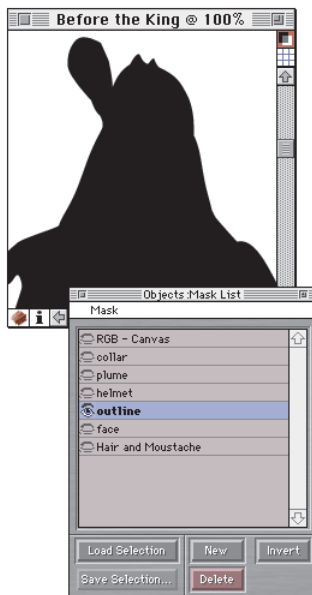
Viewing and Hiding User Masks

The Eye icon for each mask in the Mask List controls its display. When the Eye is open, that mask appears in the Image window or Model window. When the Eye is shut, the mask is hidden (not displayed).

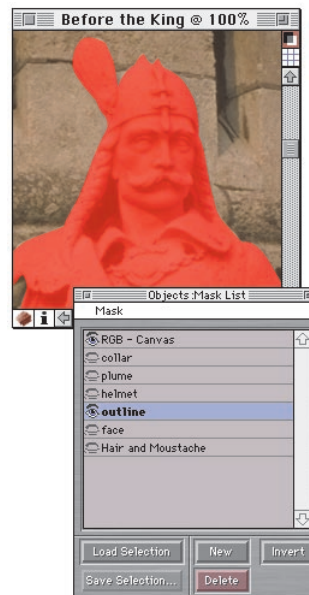
Painter 3D offers two ways to view a user mask—as a colored overlay on the image or in grayscale.



In these graphics, the Mask List palette has been torn off the Objects palette.



The mask appears in grayscale. The RGB image is hidden. The user mask Eye is open, and the Canvas-RGB Eye is shut.



The mask is a red overlay on the RGB image. Both the user mask and canvas-RGB Eyes are open.

Selecting a Mask for Editing

If you want to edit a particular mask, you must select it.

To select a user mask, click the listing of the mask you want to work with. The selected mask is highlighted in the Mask List.

Editing techniques are discussed in “Editing in a Mask” on page 304.

When you want to work on the RGB image again, select its listing.



The “Hair and Moustache” mask is displayed and selected.

You can display the RGB image and more than one mask, but your editing will apply only to the one item highlighted in the Mask List palette—either the RGB or a mask.

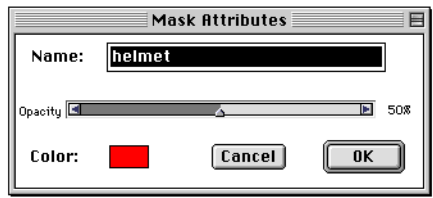
Setting Mask Attributes

Each mask has a set of display attributes that make it easier to use and help you distinguish it from the other masks.

To set mask attributes:

1. In the Mask List palette, select the mask you want to work with.
2. Choose **Objects palette: Mask menu > Mask Attributes**. The Mask Attributes dialog appears.

You can also double-click the mask listing to select it and open its Attributes dialog.



Use the Mask Attributes dialog to set mask attributes.

3. Type a name for the mask. Naming the mask can make it easier to work with, especially if you have several in the document. You’ll be able to choose the mask you want immediately if you’ve given it a descriptive name.

4. Drag the Opacity slider to set the mask display strength. The display opacity does not change the selection value (when the mask is loaded). It only affects how the mask appears as you work on it. Sometimes, you might want the mask at its full intensity. Other times, you might want the mask semi-transparent so you can follow the underlying RGB imagery as you edit the mask.

5. Double-click the Color color chip to select the display color. Use the color picker to select the color you want. If you want to see the mask as a grayscale image, choose black.

A mask is easiest to use as an overlay when its color is a strong contrast with the predominant hue of the RGB image. You might want to use a different color for each of several masks.

6. Click OK.



The color of mask display has no influence on the function of the mask. All masks are inherently 8-bit. The pixel values in the 0 to 255 range are the only things that matter.



Basic Mask Commands

The next sections describe some basic mask commands.

Creating a New Mask

You can create a new, blank mask then edit it to develop imagery. Painting with the Brush tool and other editing techniques are covered “Editing in a Mask” on page 304.



To create a new, blank mask:

Choose Objects palette: Mask menu> New Mask.

After creating the new mask, you can edit it.

Feathering a Mask

Feathering softens transitions between light and dark areas of the mask.



To feather a mask:

1. In the Mask List palette, select the mask you want to work with.
2. Choose **Objects palette: Mask menu> Feather Mask**. The Feather Mask dialog appears.

3. Enter the number of pixels you want to feather the mask.
4. Click OK.



A mask image—before and after feathering.

Copying a Mask

You can create a new mask by copying an existing mask.



To copy a mask:

1. In the Mask List palette, select the mask you want to copy.
2. Choose **Objects palette: Mask menu> Copy Mask**. The Copy Mask dialog appears.
3. Choose a copy destination from the Copy mask pop-up.
New is the default destination. Other existing masks will also be listed in the pop-up. Copying to an existing mask replaces that mask.
4. Click OK.



You can use the Copy Mask command to copy a user mask to a floater's visibility mask: Align the floater with the portion of the user mask you want. Select the floater. In the Mask List, select the source user mask. Choose Objects palette: Mask menu> Copy Mask. In the pop-up, select the Floater's mask as the destination. Painter 3D copies the portion of the user mask that coincides with the floater rectangle into the floater visibility mask.



Deleting a Mask

If you've finished working with a particular mask, you can delete it.



To delete a mask:

Select the mask you want to delete. Choose Objects palette: Mask menu> Delete Mask. For convenience, this command also appears on the Mask List palette as a button.

Clearing a Mask

If you want to clean off a mask so you can start fresh, use the Clear command.

To clear a mask:

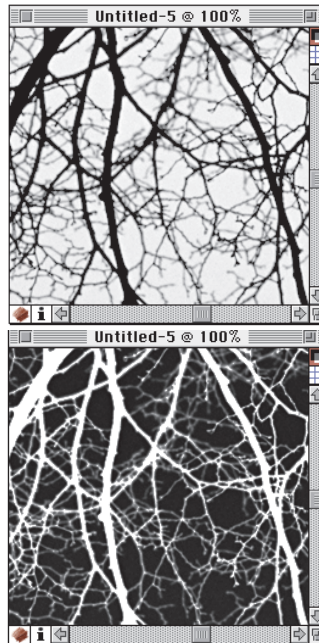
Select the mask you want to clear. Choose Objects palette: Mask menu> Clear. You can also press Command-Shift-C/ Ctrl+Shift+C.

Inverting a Mask

The mask is a grayscale image. By inverting it, you can make dark pixels light and vice versa.

To invert a mask:

Select the mask you want to invert. Choose Objects palette: Mask menu> Invert Mask.



A mask—before and after inversion.

Editing in a Mask

A mask allows certain types of editing that are not possible in a selection.

Because you're applying the effect in an 8-bit mask, some effects may not be appropriate or even allowed.

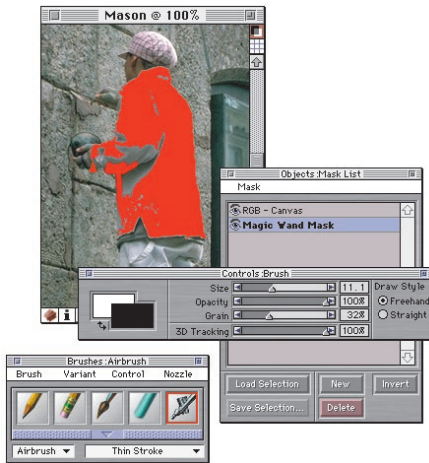
You cannot create a selection within the mask. You can, however, take advantage of Boolean operations to achieve the same result in only a few steps.

To paint in the mask with a brush:

1. In the Mask List, display the mask you want to work in. Make sure the mask you want is selected in the Mask List palette.
Your brush strokes go to the item highlighted in the Mask List palette—regardless of whether or not that item is visible.
2. Choose the Brush tool and any brush variant. The Pen and Airbrush variants make good choices.
3. In the Color palette, choose a value for the mask paint. Black adds to the mask. White erases from it.

When you paint in the mask, hue is irrelevant. The mask carries 8 bits of information and you need only to set a level in that range. The value scale is between black and white; you can see this on the left edge of the Color palette triangle.

4. Set Opacity in the **Controls palette: Brush tool**.
5. Mark in the document to edit the mask.



The Magic Wand masked most of the jacket. Now the artist uses the Brush tool to clean up the mask.

You might want to change Mask Attributes to set the color and opacity of the mask overlay. To change Mask Attributes, select the mask in the Mask List and choose Objects palette: Mask menu > Mask Attributes.

Filling the Mask

To fill the mask with the Fill command:

1. In the Mask List, select the mask you want to work in. Make sure the mask is visible. The Paint Bucket only fills the selected mask if it's visible.
2. In the Art Materials palette, choose the material you want to fill with. Grads are useful.
3. Choose **Effects menu > Fill**. The Fill dialog appears.
4. Choose the material you want to fill with.
5. Click OK.

For more information on the Fill command, refer to “Filling with Art Materials” on page 126.

To fill the mask with the Paint Bucket:

1. In the Mask List, display the mask you want to work in. Make sure the mask is selected in the Mask List palette.
2. In the Art Materials palette, choose the material you want to fill with.
3. Choose the Paint Bucket tool from the Tools palette.
4. In the **Controls palette: Paint Bucket tool**, choose Image from the What to Fill pop-up. Choose the material you want to fill with and set your other options. For complete information on Paint Bucket controls, refer to “Filling an Area” on page 150.
5. Click in the document in the region of the mask you want to fill.

Applying an Image Effect to a Mask

You can apply effects to masks. You might do this for practical reasons. For example, the Brightness/Contrast effect spreads and chokes the mask. You can also create special layering effects, for example, by applying Surface Texture or Glass Distortion.

To apply an image effect to a mask:

1. In the Mask List, display the mask you want to work in. Make sure the mask is selected in the Mask List palette.
2. Choose the Image Effect you want.
Effects menu > Tonal Control > Brightness/Contrast is quite useful. Focus effects are also good in some cases.

To learn more about image effects, explore Chapter 13, “Image Effects.”







Floater



Understanding Floaters

Floater are images, or portions of images, that float above the canvas. You can copy and move floaters around in the document to create just the composition you want.

Each floater is a separate image, so each floater you add to a document introduces another layer of information. Because each floater is distinct, you can move floaters around and edit them without interfering with the canvas image—or with other floaters. Likewise, you can

work in the Image window or Model window without interfering with any of the floaters.



Save files with floaters in RIFF format so you can rearrange them later.

Floaters are particularly handy when you're working in the Model window. You can drag a floater object across a model object to position it exactly where you want it. For example, you could drag a floater depicting a face across a face model in the Model window and place the floater so that the features line up precisely.

In RIFF format, floaters stay floating even when you save the file, so you can make changes easily. There's no need to redo the

entire composition; just rearrange the floaters. The result is a dynamic and flexible design environment.

If you're used to working with Photoshop, you can see that floaters are akin to Photoshop's layers. Like layers, floaters let you work on portions of your image without affecting other portions. You can edit floaters independently until you "drop" them into the image.



Types of Floaters

Because you can manipulate floaters independently, they are considered objects.

Painter 3D has three types of floater objects: image floaters, reference floaters, and plug-in floaters. These object types have the "floating" characteristic in common, but differ in how you create them and what you can do with them.

Image Floaters

Image floaters are discrete images that float above the canvas. Image floaters are stored as pixel information with a mask to define the image shape and opacity. You can paint and apply effects in image floaters.

Image floaters are used primarily for compositing images—moving portions of imagery within an image, moving imagery between images and models, and maintaining layers within a document.



One special variety of image floater is completely transparent—until you paint into it. For more information on painting into a transparent floater, refer to "Painting into a Transparent Floater" on page 314 or "Painting on a Transparent Floater with the Layer Brush" on page 53.



You'll find information on creating and using image floaters in "Editing Image Floaters" on page 313.

Reference Floaters

Reference floaters are temporary, low-resolution versions of image floaters. You convert an image floater to a reference floater when you want to transform it (resize, rotate, slant) by dragging its handles. When you've finished with such transformations, you need to convert the reference floater back to an image floater to restore its original resolution.

You'll find information on creating and using Reference Floaters in "Creating a Reference Floater" on page 320.

Dynamic Plug-in Floaters

Plug-in floaters are a class of floating objects, each of which brings new functionality to Painter 3D.

A plug-in floater provides dynamic effects over its source imagery. For example, the Glass Distortion plug-in floater applies glass distortion to the imagery beneath it, and the Kaleidoscope plug-in floater produces kaleidoscope effects over the underlying imagery. You can open each plug-in floater's options dialog to change its settings and thus alter its effects.

Plug-in floaters use an extensible architecture. You can add new plug-in floaters to your Painter 3D toolbox when they become available.

For detailed information on creating and working with Plug-in Floaters, refer to "Using Plug-in Floaters" on page 226.

What All Floaters Have in Common

Image floaters, reference floaters, and plug-in floaters have the following characteristics in common:

- They are subject to the layering hierarchy in the Floater List. This includes the related controls for selecting, hiding, locking, naming, and grouping.

These features are described in "The Floater List" on page 323.

- They can be cut, copied, pasted, moved onscreen, and aligned in the same ways.

These features are described in "Arranging Floaters" on page 329.

- They obey the floater composite method, which controls how the floater interacts with underlying images.

These features are described in "Creating Special Effects With Floaters" on page 331.



Image Floaters

Image floaters let you move image selections around within other images or in the Model window. You can also use image floaters to move images to other documents so you can composite them, or to save images so they can be used again later. Whenever you copy and paste image selections, they come in as floaters. This is

handy because you can easily drag the floaters where you want them. The main value of floaters is that they let you move imagery over the surface of a 3D model.

You can also use floaters to create Image Hose nozzle files. For more information, refer to Chapter 7, "The Image Hose."

Creating Image Floaters

There are several ways to create image floaters:

- You can select a portion of an image and float it.
- You can create a mask, load it as a selection, and float it.
- You can drag a ready-made floater image from the Floater Portfolio into the Image window.
- You can use the Text tool to create text floaters.
- You can paste objects from the Clipboard.
- Some commands from the Effects menu (Rotate, Scale, and Distort) automatically turn a selection into a floater.

Creating an Image Floater from a Selection

Creating an image floater from a selection is a two-step process: you make a selection, then you float it. You have several options for accomplishing either step.

To create an image floater from a selection:

1. Select an area in your image using the Rectangular or Oval Selection tool, the Lasso tool, or the Magic Wand tool.

Or

Create a mask (or use one you already have) and load it as a selection.

For more information on working with masks and selections, refer to Chapter 9, "Selections and Masks."

2. Be sure that marching ants are bounding your selection.
3. Choose **Select menu > Float**. Hold down the Option/Alt key when you choose Float to float a copy of the selection.

Or

Using the Adjuster tool, click inside a selection to float it. Hold down the Option/Alt key when you click to float a copy.

Creating an Image Floater from the Floater Portfolio

Painter 3D comes with a set of ready-to-go images you can drag into the Image window as floaters.

To use a floater from the Floater Portfolio:

1. In the **Objects:Floater List palette** choose **Floater menu > Floater Portfolio**. The Objects: Floaters palette appears.
2. Choose a floater from the palette and drag it to the Image window. The floater appears in the Image window, "floating" on top of the existing imagery. You'll also see the floater in the Model window if map visibility is turned on in the Maps Manager.

Creating Text floaters

Using the Text tool, you can add text to your image. Each letter you type is added as a separate image floater, which you can group so that all the elements stay together.

To create text floaters:

1. Click the Text tool and adjust the font and font size in the Controls: Text tool palette.
2. Click in the Image window.
3. When you see the insertion point flashing, type the text you want, pressing Return/Enter to start a new line.

Other Ways to Create Image Floaters

There are a few other ways to create image floaters:

- You can cut or copy information, then paste it. Anything you paste from the Clipboard appears in the Painter 3D document as a floater.
- You can drag a floater between images. When a floater is selected in one image, you can drag it to another open image. A copy of the floater appears in the other image.
- When you have an area selected in an image, rotating, scaling, or distorting it using the Effects menu > Orientation command automatically turns the selection into a floater.

Creating image floaters is just the beginning. You can move, copy, and use any of Painter 3D's tools and effects to modify a floater. You can also save a floater to a portfolio library for later use.

Anatomy of an Image Floater

An image floater has two components; the RGB image, which is rectangular, and the visibility mask, which defines the portions of the RGB rectangle that are visible.



An image floater has two components; the RGB image and the visibility mask.

When you select a floater in the Floater List, the Mask List provides a listing for the floater's visibility mask. You'll find more information on working with the floater's visibility mask later in "Floater Visibility Mask" on page 315.

Editing Image Floaters

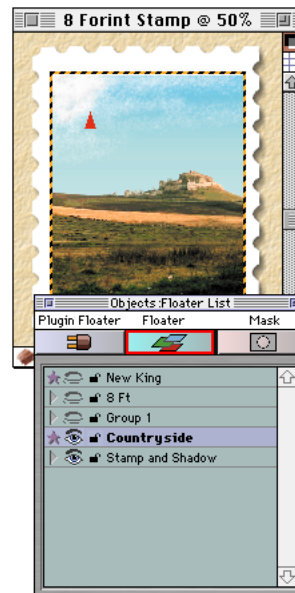
Nearly all of Painter 3D's brushes and effects work with floaters. You can paint in an image floater, change its opacity, feather its edges, and enhance its image with commands from the Effects menu.

You can also edit the floater by modifying its mask. By changing the mask, you'll reveal or conceal parts of the floater. You can paint on a floater's mask with any brush or use any of the advanced masking features, like Auto Mask.

When you want to work with a particular floater, you must first select it. When you want to work on the canvas, deselect all floaters. For information on selecting and deselecting floaters, refer to "The Floater List" on page 323.

Painting in a Floater

To paint in a floater, select a floater and start painting. Your brush strokes appear only in the floater.



Paint on a selected floater to change the image. Here the artist uses the Airbrush to add some clouds to the "Country Side" floater. Higher floaters are hidden.

You can use any of Painter 3D's brushes to paint or draw in a floater, with the exception of the Water Color brushes—a floater doesn't have a wet layer.

You can move a floater to a temporary document, Drop and Select, and use the Water Color brushes there. Because you dropped the floater with a selection, you can easily re-float the modified image to bring it back.

You can't paint across a floater group. If this is something you want to do, you need to Collapse the group first.

To paint on the canvas again, deselect all floaters in the Floater List. Select the Canvas-RGB listing in the Mask List. You can now start painting. When no floater or mask is selected, your brush strokes go to the canvas.

This can be interesting if a floater covers the area where you're painting. In this case, you might not see the brush strokes. You'll need to deal with the floater by moving, hiding, or dropping it to see what you're painting.

Painting into a Transparent Floater

You might want to view the canvas image, but paint over it into a floater. You can do this using the special Transparent Layer brush. This is the only brush that paints in the RGB layer and adds to the floater's visibility mask at a single stroke.

To use the Transparent Layer brush:

1. Choose a brush variant for the type of painting you want to do—for example, any of the Layer brush variants from the New Brushes folder or the Feather Tip variant of the Airbrush.

If necessary, you can adjust any of the relevant brush controls.

2. Expand the Brushes palette to show the method and subcategory.
3. In the Method pop-up, choose Plug-in; in the Subcategory pop-up, choose Transparent Layer.

For more information on working with brushes, refer to “Painting with Painter’s Brushes” on page 41.

4. Create a new transparent floater to paint into. First deselect all floaters, then choose **Objects palette: Floater menu > Transparent Layer**. Painter 3D creates a transparent floater that's equal in size to the canvas.
5. If you want to create a new transparent floater at a limited size (smaller than the canvas), use the Rectangular Selection tool to select the size of your transparent floater.

Now choose **Objects palette: Floater menu > Transparent Layer**.

Painter 3D converts the selection to a transparent layer floater.

6. Choose your color. You can even use the Clone Color feature to take color from another image.

You can now paint in the transparent floater.

Adding a Drop Shadow

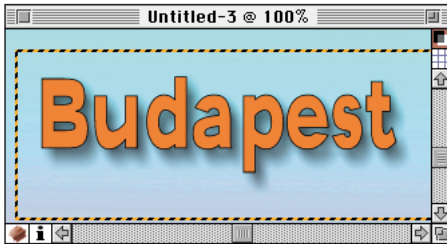
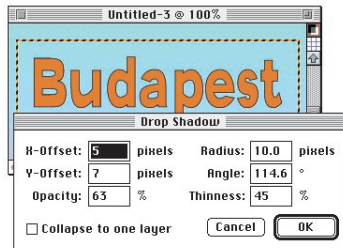
At times, you might want to add a shadow to a floater. Shadows can improve the appearance of text and are sometimes used when developing floaters for an Image Hose nozzle. You can add a drop shadow to a single floater or to a floater group.

Drop shadow works only with image floaters. Other objects must be converted for this effect.

Be conservative about using drop shadows on models because the effect might not be what you intend. Lighting effects you set up for the model might not mesh well with the light a drop shadow implies, creating an unrealistic appearance.

To add a drop shadow:

1. Select the floater or group you want to shadow.
2. Choose **Effects menu > Objects > Create Drop Shadow**. The Drop Shadow dialog appears.



You can easily add a drop shadow to a floater. In this case, the text shapes group was collapsed to become an image floater before adding the drop shadow.

3. Enter information to describe the shadow you want, then click OK.

The X and Y offset describe the distance the shadow shape is offset from the center of the floater image.

Opacity sets the darkness of the shadow. Increasing Opacity darkens the shadow.

The blurring of the shadow edge is controlled with the Radius, Angle, and Thinness settings. These controls apply motion blur to the shadow shape, thereby softening its edges.

Radius sets the amount of blur. The radius is half the distance across the blurred region. If you set Radius to zero, you'll get a sharp edge on the shadow.

Angle sets the direction that the shadow is blurred.

Thinness applies blur perpendicular to the Angle. If the blurring shows streaks, you can increase Thinness to soften them.

The Collapse to One Layer Option

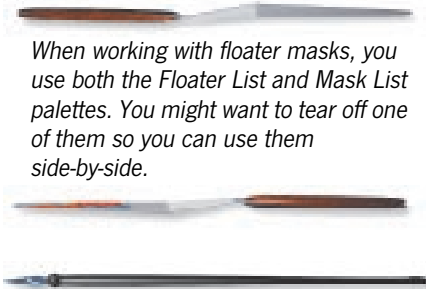
Drop shadows are normally created as a separate floater, grouped with the original. This enables you to select the drop shadow floater and modify it independently.

If you want the shadow and the original united in a single floater, enable the Collapse to One Layer option at the

bottom of the Drop Shadow dialog. If you are preparing floaters for a Nozzle, this saves you from collapsing each group manually.

Floater Visibility Mask

The floater visibility mask is created when you float a selection. The mask defines the area of the RGB layer that is visible.



When working with floater masks, you use both the Floater List and Mask List palettes. You might want to tear off one of them so you can use them side-by-side.

To view an image floater's mask:

1. Select the floater.
2. In the Mask List, click the floater's mask eye icon to open it.

In the floater, Painter 3D displays the mask in grayscale.
3. To return to normal display, click the floater mask's eye icon again to shut it.
4. Remember to select the RGB listing in the Mask List when you're done working with the floater's mask.

Editing a Floater's Mask

By modifying a floater's mask, you can change how much of the image is visible. The most useful way to modify a floater mask is with the Brush tool. Some image effects are also possible.



Notice that the inside of the sword arm is not masked properly.



When working with a floater mask, it is more convenient to tear off either the Floater List palette or Mask List palette.



Notice the background imagery showing through. White is used to erase visibility.

By painting with a brush in a floater mask, you change the extent of its mask, revealing or concealing more of the floater RGB layer.



To edit a floater's visibility mask:

1. Select the floater.
2. In the Mask List, click the listing for the floater's mask to select it.

You can open the eye to use a grayscale display of the mask. Or you can keep the eye shut so you can view the floater's RGB layer while you modify the mask.
3. Use the Brush tool to paint in the mask, apply an image effect, feather, or use any of the Mask menu items to modify the mask.
4. When you're done working with the floater's mask, remember to select the RGB listing in the Mask List.

Painting in the Floater Visibility Mask

You can use almost any brush to modify the mask. The Airbrush variants and other brushes of the Cover method are ideal.

Remember that the floater visibility mask is an 8-bit image, so you use “grayscale paint.”

- Painting with black adds to the mask, which makes more of the RGB image visible.
- Painting with white removes from the mask, which conceals more of the RGB image (makes it invisible).
- Painting with an intermediate grayscale value makes that portion of the floater semi-transparent.

Feathering a Visibility Mask

You can feather the visibility mask to create soft edges on the floater.



To feather a floater’s edge:

1. Select the floater.
2. In the Mask List, click the listing for the floater’s mask to select it.
3. Choose **Objects palette: Mask menu > Feather Mask**. The Feather Mask dialog appears.

4. Set the number of pixels to feather by.



Feather creates soft edges.

5. Click OK.



How much room you have to feather a floater is determined in the General Preferences dialog. Choose Edit menu > Preferences > General. Notice that the Floater Pre-Feather is preset to 16 pixels. You can change this default to any number up to 50.



Floater Masking Modes

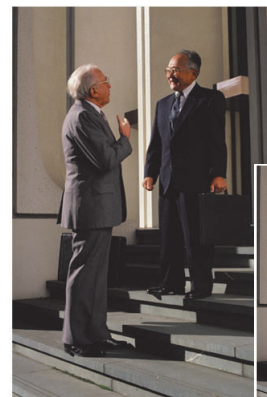
A floater mask has three modes: Disabled, Normal, or Inverted. By changing the mode, you change how the floater appears.



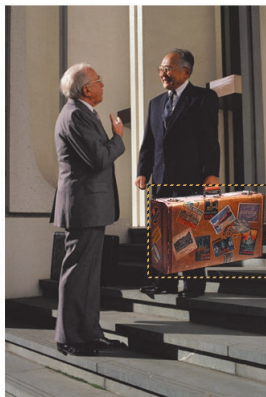
To change a floater’s mask mode:

1. Select the floater you want to change.

2. Choose **Objects palette: Floater menu > Floater Attributes** or double-click the image floater in the Floater List.
3. In the Floater Attributes dialog, click the radio button for the Floater Mask Mode you want.



This floater and canvas are used in the following examples to illustrate Floater Masking Modes.



Floater Attributes

Name:

Position: Top: Left:

Note:

Selection Interaction:

- None
- Selection Reveals Floater
- Selection Conceals Floater

Floater Visibility Mask:

- Disabled
- Normal
- Inverted

Map Clickable Region

Region: Rectangle Bounding Box

- Oval Inside Bounding Box
- Polygon Region

Disabled

With masking Disabled, Painter 3D ignores the visibility mask and displays the entire floater rectangle.

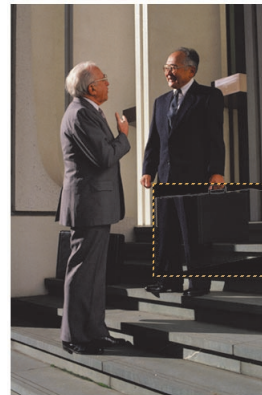


Floater Visibility Mask:

- Disabled
- Normal
- Inverted

Inverted

With the mask Inverted, masked regions of the floater rectangle are rendered invisible. Regions outside the mask are visible.



Normal

An image floater's normal masking mode uses the mask to reveal only the shape of the floating image. The unmasked regions are invisible.



Reference Floaters

A reference floater is a special kind of image floater. It gets its image information from an external source—a

reference image, which can be a standard floater in the current document or a separate file.

The reference floater is a low-resolution “stand-in” for the original image. Because it is low resolution, a reference floater can be quickly transformed in ways that would otherwise be prohibitively slow.

Working with a reference floater allows you to transform a floater onscreen by dragging its handles. Possible transformations include resizing, rotating, and skewing. Transformations happen immediately.

After transformations, you can convert the reference floater to an image floater. During conversion, Painter 3D refers to the original image to improve the resolution. This makes the image cleaner.

Editing the image—with a brush or effect—is not possible in a reference floater. When you’ve finished transforming the floater, you can convert it to an image floater, which you can edit.

Reference floaters (and the transformations they allow) are particularly useful when compositing high-resolution images.

Creating a Reference Floater

There are two ways to create a reference floater:

- By converting an image floater to a reference floater
- By placing an image that exists as a separate file



To convert an image floater to a reference floater:

1. Select a floater.
2. Choose **Effects menu > Orientation > Free Transform**. Painter 3D converts the image to a reference floater.

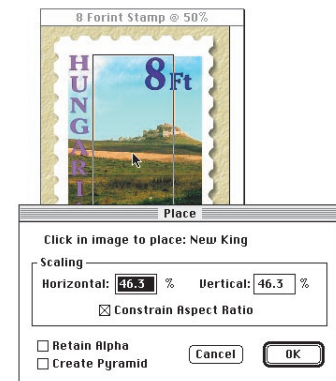
In the Floater List, the icon beside a reference floater shows the eight handles.



The reference floater state is just for transformations. If you try to paint in a reference floater, Painter 3D immediately commits the transform and converts the reference to an image floater.

Placing a Reference Floater

If the image you want exists as a separate file, you can use the Place command to bring it into the document.



The Place command allows you to place an image that exists as a separate file into your current open document.

Important: While working with a placed image, do not delete, move, or rename the reference original. Painter 3D must be able to refer to the image data in that file.

To place an image file as a reference floater:

1. Choose **File menu > Place**. A standard Open dialog appears, allowing you choose an image file.
2. Select an image file and click Open. The Place dialog appears.

When you move the cursor into the Image window, a rectangle shows how large the floater will be. This lets you see the scale of the floater in relation to the current document.

3. Set the options in the dialog, then click OK to finish placing the image:
 - To place the floater in a particular location, click in the document where you want the image centered.
 - To place the floater in the center of the document, click OK.

Horizontal and Vertical Scaling

When you place a file, Painter 3D suggests a scale for the image that fits in the current Image window. If you want to change the size, enter a different scaling percentage in the Horizontal Scale and Vertical Scale fields.

Constrain Aspect Ratio

When this option is enabled, Painter 3D maintains the proportions of the image. You can disable this option if you want to distort the image.

Retain Alpha

The image you place may carry a mask. If you want to keep the mask, leave this option enabled. When the image is placed, the image mask becomes the floater mask. If you disable this option, Painter 3D discards the mask.

Transforming a Reference Floater

A selected reference floater has eight handles on its selection rectangle—one on each corner and one on each side. You can drag these handles to transform the floater.

You can resize, rotate, and slant a reference floater by dragging its handles.

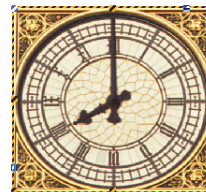
Choose the Adjuster tool and select the reference floater you want to manipulate.

Resizing a Reference Floater

Drag a corner handle in the direction you want to resize.

To maintain proportions, hold down the Shift key as you drag.

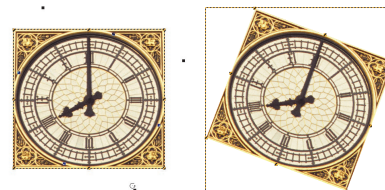
To resize in one dimension only, drag a side handle.



Resizing a reference floater.

Rotating a Reference Floater

Hold down the Command/Ctrl key and drag a corner handle.

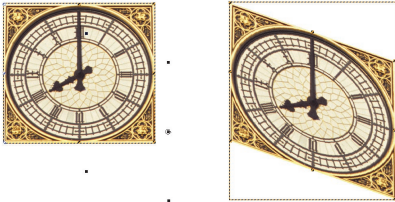


Rotating a reference floater.

Slanting (Skewing) a Reference Floater

Hold down the Command/Ctrl key and drag a side handle.

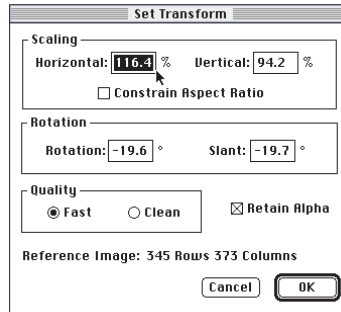
Notice the cursor change as you position the floater over a handle.



Slanting or skewing a reference floater.

Set Transform

After creating a reference floater, the Set Transform command allows you to perform numerical transformations. Set Transform is useful for returning the floater to its original condition.



Set Transform allows you to apply a specific set of instructions to a reference floater.



To set transformation options:

1. Select a reference floater.
2. Choose **Effects menu > Orientation > Set Transform**. Painter 3D opens the Set Transform dialog.
3. Enter values for the effect you want, then click OK. Painter 3D transforms the reference floater accordingly.

Scaling

The Horizontal and Vertical Scaling values describe the scaling relationship between this floater and its reference original. You can change the scaling by entering new values.

If the scaling is low, 33% for example, and you increase it, Painter 3D refers to the reference original to get more pixel data.

If you want to alter the proportions, disable the Constrain Aspect Ratio option. This allows you to apply different scaling factors in the horizontal and vertical dimensions.

Rotation

The original rotation value is 0°. Enter a new value to rotate the reference floater. Positive values rotate the reference floater counter-clockwise. Negative values rotate clockwise.

Slant

The original slant value is 0°. Enter a new value to slant the reference floater.

Retain Alpha

The Retain Alpha option is enabled by default. If you want to ignore the mask information, you can disable this option.

Quality

The Quality options allow you to choose the level of sampling between the reference floater and the original image.

Fast sets a high sampling ratio, which produces a low resolution reference floater. A low resolution reference floater contains less information, so it can be transformed quickly.

Remember that when you convert a reference floater to an image floater (with **Effects menu > Orientation > Commit Transform**), Painter 3D re-samples the original reference image to produce the best possible transformed image. This means that you can work fast without sacrificing image quality.

Clean sets the sampling ratio at 1 to 1, which produces a reference floater of the highest possible resolution—up to that of the original. This shows a better image as you work, but takes much longer to calculate transformations.

Reference Image

The number of pixels (Rows and Columns) of the original Reference Image appears at the bottom of the Set Transform window. You might find this information useful.

Converting a Reference Floater to an Image Floater

When you are finished with transformations, you can convert the reference floater back to an image floater.

If you try to apply an effect or paint on a reference floater, Painter 3D automatically asks if you want to convert it to an image floater.



To convert a reference floater to an image floater:

1. Select the floater you want to convert.
2. Choose **Effects menu > Orientation > Commit Transform**. Painter 3D converts the reference floater to an image floater. This may take a few moments.

During the conversion, Painter 3D examines the reference original and brings the best pixel data possible to the transformed floater. For this reason, you'll see the image quality improve.

Notice that the floater's icon in the Floater List changes.



When you are finished making transformations, you must convert your reference floater back to an image floater.



The Floater List

The Floater List palette keeps track of all floater objects in a document and provides special features for controlling them. Some of the things you can do with the Floater list are

- Select and deselect floaters
- Hide floaters
- Lock floaters
- Delete floaters
- Order floaters
- Group and ungroup floaters

To open the Floater List palette, display the Objects palette and click the Floater icon.

The Floater List palette lists all the floater objects in the current document. The floater list is arranged according to the layers, with the highest layer on top.

Selecting Floaters

When you want to work with a particular floater, you must select it.



To select a floater:

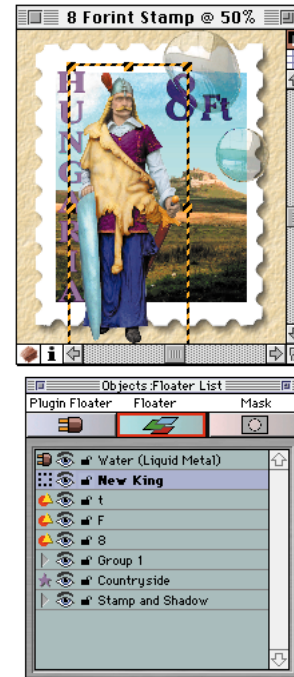
- ✳ Click the floater's name on the Floater List palette.
- Or
- ✳ Click the floater with the Adjuster tool.



Floaters in an image are listed in the Floater List palette.

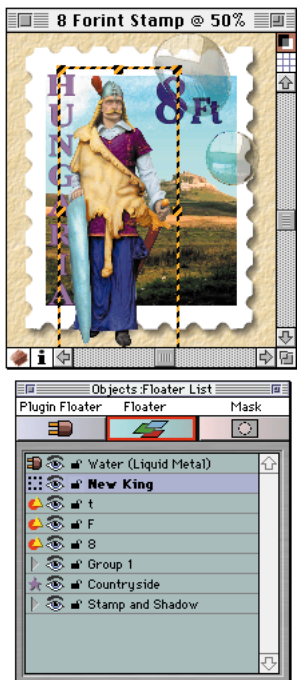
Icons identify each floater type:

- ✳ Image Floater
- ⋮ Reference Floater
- 🔧 Plug-in Floater



Click a floater with the Adjuster tool or work with the Floater List.

The floater selection marquee outlines the selected floater. Its listing in the Floater List is shown in bold type and highlighted.



Floaters appear in a selection marquee. Shape Floaters (and their groups) and Reference Floaters have handles for making adjustments. Image Floaters do not have handles.

You can select multiple floaters by holding down the Shift key and clicking on them. You can also use the Adjuster tool to drag a marquee over the floaters you want to select.

You can select all floaters in the document by choosing Objects palette: Floater menu > Select All.

To deselect a floater, click outside of it with the Adjuster tool. You can also choose Objects palette: Floater menu > Deselect. You can deselect a floater by clicking in the empty space below the names in the Floater List.

By deselecting all floaters, you select the canvas.



A deselected floater continues to float. That is, even though you don't see a selection marquee and the floater image appears to blend with the background, the floater is still a distinct object. Changes you make to the background will not affect the floater. This can lead to confusion. For example: If you try to paint into a floater that is not selected, your brush strokes will go to the canvas. Because the floater is concealing that part of the

canvas, you won't see the strokes. To avoid this, remember to select the floater before you try to paint into it.



If you want a floater to “stop floating,” you must drop it. Refer to [“Dropping Floaters” on page 115](#) for more information about dropping floaters.

Hiding a Floater

If you want to hide a floater, click the Eye icon next to its name in the Floater List. When the Eye is shut, the floater is invisible. To see the floater again, click the Eye to open it.



Click on the Eye icon to hide a floater.

Hiding the Selection Marquee

You can hide the selected floater's selection marquee. This is different from hiding the floater itself. When you hide the marquee, the floater image remains visible; you just don't see the marquee.

To hide the selection marquee:

- ✱ Choose **Objects palette: Floater menu > Hide Floater Marquee**. You can also press Command-Shift-H/ Ctrl+Shift+H.

Locking Floaters

If you have a lot of floaters in close proximity, you might select and move a floater by accident. To avoid this, you can lock floaters and groups. A locked floater or group cannot be selected with the Adjuster tool in the Image window.

To lock a floater:

- ✱ In the Floater List, click the padlock icon for the floater you want to lock. Painter 3D closes the padlock, showing that the floater is locked.
- Or*

- ✱ You can also select the floater, then choose **Objects palette: Floater menu > Lock**.

To unlock a floater:

- ✱ In the Floater List, click the padlock icon for the floater you want to unlock. Painter 3D opens the padlock, showing that the floater is unlocked.
- Or*
- You can also select the floater, then choose **Objects palette: Floater menu > Unlock**.

Deleting Floaters

You can delete a selected floater in any of several ways:

- Click Delete on the Floater List palette.
- Choose **Objects palette: Floater menu > Delete Floater**.
- Press the Delete/Backspace key.

The Edit menu > Cut command removes the floater from the current document and puts it on the Clipboard. You can move to another document and paste it.

Ordering Floaters

All floating objects appear in the Floater List. In the Image or Model window, the floaters appear in order—that is, a floater higher in the list appears in front of the ones below it. Floaters that overlap in the document are layered—the foreground floater obscures the one behind it.

By changing the ordering, you can control the composition of the several floating objects. There are two ways to do this—using the **Objects: Floater List palette** or with the **Controls palette: Adjuster tool**.

To change the order of floaters using the Floater List palette:

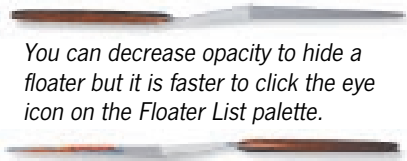
- ✱ Drag the name of the floater to the location in the list that reflects the order you want in your image. For

example, if you want the floater on top of the other images, drag it to the top of the list.

To change the order of floaters using the Controls palette:

1. Choose the Adjuster tool.
2. Select the floater whose layering you want to change.
3. Use the Front, Back, and Arrow buttons on the **Controls palette: Adjuster tool** to change the floater's level in the hierarchy.
 - Click Front or Back to send the floater to the top or bottom layer.
 - Click one of the arrow buttons to move the floater one layer at a time.

The Controls palette: Adjuster tool describes the selected floater's rectangle and provides several editing options.



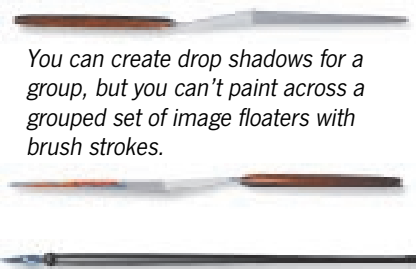
You can decrease opacity to hide a floater but it is faster to click the eye icon on the Floater List palette.

Grouping/Ungrouping Floaters

Group floaters whenever you want to control them as a unit. For example, after creating text shapes, you might want to group the words.

You can move a closed floater group in any of the ways you'd move a single floater. You can also rename, hide/show, lock, change the display order and set the opacity of a group just as you do with a single floater.

Painter 3D allows you to create mixed groups—Image Floaters and Plug-in Floaters.



You can create drop shadows for a group, but you can't paint across a grouped set of image floaters with brush strokes.

To create a group:

1. Hold down the Shift key and click each floater on the Floater List palette that you want in the group.

You can also use the Adjuster tool to Shift-click on the floaters or drag a marquee to select the ones you want.

2. In the Floater List palette, click Group. You can also choose **Objects palette: Floater menu > Group**.

A selection marquee surrounds the floaters in the Image window. The listings of the floaters are collected under a group listing in the Floater List.

To change a group's name:

1. Double-click the group's name. The Floater Attributes dialog appears.

Painter 3D names groups Group 0, Group 1, and so on, by default. You can rename groups if you like.
2. Type a new name and click OK.

To ungroup floaters:

1. On the Floater List palette, click the group name.
2. In the Floater List palette, click Ungroup. You can also choose **Objects palette: Floater menu > Ungroup**.

Closing and Opening a Group

To add a floater to a group or work with the contents individually, you must open the group. To again control the group as a unit, you must close the group.

If you want to edit individual floaters in a group or move them separately, you must open the group.

To open a group:

Click the triangle to the left of the group. The arrow turns down, opening the group and revealing the names of its members. You can now select and work with them individually.



You must open the group to edit individual floaters.

To close a group:

Click the arrow to the left of the group name. When the arrow points to the right and the names of the group members are hidden, the group is closed.

To add a floater to a group:

1. Open the destination group.
2. Drag the listing of the floater you want to add into the group. (Drag the name, not one of its icons.)

You can add a group into another group in the same way—by dragging the closed group name into the open destination group.

To remove a floater from a group:

1. Open the group.
2. Drag the floater out of the group. (Drag the name, not one of its icons.)

Collapsing a Floater Group

If you want to unite the group as a single floater, choose **Objects palette: Floater menu > Collapse**.



There is also a Collapse button on the Floater List palette.

Collapsing reduces the group to a single image floater. You cannot isolate the original group members after collapsing.

If the group contains shape objects or Plug-in Floaters, Painter 3D alerts you. Click OK to convert them to image floaters before collapsing.



Modifying Floaters

There are many ways to modify floaters, including:

- Trimming floaters
- Changing the size of the floater selection rectangle
- Moving floaters
- Copying floaters
- Aligning floaters
- Naming floaters
- Changing the opacity of floaters

Trimming Floaters

When Painter 3D creates an image floater, it captures a larger, rectangular region, then masks it down to the shape of the selection. The larger rectangle gives you room to work and allows you to feather the image beyond the original selection.



Trimming a floater crops the floater down to the minimum.

Trimming reduces the floater's dimensions to the minimum rectangle that will contain the masked image. Trimming floaters is good housekeeping, but don't do it until you're satisfied with the feathering and have finished adding any drop shadows you want. Your options for modifying the floater image and mask are reduced after trimming.

To trim a floater, select it, then choose Objects palette: Floater menu > Trim. Alternatively, you can click the Trim button in the Floater List palette.

Changing a Floater's Size

You can change the floater size, meaning you can change the dimensions of its rectangle. Changing the floater size doesn't change the size of the image inside the rectangle; rather, it expands or contracts the rectangle itself, giving you more or less workspace in the floater.

The Floater Size command is valid for most plug-in floaters.

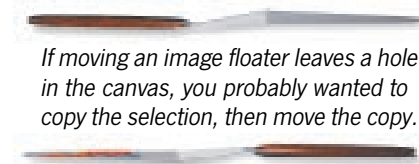


To change floater size:

1. Select the floater, then choose **Objects palette: Floater menu > Floater Size**. The Floater Size dialog appears.
2. Enter values to change the floater size. You can specify the number of pixels to add to the floater in each direction.
 - To expand the floater, use positive numbers.
 - To contract the floater, use negative numbers.
3. Click OK.

Moving Floaters

Once a floater is selected, you can drag it anywhere in the image with the Adjuster tool. You can also nudge the floater one pixel at a time by pressing the Arrow keys on your keyboard.



Moving a Floater or Group to a Specific Location

To move a floater or group to a specific location:

1. Select the floater or group.
2. Choose **Objects palette: Floater menu > Floater Attributes**.

For an image floater, you can double-click its listing in the Floater List to open its Attributes.

The Top and Left boxes show the floater or group's location with respect to the top left corner (0,0) of the window.

The reference point for the floater or group is the top left corner of the floater's rectangle (or the group's selection marquee).

The screenshot shows the 'Floater Attributes' dialog box. It has a title bar 'Floater Attributes'. Inside, there is a 'Name:' field with 'Group 1' entered. Below that are 'Position:' fields for 'Top:' (63) and 'Left:' (61). A 'Note:' text area is empty. Under 'Selection Interaction:', there are radio buttons for 'None' (selected), 'Selection Reveals Floater', and 'Selection Conceals Floater'. Under 'Floater Usability Mask:', there are radio buttons for 'Disabled' (selected), 'Normal', and 'Inverted'. There is a checkbox for 'Map Clickable Region' which is unchecked. Under 'Region:', there are radio buttons for 'Rectangle Bounding Box' (selected), 'Oval Inside Bounding Box', and 'Polygon Region'. At the bottom are 'Cancel' and 'OK' buttons.

Use the *Floater Attributes* dialog to position floaters.

3. Enter the new values in the Floater Attributes dialog. Increasing the Top value moves the floater down. Increasing the Left value moves the floater to the right.
- Positive and negative values that place the floater partially, or wholly, outside the document are allowed.
4. Click OK. The floater moves to the specified location.

Setting floater coordinates in the Floater Attributes dialog helps you to maintain a floater's exact position.

Copying Floaters

You can copy the selected floater to the Clipboard, then paste as many copies as you like. You can also move to another document and paste the floater there.

You can also drag a floater with the Adjuster tool from one document to another.

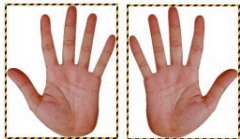
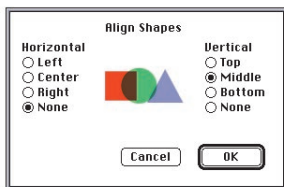
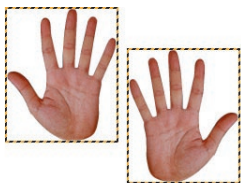
Aligning Floaters

Often, when you work with several floaters, you'll want to position them relative to one another. Painter 3D's Align command makes this easy.

To align floating objects:

1. Select the floaters you want to align. You can align any type of floater or closed group.

2. Choose **Effects menu > Objects > Align**. Painter 3D displays the Align dialog.



The Align dialog lets you specify parameters for alignment.

You can align the objects horizontally, vertically, or in both dimensions. And you can align the objects to either side, top, bottom, or center.

3. Click the radio buttons to set the alignment you want. If you want to maintain the relationship in one dimension, click the None radio button.

Left, Right, Top, Bottom refer to the respective edges of the objects.

For example, in a Horizontal: Left alignment, the leftmost object stays in place. All other objects are moved to bring their left edges in line with the stationary object.

As you change the settings, the sample objects in the window display that alignment.

When you've set the alignment you want, click OK. Painter 3D closes the window and moves the selected objects to that alignment.

Naming Floaters

As the number of floaters in a document increases, it can become difficult to track which listing refers to which floater. Painter 3D lets you give the floaters descriptive names, which makes them easier to keep track of.



To name a floater:

1. Select the floater.
2. Choose **Objects palette: Floater menu > Floater Attributes**.

For an image floater, you can double-click its listing in the Floater List to open its attributes.

3. Enter a descriptive name and click OK.

Changing Floater Opacity

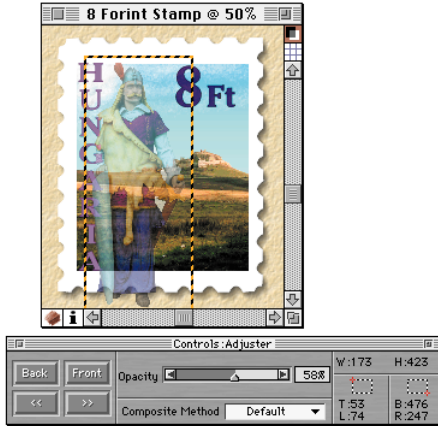
All floaters can be made semi-transparent. Decreasing Opacity allows underlying images to show through.



To change a floater's opacity:

1. Choose the Adjuster tool.
2. Select the floater you want to change.
3. In the **Controls palette: Adjuster tool**, drag the Opacity slider to change the selected floater's visibility.

4. You can also click in the text field and type an opacity value—from 0 to 100.



Opacity adjusts the transparency of selected floaters.

Creating Special Effects With Floaters

When a floater is above another image—either the canvas or another floater—Painter 3D can use the overlapping color information to create special effects.

The effects are variations of the floater's composite method. Each floater can have its own method. You can change the composite method any number of times

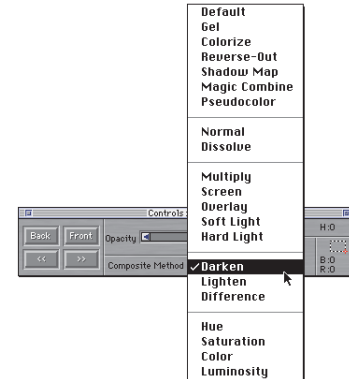
without actually changing the images. This gives you the freedom to experiment without risking an unwanted, permanent edit.

Composite methods are available for all types of floating objects.

To change a floater's composite method:

1. Select a floater. The floater should have some kind of image behind it. If the next layer is merely black or white, the effects will be limited.

2. Choose one of the composite methods from the pop-up menu on the **Controls palette: Adjuster tool**. If you don't like one effect, choose a different one.



The composite methods can be changed from within the Controls palette: Adjuster tool.

Default



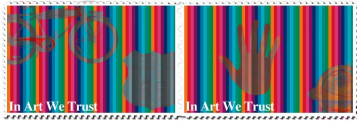
In the Default method, the floater covers (hides) the underlying image.

Gel



The Gel method tints the underlying image with the floater's color. For example, a yellow floater gives the underlying image a yellow cast.

Colorize



The Colorize method replaces the hue and saturation of the canvas pixels with the hue and saturation of the floater pixels.

You can use this feature to convert a color image into grayscale and vice versa. A black floater turns the underlying color image into a grayscale image. A colored floater adds color to an underlying grayscale image.

Reverse-Out



In the Reverse-Out method, the floater inverts the colors behind it. Reverse-Out is a great way to drop out type. Place a floater over black type and the type turns white.

A color's inverse, also known as its complementary color, is the color on the opposite side of the color wheel.

With Reverse-Out, the colors in the floater are not considered—only the area it covers.

Shadow Map



Shadow Map blocks light, letting you create shadows without changing the image.

Magic Combine



In the Magic Combine method, the floater is combined with the underlying image based on luminance. The parts of the floater that are lighter than the underlying image appear within the bottom image.

One way to use this command is for filling type. With a photograph as the top floater and black type as the underlying image, choosing Magic Combine fills the type with the image.

Pseudocolor



The Pseudocolor method translates the floater's luminance into hue. You can use this method to turn a grayscale floater into a spectrum of color.

Normal



The Normal method is similar to Photoshop's default mode.

Dissolve



Dissolve results in combining the image color with the floater color, depending on the opacity.

Multiply



Multiply combines colors to create a darker color.

Screen



Screen combines colors to create a lighter color.

Overlay



Overlay combines colors while preserving the highlights and shadows of the image color.

Soft Light



Soft Light darkens or lightens colors depending on the luminance of the floater color.

Hard Light



Hard Light multiplies or screens colors, depending on the luminance of the floater color.

Darken



Darken takes whichever color is darker—the image color or the floater color—and uses that color.

Lighten



Lighten takes whichever color is lighter—the image color or the floater color—and uses that color.

Difference



Difference subtracts one color from the other, depending on which color has a greater brightness value.

Hue



Hue creates a color by combining the luminance and saturation of the image color with the hue of the floater color.

Saturation



Saturation creates a color by combining the luminance and hue of the image color with the saturation of the floater color.

Color



Color creates a new color by combining the luminance of the image color and the hue and saturation of the floater color.

Luminosity



Luminosity creates a new color from the hue and saturation of the image color and the luminance of the floater color. This is the opposite of Color.



How a Canvas Selection Interacts With a Floater

You can use the canvas selection to conceal or reveal parts of a floater. This feature is available for image floaters, reference floaters, and plug-in floaters. The floater/selection interaction can be in one of three modes: None, Selection

Reveals Floater, or Selection Conceals Floater. By changing the mode, you can alter the composition.



The attribute for interacting with the selection is contained in the floater, so each floater can use a different interaction mode.



To change the floater/selection interaction:

1. Select the floater you want to change.
2. Choose **Objects palette: Floater menu > Floater Attributes**.
3. In the Attributes dialog, click the radio button for the Selection Interaction mode you want.

None

The selection has no effect on the floater. This is the default interaction mode.

Selection Reveals Floater


The selection reveals the floater. Only regions of the floater that overlap the canvas selection are visible.

Selection Conceals Floater


The selection conceals the floater. Only regions of the floater that overlap unselected regions are visible.

Saving Files With Floaters

You can save your image in RIFF format with “live” floaters. The floaters remain intact when you reopen the file. The RIFF format is the only format that saves all varieties of floaters. If you save in another format, the floaters are automatically composited with the background.




When you save in Photoshop format, plug-in floaters are converted to image floaters, and all floaters are assigned to appropriate image layers.



Dropping Floaters

Floaters continue to float even when deselected. When you’re finished working with a floater and want it merged with the canvas image, you “drop” it.

If you drop a plug-in floater, it will be converted to an image floater and then dropped.




To merge a floater or group of floaters with the background:

1. Select the floater or group you want to drop.
2. Click Drop on the Floater List palette. You can also choose **Objects palette: Floater menu> Drop**.





To drop (or composite) all floaters simultaneously:

Choose **Objects palette: Floater menu> Drop All**.



You may want to save the file in RIFF format with all floaters floating. This allows you to come back later and make floater changes.

You can clone the file to quickly create a fully composited, flattened version (all floaters dropped).



To composite a floater and select it:

You can drop a floater and automatically use its visibility mask (or outlines for a shape) to create the selection.

Choose Objects palette: Floater menu> Drop and Select.



Drop and Select replaces the selection.



Saving Floaters for Use Later—The Floaters Portfolio


The Floaters Portfolio palette is a convenient place to store floaters you’ll want to use again.

To display the Floaters palette: Choose Objects palette: Floater menu> Floaters Portfolio.





The Floaters Portfolio palette.

To add a floater to the portfolio, select the Floater Adjuster tool and drag the floater from the Image window into the Floaters Portfolio palette. As the floater enters the palette, you’ll see the selection marquee shrink to icon size.




When you drag a floater to the portfolio, it actually removes it from your image. To leave a copy in your image, press the Option/Alt key, then drag.




When you drop the floater in the palette, Painter 3D gives you an opportunity to rename it. If you haven't already given the floater a descriptive name, do so now.

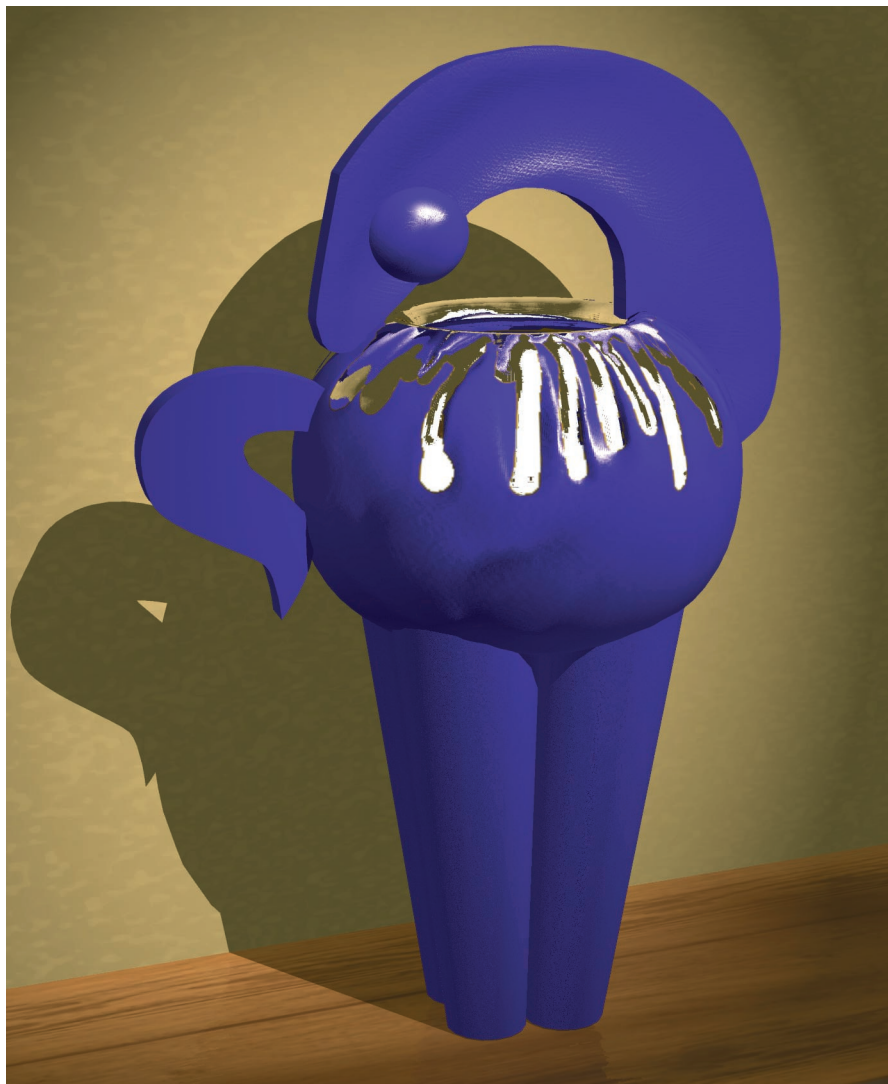
To use a floater from the palette, simply drag its icon into the Image window.



The Floater Portfolio holds only image floaters. Plug-in floaters and reference floaters must be converted to enter the portfolio.



You can create your own custom libraries to organize floaters by category. When you're creating a library, keep in mind that the smaller the library, the easier it will be to see its contents at a glance. For more information on working with libraries, refer to "Libraries and Movers" on page 10.



Plug-in Floaters



Understanding Plug-in Floaters

Painter 3D provides a plug-in architecture for floating objects. This innovative design lets you create powerful and dynamic effects that were previously impossible to attain.

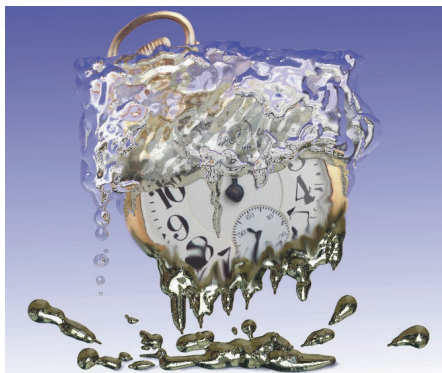
The term “plug-in floater” refers to a category of floating objects. The function and behavior of each plug-in floater is unique and diverse. Generally, a plug-in floater applies an effect that can be changed, moved, and reapplied without altering the original source material. Because you can modify the effect any number of times without damaging the source image, plug-in floaters are sometimes also called “dynamic floaters.”

The plug-in floaters act in one of three ways:

- They create a new, unique floater
- They alter an existing floater

Or

- They make an adjustment of the underlying imagery (what they're floating over)



The Liquid Metal plug-in floater lets you paint with either metal or liquid.

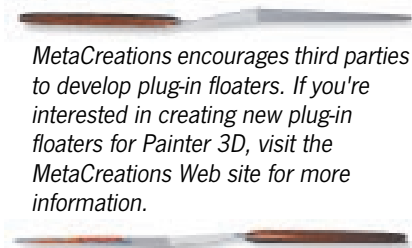
When you save the file in RIFF format, the plug-in floater retains its dynamic nature. Any time you open the file, you can adjust the effect.

Using plug-in floaters can bring a high level of sophistication to your maps and models. Effects that would be difficult to create on your own, such as painting with

liquid metal or distorting images using a liquid lens, are quite easy using plug-in floaters. When you use plug-in floaters in the various map types, such as bump, you can create some stunning effects on the surface of your model.

Each plug-in floater brings new capabilities for manipulating your images. Painter 3D comes with several cool Plug-in floaters, and you can expect MetaCreations to develop new Plug-in floaters in the future.

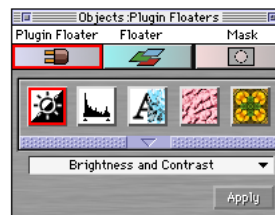
You can add plug-in floaters by copying files to your Painter 3D folder. The next time you launch Painter 3D, the program loads your new plug-in floater effects.



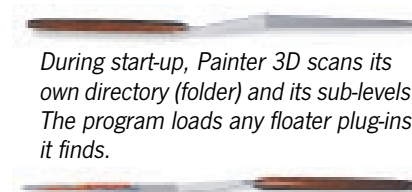
Using Plug-in Floaters

The Objects: Plug-in Floater palette holds the plug-in floaters currently loaded into Painter 3D.

To display the Plug-in Floater palette, display the Objects palette, then click the Plug-in Floater icon. If you want to see the Floater List palette at the same time, you can tear off the plug-in floater palette.



Choose and apply plug-in floaters from the Objects: Plug-in Floater palette.



During start-up, Painter 3D scans its own directory (folder) and its sub-levels. The program loads any floater plug-ins it finds.

Applying a Plug-in Floater

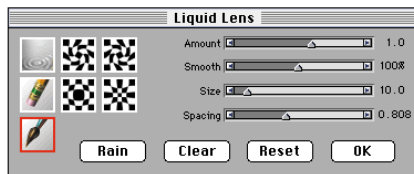
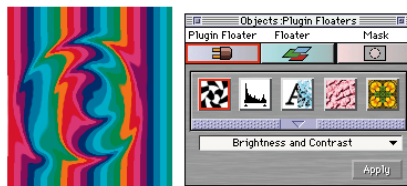
The steps for applying a plug-in floater vary slightly for the different types of plug-in floaters. The general process remains the same however. Basically, you select the plug-in floater you want from the Plug-in Floater palette, you apply it, then you work either in a dialog or the image itself to create the plug-in floater effect.

Details on creating and working with each plug-in floater appear in “Working With the Plug-in Floater” on page 119.



To apply a plug-in floater:

1. For a plug-in floater that requires source imagery—Kaleidoscope and Posterize, for example—select an image floater or make a canvas selection.
2. In the Plug-in Floater palette, click the icon of the plug-in floater you want. Open the drawer to see more icons.
3. When the drawer is closed, you can also choose a plug-in floater by name from the pop-up.
4. Choose **Objects palette: Plug-in Floater menu > Apply**. When the drawer is closed, you can also click the Apply button at the bottom of the palette.



Choose a plug-in floater and click the Apply button.



If you drag a plug-in floater icon into a custom palette, you can click the icon to select and apply it at once.



When you apply the plug-in floater, it opens a dialog containing the tools and options needed to control the effect. Set the options you want, then close the dialog.



Once you click Apply, you can't cancel the operation. If you click OK in the dialog and then decide you don't want

the plug-in floater, choose Edit menu > Undo or press the Delete/ Backspace key to remove it.



Working With the Plug-in Floater

Like all floating objects, plug-in floaters appear in the Floater List palette, where they're identified by the plug icon.

As with other floaters, you can do the following things to plug-in floaters: select, move, group, hide/show, lock, and change the display order, opacity, and composite method. For information on these features, refer to “Floaters” on page 89.



To change a plug-in floater's options:

1. Select the floater you want to change—either by clicking on it with the Adjuster tool or by clicking its listing in the Floater List palette.

At any time, you can open the plug-in floater's options dialog and change its settings.
2. Choose **Objects palette: Plug-in Floater menu > Options**. You can also double-click the plug-in floater's listing in the Floater List to select it and open its options immediately.

The content of the options dialog depends on the type of plug-in floater.

3. When you're finished setting options, close the dialog.

Committing Plug-in Floaters

A plug-in floater is dynamic. This means that, at any time, you can open the options dialog and change its parameters. At some point, though, you may want to finalize the effect and make the result a standard image floater. This lets you work with the floating image in ways not possible when it exists as a plug-in floater.

Committing the plug-in floater captures the floater's current appearance to a standard image floater.

You can explicitly choose to commit a plug-in floater to an image floater. Or, if you attempt any operation not permitted for plug-in floaters—like applying an effect—Painter 3D automatically asks whether you want to commit it to an image floater.

To commit a plug-in floater explicitly:

1. Select the floater you want to change—either by clicking on it with the Adjuster tool or by clicking its listing in the Floater List palette.

2. Choose **Objects palette: Plug-in Floater menu > Commit**.

3. Click OK to proceed with the conversion.

Committing a Plug-in Floater Automatically

Painter 3D attempts to commit the plug-in floater if you try any of the following operations:

- Paint into a plug-in floater (with the exception of Impasto)
- Apply an effect to a plug-in floater
- Apply a plug-in floater to a plug-in floater
- Drop the plug-in floater
- Collapse a group that contains a plug-in floater

Plug-in floaters are committed when you save in any format other than RIFF.

Painter 3D's Plug-in Floaters

The remainder of this chapter describes each of Painter 3D's plug-in floaters.

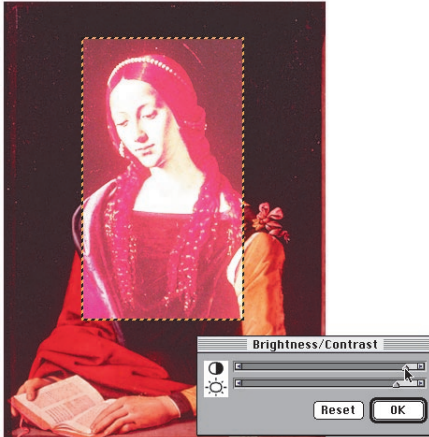
Brightness/Contrast

The Brightness/Contrast plug-in floater creates a floating layer that applies Brightness/Contrast adjustment to the imagery beneath it.

To create a Brightness/Contrast plug-in floater:

1. In the **Objects: Plug-in Floater palette**, click the Brightness/Contrast icon or choose Brightness/Contrast from the pop-up.
2. Click Apply. (Alternatively, you can choose **Objects palette: Plug-in Floater menu > Apply**.)
Painter 3D creates a floater (equal in size to the canvas) and opens the Brightness/Contrast plug-in floater control dialog.
3. Drag the sliders to adjust image contrast and brightness.

Click the Reset button to reset the options to the original defaults.



The Brightness/Contrast plug-in floater affects all imagery beneath the floater.

4. When the effect is the way you want it, click OK.

You can use the Controls palette: Adjuster tool to reduce the opacity—and therefore, the effect—of the Brightness/Contrast plug-in floater.

To create a Brightness/Contrast floater of limited size:

1. Create the plug-in floater as described in the previous task.
2. Close the dialog, then choose **Objects palette: Floater menu > Floater Size**.
3. Enter negative numbers (for example, -20) to cut the floater down to the size you want.

You can now open the dialog and change the settings.

You can change the Brightness/Contrast settings at a later time. To do so, select the plug-in floater in the document or in the Floater List. Choose *Objects palette: Plug-in Floater menu > Options*. (You can also double-click the plug-in floater's listing in the Floater List.) Painter 3D opens the dialog so you can change the settings.

When you commit a Brightness/Contrast plug-in floater, the floater “captures” the imagery beneath it with the current Brightness/Contrast settings.

Equalize

The Equalize plug-in floater creates a floater that improves contrast in underlying imagery. It does this by adjusting black and white points and distributing the brightness levels throughout the entire range of available levels.

The Equalize plug-in floater creates a histogram showing the number of pixels for each brightness level value. Equalize allows gamma adjustment, which lightens or darkens an image without changing highlights or shadows.

To create an Equalize plug-in floater:

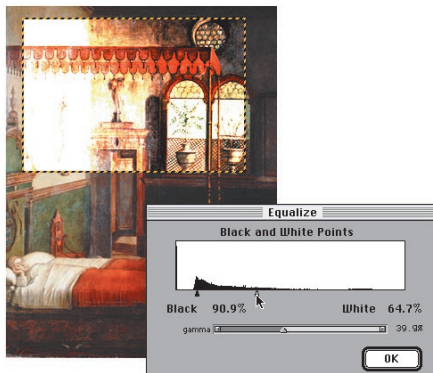
1. In the **Objects: Plug-in Floater palette**, click the Equalize icon or choose Equalize from the pop-up.
2. Click Apply. (Alternatively, you can choose **Objects palette: Plug-in Floater menu > Apply**.)

Painter 3D creates a floater (equal in size to the canvas) and displays the Equalize plug-in floater control dialog.

Here's the process for creating an Equalize floater of limited size:

Create the plug-in floater. Close the dialog, then choose **Objects palette: Floater menu > Floater Size**. Enter negative numbers (for example, -20) to cut the floater down to the size you want.

You can now open the dialog and change the settings.



The Equalize plug-in floater affects underlying imagery.

3. You can adjust contrast manually by dragging the small black and white point markers under the histogram.

Any values in the image located to the right of the white marker become white; any values to the left of the black marker become black.

4. You can drag the gamma slider to adjust only the midtones of an image and leave the white and black areas untouched.

You can use the Controls palette: Adjuster tool to reduce the opacity of the Equalize plug-in floater.

You can change the Equalize settings at a later time. To do so, select the plug-in floater in the document or in the Floater List. Choose **Objects palette: Plug-in Floater menu > Options**. (You can also double-click the plug-in floater's listing in the Floater List.) Painter 3D opens the dialog so you can change the settings.

Glass Distortion

The Glass Distortion plug-in floater creates a floating layer that applies glass distortion to the imagery beneath it. You can move the floater in the document to view the distortion over different imagery.

For best results, you should have interesting imagery beneath the Glass Distortion plug-in floater.

To create a Glass Distortion plug-in floater:

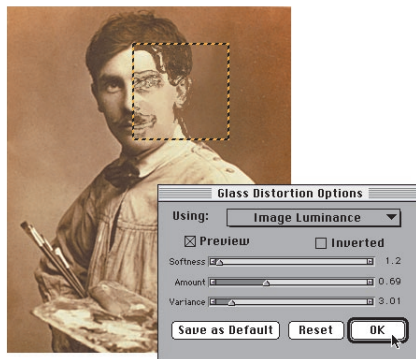
1. Create an image floater the size you want for the glass distortion. Make sure this floater is selected.
2. In the **Objects: Plug-in Floater palette**, click the Glass Distortion icon or choose Glass Distortion from the pop-up.
3. Click **Apply**. (Alternatively, you can choose **Objects palette: Plug-in Floater menu > Apply**.)

Painter 3D converts the floater to a glass distortion lens and opens the Glass Distortion plug-in floater dialog.

If you don't select a floater before applying Glass Distortion, Painter 3D creates a small floater for you. You can close the dialog and change the size of the floater with the Objects palette: Floater menu> Floater Size command. Then open the floater's options dialog and adjust the effect.

4. Use the controls in the dialog to specify the Glass Distortion. The features are described below. When the effect is as you like it, click OK.

Remember, you can move the Glass Distortion floater to different regions of the document to distort other imagery.



The Glass Distortion plug-in floater dialog.

The Using pop-up lets you specify the basic information the displacement map begins with. The amount of displacement depends on the value assigned to the image pixels from the Using source.

- Paper Grain uses the selected paper texture. Paper texture is good for creating a pebbled glass effect. Unless you want frosted glass, you'll probably want to increase the scale of the paper.
- Current Mask uses the currently selected user mask. This is a good choice for a controlled distortion map.
- Image Luminance uses the current document's luminance.
- Original Luminance uses the clone source's luminance.

If you want to work with an inversion of the "Using" information, click the Inverted check box.



The Glass Distortion plug-in floater on the left uses Paper Grain. The Glass Distortion floater on the right uses Image Luminance.

- Softness controls the transitions between displaced colors. Increasing softness creates more intermediate steps, which produces a smoother

distortion. If you experience aliasing in a glass distortion, try increasing Softness.

- Amount controls the degree of displacement. Increasing the Amount distorts your image more.
- Variance creates multiple variations in the neighborhood of the displacement. The result of increasing variance depends on the type of image and other settings.



You can use the Controls: Adjuster palette to reduce the opacity—and hence, the distortion strength—of the Glass Distortion plug-in floater.



You can change the Glass Distortion settings at a later time. To do so, select the plug-in floater in the document or in the Floater List. Choose Objects palette: Plug-in Floater menu> Options. (You can also double-click the plug-in floater's listing in the Floater List.) Painter 3D opens the dialog so you can change the settings.

When you Commit a Glass Distortion

plug-in floater, the floater “captures” the imagery beneath it with the current distortion settings.



Kaleidoscope

The Kaleidoscope plug-in floater creates a floater that produces kaleidoscope effects from the imagery it floats over. You can move the floater in the document to see the effect on different imagery.

For best results, you should have interesting imagery beneath the Kaleidoscope plug-in floater.



The traditional kaleidoscope is a hollow tube with a set of mirrors and colored chips at one end. You peer into the other end and enjoy the highly symmetrical patterns the mirrors create from the colored chips.



To create a Kaleidoscope plug-in floater:

1. In the **Objects: Plug-in Floater palette**, click the Kaleidoscope icon or choose Kaleidoscope from the pop-up.

2. Click Apply. (Alternatively, you can choose **Objects palette: Plug-in Floater menu> Apply**.)

Painter 3D opens the Kaleidoscope dialog, where you can specify the size of the floater. Kaleidoscopes must be square.

When you click OK, Painter 3D creates the Kaleidoscope floater.



Drag the Kaleidoscope floater to different areas for new effects.

Try using the Arrow keys to see the Kaleidoscope animate.

When you commit a Kaleidoscope plug-in floater, the floater “captures” the current kaleidoscope display into an image floater.

Making Patterns from Kaleidoscopes

Kaleidoscopes make great patterns. To see this for yourself, move the Kaleidoscope plug-in floater until it displays imagery you like. Commit the Kaleidoscope. Copy the image floater, then choose Edit menu> Paste> Into New Image. Choose Select All, then capture the pattern. For more information on creating and using patterns, refer to “Using Patterns: The Pattern Palette” on page 142.



You can change the Kaleidoscope settings at a later time. To do so, select the plug-in floater in the document or in the Floater List. Choose Objects palette: Plug-in Floater menu> Options. (You can also double-click the plug-in floater’s listing in the Floater List.) Painter 3D opens the dialog so you can change the effect.



Liquid Lens

Liquid Lens creates floaters in which you can nondestructively distort and smear the underlying imagery. You can create “fun house mirror” effects, melting images, and more.

For best results, you should have interesting imagery beneath the Liquid Lens plug-in floater.



To create a Liquid Lens plug-in floater:

1. Deselect all floaters.
2. In the **Objects: Plug-in Floater palette**, click the Liquid Lens icon or choose Liquid Lens from the pop-up.
3. Click Apply. (Alternatively, you can choose **Objects palette: Plug-in Floater menu> Apply**.)
Painter 3D creates a floater (equal in size to the canvas) and opens the Liquid Lens plug-in floater control dialog.
4. Use the Liquid Lens dialog to create distortion effects. The features are described below. When you’re done, click OK.

Distorting With the Liquid Lens

You use the Liquid Lens by setting sliders to control the effect, choosing a tool, then dragging in the floater to create distortion. You can change slider settings or tools, then drag again for different results. The Eraser tool lets you remove distortion.

Liquid Lens Controls

The Amount slider controls the degree of distortion applied. With the slider close to zero, you create minimal distortion. Negative values create distortion counter to the stroke direction. This breaks up the image more.

The Smooth slider changes the blending between the distortion stroke and the neighborhood. Higher values make a gentle transition to the distortion. Low settings make abrupt edges to the distortion region.





Low Smooth settings make abrupt distortions. Higher Smooth settings let distortions transition smoothly into other areas.

The Size slider changes the diameter of the distortion tool and the size of rain.

The Spacing slider changes the distance between distortion dabs.

If you want to return the sliders to their defaults, click Reset. If you don't like the results and you want to start again, Click the Clear button.

Applying Distortion in the Floater

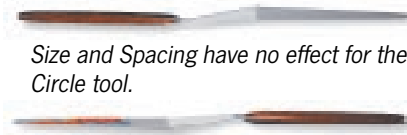
You can apply distortion with the Circle, Brush, Right Twirl, Left Twirl, Bulge, or Pinch tools. These tools function similarly, but apply different distortion effects.

Choose the tool you want, set the sliders, then stroke in the document to create distortion.

The Circle



The Circle tool creates circles of distortion. Drag in the direction you want the distortion to move.



Size and Spacing have no effect for the Circle tool.

The Brush



The Brush distorts in the direction you drag.

Right Twirl



Right Twirl distorts in clockwise spirals.

Left Twirl



Left Twirl distorts in counter-clockwise spirals.

Bulge



Bulge distorts from the center outward.

Pinch



Pinch distorts from the center inward.

Rain

The Rain command scatters distortion droplets in the floater. Raindrops distort downward, “melting” the image.



To melt the image with rain:

1. Set the sliders to describe the distortion you want.
2. Click the Rain button. Painter 3D scatters distortion droplets in the floater.
3. Click anywhere to stop the rain.

Clear

Click the Clear button to start over.

Reset

Click the Reset button to reset the options to the original defaults.



If Smooth and Size are very high, the rain might continue for a moment after you click.





Rain melts the image.

Erasing Distortion

Undo features are not available when working with the Liquid Lens. Use the Liquid Lens Eraser tool to clear distortion from an area.



To erase distortion:

1. Choose the Eraser.
2. Set the sliders for Size, Spacing, and Smooth to describe the type of erasing you want. Higher Smooth settings create softer transitions from the erasure to the remaining distortion.

3. Drag in the document to erase the distortion. The original underlying imagery returns.

Eraser



Remove distortion with the Eraser tool.



To erase the distortion completely:

If you don't like the distortions and you want to start again, click the Clear button.



If you move the Liquid Lens floater, the distortion effect travels to the new imagery it moves over.



You can change the Liquid Lens settings at a later time. To do so, select the plug-in floater in the document or in the Floater List. Choose Objects palette: Plug-in Floater menu> Options. (You can also double-click the plug-in floater's listing in the Floater List.) Painter 3D opens the dialog so you can change the effect.

Liquid Metal

The Liquid Metal plug-in floater lets you paint with liquid and metal in a floater. You can apply droplets of water that distort the underlying image through refraction. You can also create globs of shiny metal that flow together and move like real mercury. A slider (Refraction) sets the difference between water and metal, so you can achieve intermediate effects.

This text uses the term "metal" to refer to the media applied—even if the settings cause the effect to look more like water.



The Liquid Metal Plug-In floater creates either liquid metal or translucent, refractive liquid.

To create a Liquid Metal plug-in floater:

1. Deselect all floaters.
2. In the **Objects: Plug-in Floater palette**, click the Liquid Metal icon or choose Liquid Metal from the pop-up.
3. Click Apply. (Alternatively, you can also choose **Objects palette: Plug-in Floater menu > Apply**.)

Painter 3D creates a floater (equal in size to the canvas) and opens the Liquid Metal plug-in floater control dialog.

4. When you're finished creating metal, click OK.

You can change the metal settings at a later time. To do so, select the plug-in floater in the document or in the Floater List. Choose **Objects palette: Plug-in Floater menu > Options**. (You can also double-click the plug-in floater's listing in the Floater List.) Painter 3D opens the dialog so you can change the metal.

To create negative metal:

To create "holes" in your metal, press Option/Alt when drawing with the Circle or Brush tool. As you drag through positive pools, the negative metal will divide and separate the existing metal.

Applying Metal

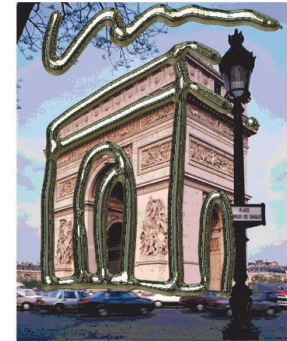
You can apply metal with the Metal Brush tool, the Circle tool, or the Rain button.

Undo features are not available when working with metal. You can press Delete or Backspace to remove the last

metal applied. See "Getting Rid of Metal" on page 132 for information on other metal-removal techniques.

Brush

The Brush is the default applicator. Stroke in the document window to paint with metal.



Drag to create strokes of metal.

To adjust the size of the brush or raindrops:

1. Chose the Metal Selector tool and click outside the droplets to deselect all.



The Liquid Metal Selector tool.

2. Change the Size slider to the desired value.

When you begin to paint, you'll see the change in size.



Circles

Click the Circle tool to select it. Drag in the document to create circles of metal.



Create circles of metal.

Rain

Click the Rain button. Painter 3D scatters droplets in the floater. Click anywhere to stop the rain.



Metal raindrops fall randomly.

Clear

Click the Clear button to remove all droplets and start over.

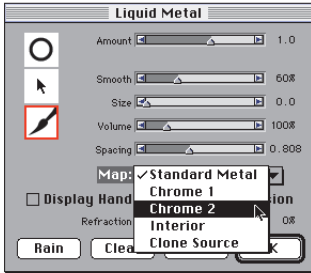
Reset

Click the Reset button to reset the options to the original defaults.

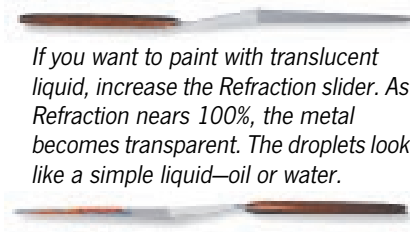
Choosing the Type of Metal

The Commands pop-up offers several metal types to choose from: Standard Metal, Chrome 1, Chrome 2, Interior, and Clone Source. The type is global and

dynamic: The type applies to the entire floater, and you can apply some metal, then change the type.



Choose the type of metal you want.



If you want to paint with translucent liquid, increase the Refraction slider. As Refraction nears 100%, the metal becomes transparent. The droplets look like a simple liquid—oil or water.

Importing an Environment

Metal is highly reflective. You can customize the look by choosing your own reflection map to describe the environment.

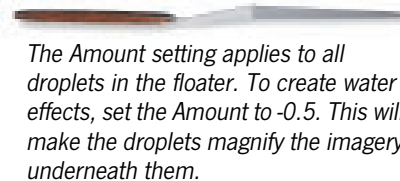


To import an environment:

1. Specify a clone source or load the imagery you want for the environment as the current pattern.
2. Choose **Map pop-up > Clone Source**. Painter 3D loads the current Pattern as the reflection environment.

Metal Properties

The Amount slider controls the emphasis of the metal effect (from the Refraction slider) for all droplets in the floater. The extreme left and extreme right are the inverse of each other.



The Amount setting applies to all droplets in the floater. To create water effects, set the Amount to -0.5. This will make the droplets magnify the imagery underneath them.



- The Smooth slider changes the perimeter range. The perimeter range determines the droplet's tendency to "join" its neighbors.



The Smooth slider applies to all selected droplets and new droplets you create.



- The Size slider changes the diameter of the selected droplets.

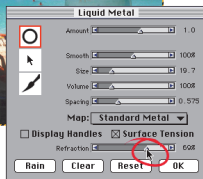
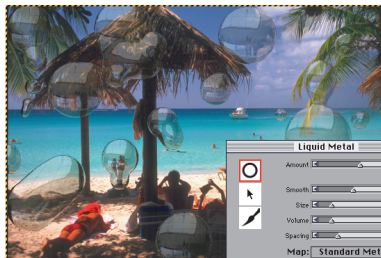


The Size slider applies to all selected droplets and new droplets you create with the Metal Brush or Rain.



- The Volume slider adjusts the visibility threshold in relation to the perimeter range.
- The Volume slider applies to all selected droplets and new droplets you create.
- The Spacing slider adjusts the spacing between droplets in strokes you create with the Metal Brush.
- The Refraction slider controls droplet appearance. The slider represents a scale between reflection and refraction.

The Refraction setting applies to all droplets in the floater.



Low refraction means high reflection. High refraction creates translucent, refractive liquid.

- The Surface Tension option makes the droplets appear more round and three dimensional.

Working with Metal

A stroke of metal is made up of a series of discrete droplets. You can select one or several droplets and move them or change their properties. Refer to “[Metal Properties](#)” on this page to see which sliders settings apply to selected droplets.

Display Handles

The “display handles” (or just “handles”) show the droplet’s circle and center point. Showing the handles on the droplets isn’t necessary for selecting them, but it can make your work easier.

To show the handles, check the Display Handles option in the Liquid Metal dialog.



When you check Display Handles, you can see the droplet circles and center points.

Selecting and Moving Metal Droplets

The droplets applied in the last stroke are automatically selected. Each new stroke deselects the droplets of the previous one. You can use the Metal Selector tool to select one or a group of droplets.

To select metal droplets:

1. Choose the Metal Selector tool.
2. Drag across the droplets you want to select. You can click the center point handle of an individual droplet to select it. When handles are not displayed, you can click anywhere on the droplet to select it.

Hold down the Shift key to add to (or subtract from) the selection.

When a droplet is selected, the center point handle is displayed solid.

To move metal:

Drag the center of one of the droplets to move the selected group.

Hold down the Option/Alt key to create negative metal.

Notice how the droplets seek to join other droplets they encounter. You can control this tendency with the Smoothness slider.

Getting Rid of Metal

Undo features are not available when working with metal. You can press Delete/Backspace to remove the last metal applied.

- You can remove any metal by selecting it (with the Metal Selector tool), then pressing Delete/Backspace.
- To remove all metal in the floater so you can start again, click the Clear button.

Posterize

The Posterize plug-in floater creates a floating layer that reduces the number of color levels in the imagery it floats over.

To create a Posterize plug-in floater:

1. In the **Objects: Plug-in Floater palette**, click the Posterize icon or choose Posterize from the pop-up.
2. Click Apply. (Alternatively, you can choose **Objects palette: Plug-in Floater menu > Apply**.)

Painter 3D creates a floater (equal in size to the canvas) and opens the Posterize plug-in floater control dialog.

Here's the process for creating a Posterize floater of limited size:

Create the plug-in floater. Close the dialog, then choose Objects palette:

Floater menu > Floater Size. Enter negative numbers (e.g. -20) to cut the floater down to the size you want.

You can now open the dialog and change the number of levels.

3. Enter the number of color levels you want. The value applies to each color channel—red, green, and blue.



A Posterize plug-in floater modifies the right half of this image.

4. When the effect is the way you want it, click OK.

You can change the number of levels at a later time. To do so, select the plug-in floater in the document or in the Floater List. Choose Objects palette: Plug-in Floater menu > Options. (You can also double-click the plug-in floater's listing in the Floater List.) Painter 3D opens the dialog so you can change the number of levels.

When you commit a Posterize plug-in floater, the floater “captures” the imagery beneath it with the current number of Posterize levels.

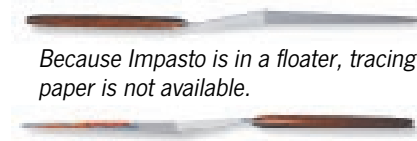
Impasto

The Impasto plug-in floater lets you paint with textured brush strokes. The texture strokes appear three-dimensional, giving them the illusion of thick oil paints. This plug-in is useful for creating texture on a model that has only a texture map.

The Impasto plug-in floater has two layers—the color layer and the depth layer. Impasto uses the depth layer and lighting to create texture in the color layer.



Impasto creates the textured look of oil paints.

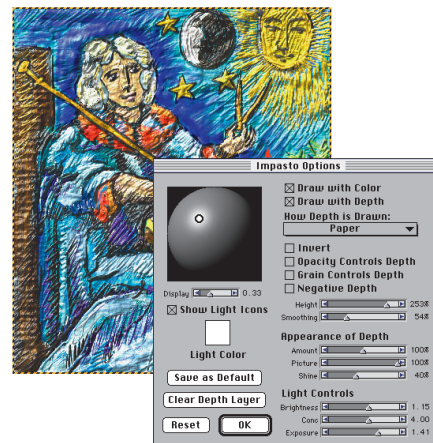


Because Impasto is in a floater, tracing paper is not available.

To create an Impasto plug-in floater:

1. Choose the brush variant you want to use. You can paint with almost any brush variant in Impasto. Brushes that leave bristle striations are particularly nice.
2. Prepare your Impasto painting area.
 - If you want to paint using existing imagery, select and float that image.
 - If you want to work in a limited area, use the Rectangular Selection tool to select an area.
 - If you want to paint from scratch in a canvas-sized floater, deselect all floaters.
3. In the **Objects: Plug-in Floater palette**, click the Impasto icon or choose Impasto from the pop-up.
4. Click Apply. (Alternatively, you can choose **Objects palette: Plug-in Floater menu > Apply**.)

Painter 3D converts the selection or floater to an Impasto plug-in floater and opens the Impasto Options dialog.



Use the Impasto Options dialog to set the stroke depth. If you like, you can close the dialog and continue to work in the Impasto floater.

Impasto Options

You set your stroke depth options in the Impasto Options dialog. The options are described below. After setting the options, you paint in the floater to create textured strokes.

You can paint in the Impasto floater with the Impasto Options dialog open or closed.

- When the dialog is open, you can change your depth drawing options and you have access to open palettes (Art Materials, Brushes and Controls palette: Brush tool).
- When the dialog is closed, you can open and use all the Brush control palettes to change the character of your strokes. You can also use the Command-Z/Ctrl+Z Undo command to remove your last stroke.

As long as the Impasto plug-in floater is selected in the Floater List, your brush strokes go to that floater.

To close the Impasto Options dialog, click OK.

You can reopen the Impasto Options dialog at any time. Select the plug-in floater in the document or in the Floater List. Choose Objects palette: Plug-in Floater menu > Options. You can also

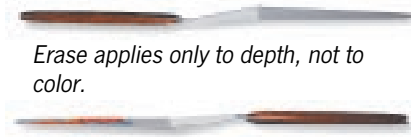
double-click the plug-in floater's listing in the Floater List. Painter 3D opens the dialog so you can change the settings.

Drawing Controls

All the drawing controls affect the next strokes you make in the document. You can work for a while, change the settings, then work some more.

- When Draw with Color is enabled, the brush applies color. Set your color on the Art Materials: Color palette. The Clone Color option is sometimes useful.
- When Draw with Depth is enabled, the brush applies depth. If you're working with existing imagery, you might want to draw only with depth.
- The How Depth is Drawn pop-up lets you choose a control medium for the depth. The control medium describes areas of the canvas where more (or less) depth is permitted. High luminance (closer to white) in the control permits more depth. Regions of the control that are closer to black inhibit the depth effect.
 - Uniform leaves all depth control in your brush strokes. The floater allows depth uniformly.

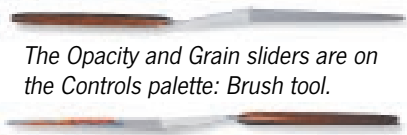
- Erase levels the depth layer. If you created texture strokes you don't like, use this setting to wipe them out.



Erase applies only to depth, not to color.

- Paper controls depth using the current paper texture. If the Paper palette is open, you can choose different papers and change their scale to try different textures.
 - Original Luminance uses the clone source's luminance to control depth.
 - Weaving Luminance controls depth using the current Weave. If the Art Materials: Weaves palette is open, you can choose different weaves.
- If you want the depth to be an inversion of the "How Depth is Drawn" information, enable the Inverted option.
- The Opacity Controls Depth option sets the brush stroke opacity as the control for the amount of depth applied.

- The Grain Controls Depth option sets the brush stroke grain penetration as the control for the amount of depth applied.

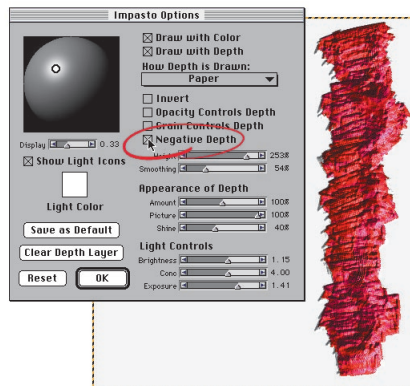
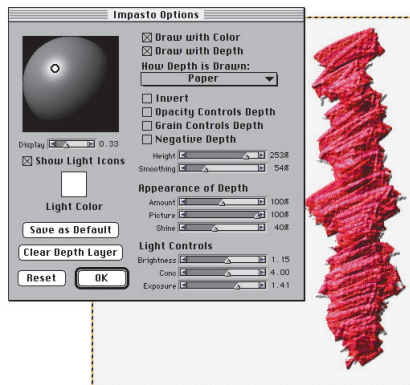


The Opacity and Grain sliders are on the Controls palette: Brush tool.



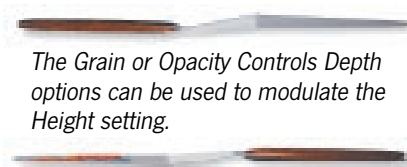
You can use either Opacity or Grain to control the brush's depth application strength.

- The Negative Depth option changes the direction of depth. When Negative Depth is enabled, the brush digs valleys instead of raising ridges.



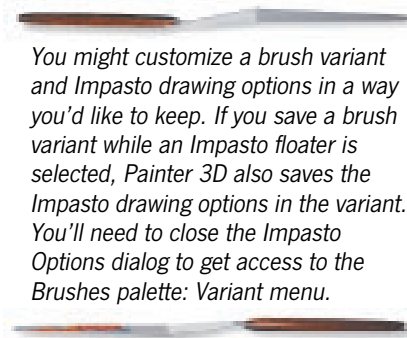
Normally, the Impasto media raises ridges and bumps. The Negative Depth option forces Impasto to excavate instead.

- The Height slider sets the maximum depth elevation.



The Grain or Opacity Controls Depth options can be used to modulate the Height setting.

- The Smoothing slider controls the transitions in texture. Increasing smoothing creates more intermediate steps, which produces a softer texture.

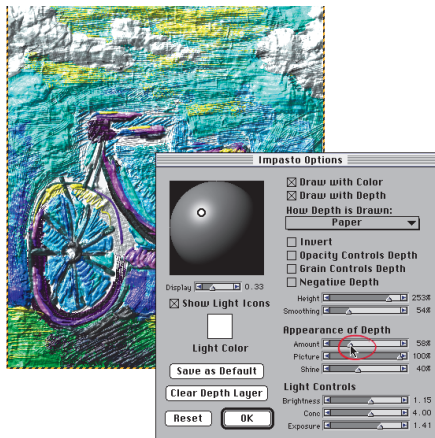
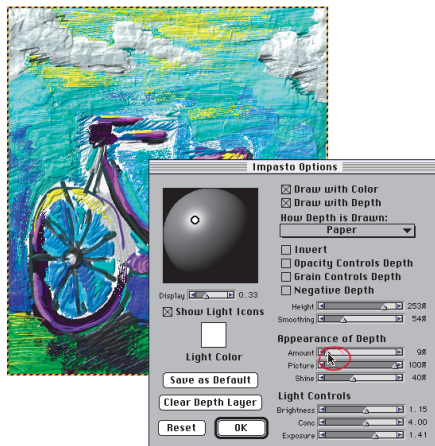


You might customize a brush variant and Impasto drawing options in a way you'd like to keep. If you save a brush variant while an Impasto floater is selected, Painter 3D also saves the Impasto drawing options in the variant. You'll need to close the Impasto Options dialog to get access to the Brushes palette: Variant menu.

Appearance of Depth settings

The Appearance of Depth settings affect the entire Impasto plug-in floater. At any time, you can change these settings to get different texture effects.

- The Amount slider controls the degree to which the depth layer is used to create texture in the image. Moving the slider all the way to the left removes the appearance of depth. Moving the slider all the way to the right displays the maximum amount.
- The Shine slider controls the highlights.

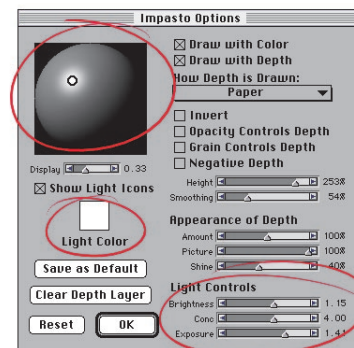


You can use the Amount slider to adjust the appearance of depth in the entire floater.

Light Control settings

Like the Appearance of Depth settings, the Light Control settings affect the entire Impasto plug-in floater. You can also choose to have multiple colored lights interact with the depth to produce different textural effects.

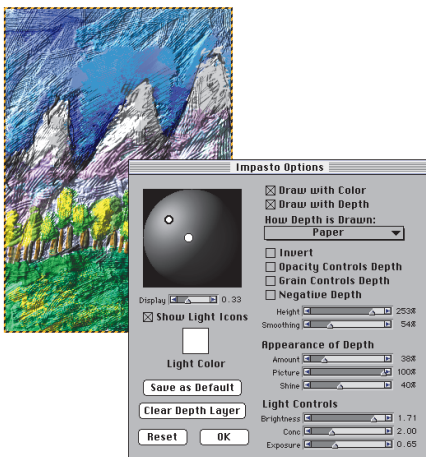
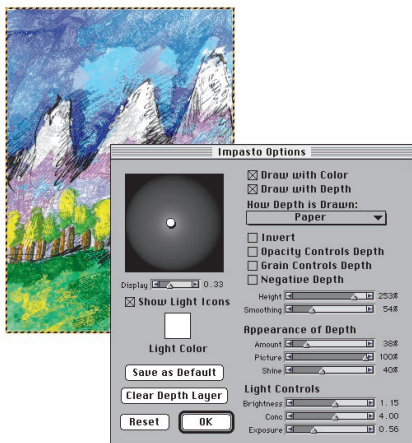
The lighting preview sphere shows all possible surface angles and how the lights illuminate them.



The lighting controls let you change how Painter 3D uses the depth layer to render texture into the image.

- The Show Light Icons check box lets you hide or show the light icons.
- To create a new light, click the sphere. A new light icon (small circle) appears where you click.
- To change a light's angle, drag its icon on the sphere.

- To select a light, click its icon. Notice the selected light has a thicker, dark icon. You can change the selected light's color and other characteristics.
- To choose a new color for the selected light, click the Light Color chip. Use the color picker to choose a color.
- To delete the selected light, press the Delete/Backspace key on your keyboard.
- Brightness controls the intensity of the light.
- Conc (concentration) adjusts the spread of the light's shine over the surface.
- Exposure globally adjusts the overall lighting amount from darkest to brightest. (Exposure applies to all lights.)
- Display affects the lighting Preview sphere only. If you have a darker color for the display, it can be easier to see subtle lighting adjustments.

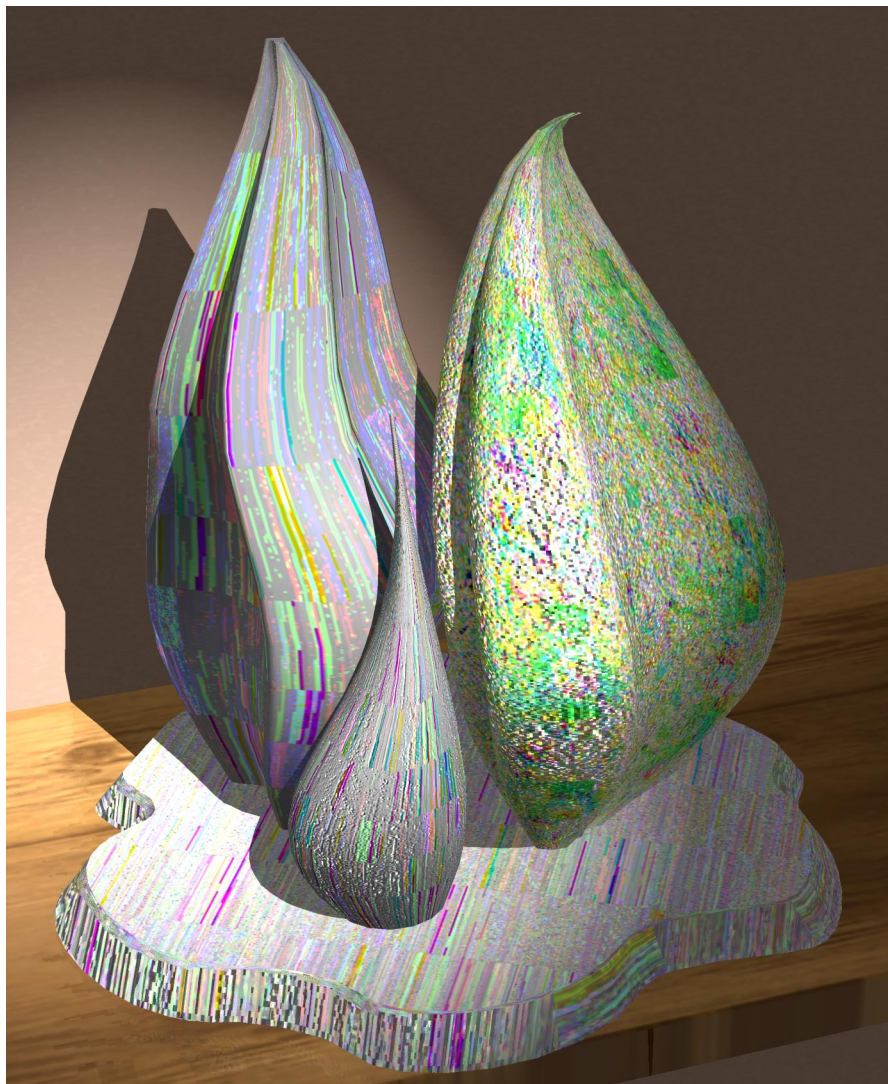


Different lighting changes the depth appearance of this Impasto.

Other Controls

If you make a mess of the depth layer and want to start again, click the Clear Depth Layer button. Any colors you've applied will remain.

When you get the controls set the way you want them (and you want this to be your new default), click Save as Default. At a later date, you can click Reset to return to your saved settings.



2D Image Effects



Understanding the Effects

The Effects menu offers a variety of features that alter and react with your 2D images. Some of these features are electronic retouching, color correction, sharpening and softening focus, surface appearance, and orientation effects such as rotate, scale, and flip.

Many of Painter 3D's effects are inspired by traditional artistic methods. Some of the special effects include glass distortion, embossing, posterizing, color overlays, and warping.

You apply the effects described in this chapter to images in the Image window only. You cannot apply these effects while you're working in the Model window

(although you can certainly see the Model window update with changes you make in the Image window).

In this chapter you'll learn about the image effects and how you can use them to best advantage. In some cases, effects involve other Painter 3D features such as clones, special brushes, or floaters. Whenever possible, this chapter tries to provide enough information that you can select and experiment with an effect without having to refer to other sections of this manual.

Basics of Applying Effects

Most of Painter 3D's effects are applied by making a selection, choosing a command from the Effects menu or one of its submenus, setting options, and clicking OK. If you don't make a selection, the effect will be applied to the entire image.

There are some Painter 3D-specific features you should review before using the Effects menu. These include some selection tips, how effects dialogs work with other open palettes, using the Fade command to partially undo effects, the location of recently used commands in the Effects menu, and descriptions of the Using pop-up. These areas are discussed in the next few sections.

Selecting Where to Apply Effects

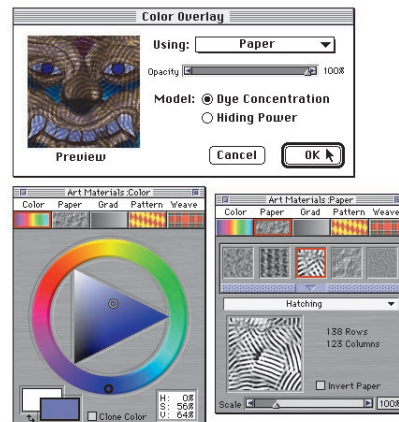
You can apply Painter 3D's special effects to a selection, to a floater, or to the entire image.

- If you want to apply an effect to a region of the image, select that area before choosing an effect command. You can use any of Painter 3D's selection tools, including the Rectangular Selection tool, the Oval Selection tool, the Lasso, and the Magic Wand.
- If you want to apply an effect to an image floater, select that floater before choosing an effect. Painter 3D applies the effect to the entire floater. For more information on selecting a floater, refer to "Selecting Floaters" on page 202.
- If you apply an effect to an object other than an image floater (a plug-in floater or reference floater), Painter 3D automatically converts it to an image floater.

Painter 3D automatically applies an effect to the entire image if no part of the image is selected.

Effects and Open Palettes

All the effects dialogs can be used in conjunction with the Art Materials palettes. For effects that use color or paper texture, this means that you can change the Art Materials while you're experimenting with the effect. Your changes update interactively. You must display the Art Materials palette before opening the dialog.



While most effects dialogs are open, you can change colors and textures, and you can open libraries.

For example, if you're adding a Color Overlay to an image, the overlay effect depends on a selected paper texture and primary color. If you open the Paper palette and the Color palette when you choose Effects menu> Surface Control>

Color Overlay, you can change paper grains and colors. These changes can be seen in the Preview window of the Color Overlay dialog. If necessary, you can open color sets or paper-texture libraries while the Color Overlay dialog remains open.

You can move effects dialogs around on your Desktop, if necessary, for full access to other palettes.

Using Fade to Partially Undo Effects

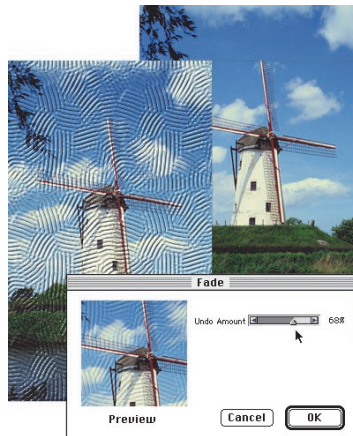
The Fade command allows you to undo any percentage of your last effect. This is a great way to achieve just the right amount of an effect.



To experiment with fade:

1. Open a new document.
2. Paint a colorful image or fill it with a pattern.
3. Choose **Effects menu > Surface Control > Apply Surface Texture** or another effect. Painter 3D converts the image to a color negative.
4. Choose **Edit menu > Fade**. The Fade dialog appears.
5. Drag the slider and watch the image change between positive and negative

6. When you're satisfied with the settings, click OK to apply the effect.



Use the Fade dialog to undo a specified percentage of your last effect.

Recently Used Effects Commands

Sometimes you'll want to use the same effect multiple times in a work session. Painter 3D makes this easy.

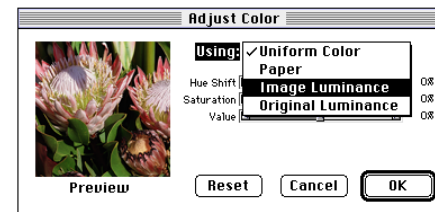
As you work, you'll notice that the menu items for the most recent effects commands you've used are available at the top of the Effects menu. This makes it easy to choose the commands again.

Painter 3D provides keyboard shortcuts for the two most recently used effects:

- The last effect you used can be accessed by pressing Command- / or Ctrl+ /.
- The second-to-last effect you used can be accessed by pressing Command- ; or Ctrl+ ;.

About the "Using" Pop-Up

Many of Painter 3D's effects dialogs contain a pop-up called Using.

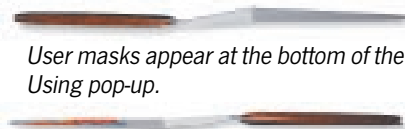


The Using pop-up is common in Painter 3D's effects dialogs.

This pop-up menu lets you specify the source that Painter 3D uses as an example for applying an effect. The example tells Painter 3D how much of the effect to apply to different areas of the image. Areas of high luminance in the model apply a greater degree of the effect in the image.

The Using options vary between effects. They include Paper, User Masks, Image Luminance, Original (clone source)

Luminance, and Uniform. These options are all described in the following sections that explain the various effects.



User masks appear at the bottom of the Using pop-up.

In most cases, you can see the results of the different options in the Preview window of an effect's dialog. The best way to see how these options affect your images is to try them.



Third-party Plug-ins

Additional effects can be provided by third-party plug-ins. Usually, these are purchased separately. You can access third-party plug-ins from within Painter by using the Effects menu.

For information on locating your plug-ins for Painter 3D, refer to "Other Raster Plug-ins" on page 37.

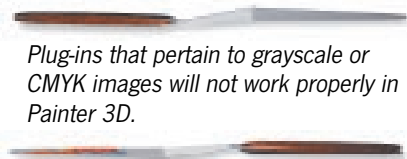


To use third-party plug-ins from within Painter 3D:

1. Select all or part of your image.

2. Choose **Effects menu > Plug-in Filter** and choose the effect you want. You'll see a list of available plug-ins at the bottom of the menu. All third-party plug-ins are located in submenus.

You can also use the **File menu > Acquire** or **File menu > Export** commands to send images in and out of Painter 3D by way of supported devices, such as scanners, film recorders, color printers, and so on.



Plug-ins that pertain to grayscale or CMYK images will not work properly in Painter 3D.



Orientation Effects

You can manipulate part or all of your image's orientation by rotating, scaling to a larger or smaller size, or flipping horizontally or vertically.

These commands are located under **Effects menu > Orientation**.

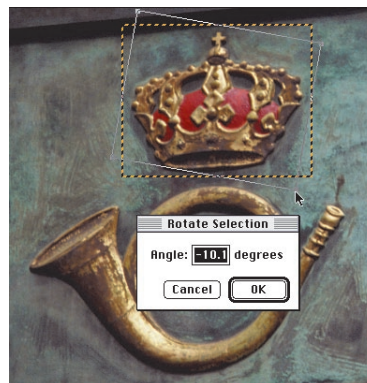
Rotating Images

You can rotate all or part of an image.



To rotate an image:

1. Select the part of the image you want to rotate. To rotate the entire image, don't select anything. If you want to rotate a floater, select that floater.
2. Choose **Effects menu > Orientation > Rotate**. The Rotate Selection dialog appears.

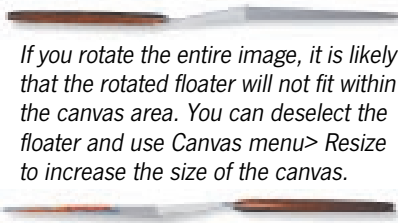


Use the Rotate dialog to rotate an image.

3. You can visually rotate the selection in the windows while the dialog is displayed. Drag the corner of the selection to rotate manually. The Rotate Selection dialog reflects the numerical value of the angle after you release the mouse or stylus.

You can also rotate by entering the desired angle in the dialog. A positive number rotates counterclockwise. A negative number rotates clockwise.

4. Click OK to apply the effect. When you rotate an image, Painter 3D first turns the image into a floater and then rotates it. The image remains a floater until you drop it. For more information on working with floaters, refer to Chapter 11, “Floaters.”



*If you rotate the entire image, it is likely that the rotated floater will not fit within the canvas area. You can deselect the floater and use **Canvas menu > Resize** to increase the size of the canvas.*

Scaling Images

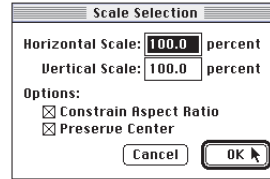
The Scale command lets you change the dimensions of part or all of an image.



To scale an image:

1. If you want to scale only part of the image, select that part. If you want to scale a floater, select that floater.

2. Choose **Effects menu > Orientation > Scale**. The Scale Selection dialog appears, and there are selection handles on the selected area.



Use *Scale Selection* dialog to resize your image.

3. You can visually scale the selection in the windows while the dialog is displayed. Drag the corner of the selection to scale manually. The Scale Selection dialog reflects the numerical percentage after you release the mouse or stylus.

You can also scale by entering the desired percentages in the dialog.

4. Make a selection from the Options:
 - Constrain Aspect Ratio maintains the selection's proportions. Unchecking this item lets you change horizontal and vertical measurements independently.
 - Preserve Center keeps the item anchored in its location, based on the center of the image.

5. Click OK to apply the effect. When you scale an image, Painter 3D first turns the image into a floater and then scales it. The image remains a floater until you drop it.

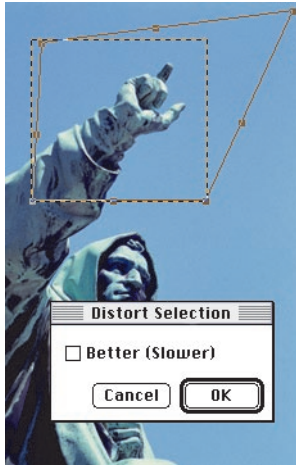
Distorting Images

You can distort the shape of an image or part of an image. Distort can be applied to a selection within the canvas or to a floater.



To distort an image:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Orientation > Distort**. Handles appear around the selection, and the Distort Selection dialog appears.
3. Drag the handles to reshape the selection.
4. Check the Better (Slower) box to see a more accurate rendering of your changes. This option takes a bit longer, but is particularly useful when you're working with a high amount of distortion.



Original image



Part of an image is selected and distorted

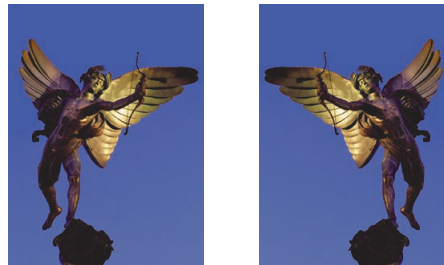
5. Click OK to apply the effect. A dialog tells you Painter 3D is distorting the selection. Your selection will remain floating until you drop it.

Flipping Images Horizontally

Flipping an image horizontally creates the mirror image across an imaginary vertical line down the center of the image. The Flip commands work on a selection within the canvas or on a floater.

To flip an image horizontally:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Orientation > Flip Horizontal**.



Original image, then flipped horizontally.

Flipping Images Vertically

Flipping an image vertically creates the vertical mirror image of itself flipped across the horizontal line.

To flip an image vertically:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Orientation > Flip Vertical**.



Original image, then flipped vertically.

Free Transforming Images

Free Transform converts an image floater into a reference floater. This lets you resize, rotate, and slant the floater by dragging the handles.

To rotate or slant, you need to first hold down certain command keys. For more information on reference floaters, refer to "Creating a Reference Floater" on page 220.

Set Transform

Set Transform lets you perform these same transformations numerically.

Commit Transform

Commit Transform converts the (transformed) reference floater back into an image floater.

Tonal Control Effects

The Tonal Control commands in the Effects menu let you adjust or alter colors in an image.

Adjust Colors

The Adjust Colors command lets you control the hue, saturation, and value of an image in much the same way as you would adjust your TV.

To adjust colors:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.



Use the Adjust Color dialog to change the hue, saturation, and value of an image.

2. Choose **Effects menu > Tonal Control > Adjust Colors**. The Adjust Color dialog appears.
3. Make a selection from the Using pop-up to control where and how much to apply the color adjustment. In all cases other than Uniform, pixels

assigned higher luminance from the Using pop-up receive the greater color adjustment.

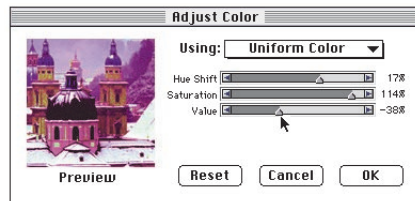
- Uniform adjusts all pixels equally.
- Paper Grain uses the selected paper grain to control the color adjustment.
- Masks use the mask image as the model for controlling color adjustment. For example, a black-to-white gradation in the mask lets you adjust the color progressively across the image. Where the mask is black, the colors are not changed. Where the mask is white, the adjustment applies fully. Transitional areas receive proportional color adjustments.

In a floater, the visibility mask is also a choice.

- Image Luminance uses this image's luminance as the model for color adjustment. Areas of greater luminance are adjusted more.

- Original Luminance uses the luminance of the clone source as the model for color adjustment. If you haven't set up a clone source, the current pattern will be used.
4. Adjust the sliders to control the overall hue, saturation, and value levels in the selection. You can see changes in the Preview window. You can drag in the Preview window to scroll.
 - Hue Shift adjusts the colors of the pixels by changing their hue. Moving the Hue slider to the right shifts the hue counter-clockwise on the color ring.
 - Saturation adjusts the amount of pure hue in the color. Moving the Saturation slider all the way to the left creates a grayscale image.
 - Value adjusts how light or dark the colors are. Moving the slider to the left darkens the colors.
 5. To return the image or selection to the way it was, press Reset. This resets all the sliders.

6. When you're satisfied with the settings, click OK to apply the effect.



Preview image reflects changes made by dragging the sliders.

Adjust Selected Colors

Adjust Selected Colors is similar to the Adjust Colors command, but it works only on a specified range of colors within an image. You choose a color in an image and adjust colors within a range of that color. You could, for example, turn yellow peppers into red peppers.

You can adjust colors that are exactly the same as the color you select, or you can choose colors within a range, based on proximity (on the color wheel or color space) to the selected color.



To adjust selected colors:

1. Choose **Effects menu > Tonal Control > Adjust Selected Colors**. The Adjust Selected Colors dialog appears.

2. In the Image window, click the color you want to adjust.

When you pick a color, the Color palette updates to your choice.

3. Make a selection from the Using pop-up to determine what Painter 3D uses as the source for the color adjustment. For example, Image Luminance uses the brightness of the image to control the color adjustment.
4. Adjust the Extents and Feathers sliders.



Selective color adjustments change only certain colors in the image.

The three Extents sliders determine the extent of the HSV color space around the selected center color. Move the Extents sliders to the right to increase the amount of color space that is affected by the command.

- H Extents controls the number of hues affected. The percentage you choose means that only hues within the selected percentage of hues on the color wheel are affected.
- S Extents controls the range of saturation affected. Only saturations within this range are adjusted.
- V Extents controls the range of values affected. Only values within this range are adjusted.

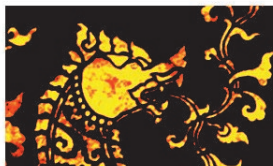
The three Feather sliders (H Feather, S Feather, and V Feather) affect the softness at the edge of the selected colors.

5. Adjust the bottom three sliders to control the overall hue, saturation, and value levels. Watch the results in the Preview window. You can drag in the Preview window to scroll to different parts of the image.
6. When you're satisfied with the settings, click OK to apply the effect. Alternately, to remove your changes

from the Preview window and return your image to the way it was, press Reset.

Brightness/Contrast

The Brightness/Contrast dialog adjusts the brightness and contrast of the overall image in the RGB format. Alternatively, the Adjust Dye Concentration command (refer to “Dye Concentration” on page 150) converts the image to a dye density domain and adjusts it there.



The Brightness/Contrast dialog.

To adjust RGB brightness and contrast:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Tonal Control > Brightness/Contrast**.
3. Drag the upper slider to adjust image contrast. Drag the lower slider to adjust image brightness. The image is redrawn when you let up on your mouse or stylus.
4. If you want to reset the sliders to normal, click Reset.
5. When the adjustments are the way you want them, click Apply to save the adjustments.

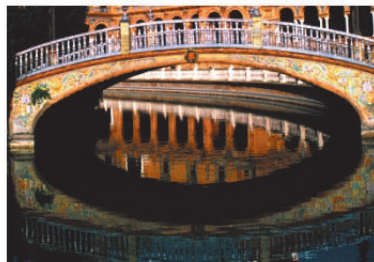
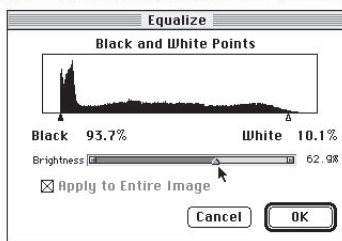
Equalize

The Equalize effect improves contrast, adjusting black and white points and distributing the brightness levels throughout the entire range of available levels. To achieve this, Painter 3D creates a histogram showing the number of pixels for each brightness level value. Equalize allows *gamma adjustment*, which lightens or darkens an image without changing highlights or shadows.

To equalize colors:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Tonal Control > Equalize**. The Equalize dialog appears. When you initially bring up the Equalize dialog, Painter 3D automatically adjusts the image so that the lightest color is white and the darkest color is black.
3. Enable the Apply to Entire Image option if you want to disregard the selection and equalize the entire image.

You can adjust contrast manually by setting the black and white points in the histogram.



The histogram is represented by the silhouette. Each peak shows the number of pixels for a brightness level. You can adjust white and black points by dragging the triangles.

To set the white and black points manually:

1. Choose **Effects menu > Tonal Control > Equalize**. The Equalize dialog appears.
2. Drag the small white point marker under the histogram to the left and drag the black point marker to the right.

Now, any values in the image located to the right of the white marker become white; any values to the left of the black marker become black.

To adjust the image's gamma:

1. Move the Brightness slider to the right to increase gamma, which makes the image darker. Move the slider to the left to decrease gamma, making the image lighter. Your changes will be apparent while you're still in the dialog.

Changing the gamma adjusts only the midtones of an image and leaves the white and black areas untouched.

2. Enable the Apply to Entire Image option if you want to disregard the selection and equalize the entire image.

3. Click OK to apply changes.

Negative

Choose **Effects menu > Tonal Control > Negative** to turn part or all of your image into a negative. The Negative effect simply inverts all the colors in your image or in the selected floater.



Positive and negative versions of an image.

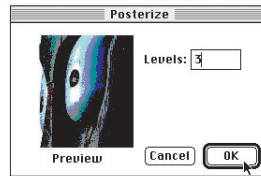
Posterize

Posterizing adjusts the number of color levels an image contains.



To posterize an image:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Select **Effects menu > Tonal Control > Posterize**. The Posterize dialog appears.



Posterizing colors.

3. Enter a number of levels. The lower the number you enter, the more dramatic the effect will be.

4. When you're satisfied with the settings, click OK to apply the effect.

To posterize an image combined with a paper grain, use **Effect menu > Surface Control > Apply Screen**. To posterize to two levels and adjust the threshold level, use **Effect menu > Tonal Control > Equalize**.



Surface Control Effects

Some of Painter 3D's most unusual image-editing effects are in the Surface Control submenu of the Effects menu. You can manipulate paper, color, and light to produce a variety of interesting visual effects. Many of these effects allow you to add texture to an image, which can give the illusion that it was created on canvas or paper.

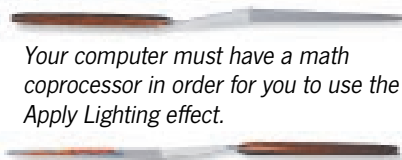
Apply Lighting

The Apply Lighting effect lets you shine one or more light sources on part or all of your image.

This is different from lighting your model in the Model window. The Apply Lighting command affects your 2D image only. It is comparable to hanging your artwork in a gallery and adjusting colored spotlights to

illuminate it. This can brighten portions of the map, but the effect in the model is flat.

You can choose different lighting effects from the provided library, or you can create your own effects by defining brightness, distance, color, and other characteristics. Once you have achieved an image lighting effect you like, you can save it in a library for use with other images.



Your computer must have a math coprocessor in order for you to use the Apply Lighting effect.

Applying Lighting from a Library

The Lighting library holds several preset lighting environments. You can use these directly or as a starting point for customized lighting.

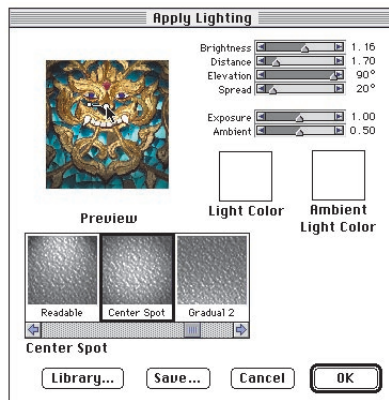


To apply lighting effects from the library:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.

2. Choose **Effects menu > Surface Control > Apply Lighting**. The Apply Lighting dialog appears.

The scrolling palette contains preset lighting effects in the library. When you first open the dialog, the first effect is selected (it has a black box around it), and its name appears under the scroll bar.



Use the Apply Lighting dialog to create your own custom lighting effects, or choose light effects from a library.

3. Click a lighting effect in the scrolling palette (Readable, Center Spot, Gradual 2, and so on) to see the effect in the Preview window. Scroll the palette to see and select other effects.

4. When you're satisfied with the settings, click OK to apply the effect.

Customizing Lighting

You can use the controls in the Apply Lighting dialog to achieve other lighting effects. The Preview window shows your changes, so you can experiment and see the results.



To set the light source:

1. Add, delete, or adjust lights in the Preview window. The small part of the light indicator is the origin from which the light is shining; the large part is the point the light shines toward.

Use the following actions to add, delete, or adjust lights.



Standard camera-based principles apply to editing lighting. For example, if you turn up the lights, you may have to adjust exposure.



- To move the indicator, drag its large end.

- To change the light source direction, drag the small end.
 - To create another indicator, click anywhere else in the Preview window.
 - To delete an indicator, click the indicator to select it. Then press Delete/Backspace.
 - To change the settings for a light, click on the indicator to select it. Then adjust the sliders to set the color as described below.
- 2.** Adjust the sliders using the following guidelines:
- Brightness is like a dimmer knob. Moving it to the left turns down the light source; moving it to the right increases brightness.
 - Distance controls how far the light is from the image. If you move the light source closer, you may have to change the image's exposure (see below).
 - Elevation sets the light's angle in relation to the canvas. At 90° the light is shining straight down, and at 1° the light is nearly horizontal.
 - Spread sets the angle of the light cone.
 - Exposure is the image's brightness, as in photography. Moving the slider to the left

decreases exposure; moving it to the right increases exposure. Increasing the exposure lightens the image as a whole. Decreasing exposure darkens it.

- Ambient is the surrounding light in an image. If you had no individual lights in your image, the ambient lighting would govern the overall lightness of the image. Moving the slider to the left darkens the overall lighting; moving it to the right increases the light.
- 3.** Click the Light Color color chip and choose a color for the selected light from the Color Picker. Click OK to exit the Color Picker.
 - 4.** Click the Ambient Light Color color chip and choose a color for the surrounding light from the Color Picker. Click OK to exit the Color Picker.
 - 5.** When you're satisfied with the settings, click OK to apply the effect.

Saving Lighting Effects

When you've adjusted the lighting and created an effect you like, you can save the effect. In the future, your saved lighting environment will be available in the library at the bottom of the dialog.



To save specific lighting effects:

- 1.** After making your changes, click Save.
- 2.** Type a name for your new lighting effect.
- 3.** Click OK to save the effects. It becomes a choice in the palette that you can apply it to any image.
- 4.** When you're satisfied with the settings, click OK to apply the effect.

Creating Lighting Effects Libraries

You can create your own lighting library. From within the Apply Lighting dialog, click Library. Painter 3D displays a dialog that allows you to create a new library or load an existing one.

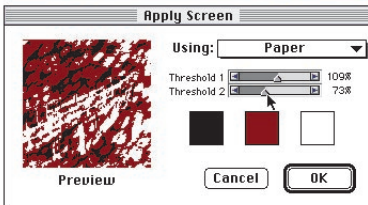
The Lighting Mover lets you create a new lighting library and manage your library contents. To open the Lighting Mover, choose Shift-Command-L/Shift+Ctrl+L.

Apply Screen

Apply Screen is another way to add texture to an image. It combines luminance, the selected paper texture, and the three colors you pick in the Apply Screen dialog to add a three-color screen to an image.

To apply a screen:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Surface Control > Apply Screen**. The Apply Screen dialog appears.



The Threshold sliders determine amounts of the selected colors. Clicking a square activates the Color Picker.

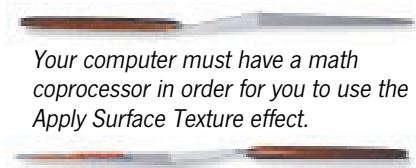
3. Click each color chip to display the Color Picker. Click the color you want to use, then click OK.

4. Move the Threshold 1 slider to determine how much of the right and middle squares' color will be in the image. Moving the slider to the left increases the amount of the right color. Moving it to the right decreases the amount of the middle color.
5. Move the Threshold 2 slider to determine how much of the left chips' colors will be in the image. Moving the slider to the left decreases the amount of the color. Moving it to the right increases the amount of the left color.
6. Make a selection from the Using pop-up:
 - Paper Grain produces a screen using the paper grain. If the Papers palette is open, you can choose different textures while the Apply Screen dialog is open.
 - Image Luminance creates texture based on the image's brightness. It is similar to a three-level posterization.
 - Original Luminance adds texture based on the clone source document's brightness.

- User Mask adds texture based on the luminance of a mask. The pop-up lists each user mask in the document.
7. When you're satisfied with the settings, click OK to apply the effect.

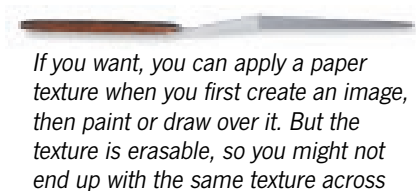
Apply Surface Texture

Painter 3D lets you add a three-dimensional surface texture to your image. You can use this feature to apply a paper texture across the image or to give depth to the brush strokes of oil paint.



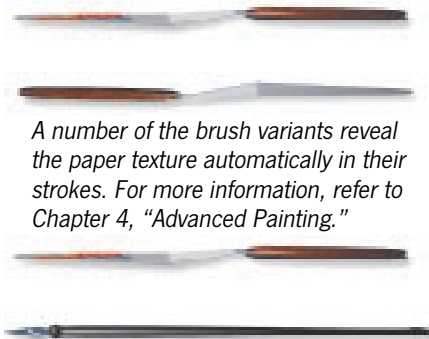
Your computer must have a math coprocessor in order for you to use the Apply Surface Texture effect.

The Reflection feature allows you to map a separate image onto the surface. This gives the effect you would expect to see in objects made of glass or polished metal, like the chrome bumper of a classic car.



If you want, you can apply a paper texture when you first create an image, then paint or draw over it. But the texture is erasable, so you might not end up with the same texture across

the document surface. Generally, you'll add the paper texture as the last step in producing artwork.

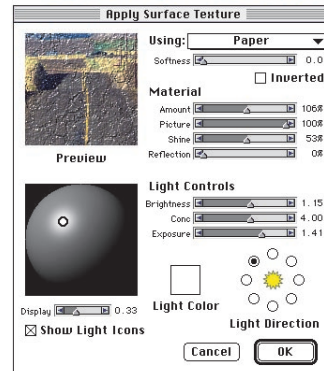
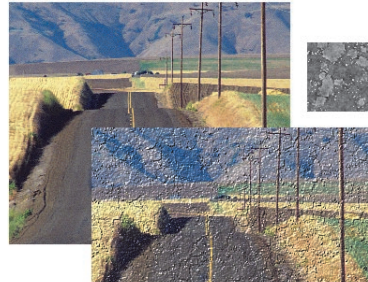


A number of the brush variants reveal the paper texture automatically in their strokes. For more information, refer to Chapter 4, "Advanced Painting."

To apply surface texture:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Surface Control > Apply Surface Texture**. The Apply Surface Texture dialog appears.
3. Make a selection from the Using pop-up to specify where to get the texture.
 - Paper applies the current paper texture. If the Paper palette is open, you can choose different papers and change their scale to

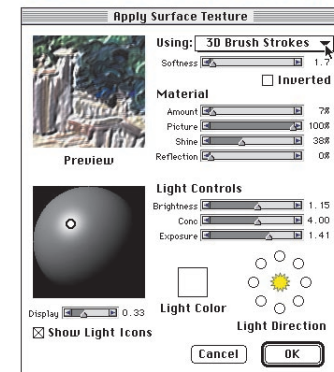
try different textures. The Preview window automatically updates to paper changes.



Texture based on Paper Grain.

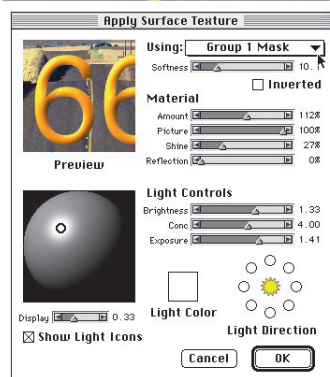
- 3D Brush Strokes uses the difference in luminance between the clone source and the current document. This can make brush

strokes appear three-dimensional, giving them the illusion of oil paints.



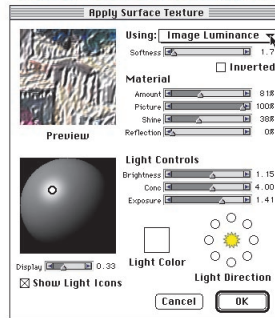
Texture based on 3D Brush Strokes.

- User Mask produces surface texture based on a mask. The pop-up lists each user mask in the document. If a floater is selected, the visibility mask is also listed. With a floater's mask, texture is applied around the edges of the floater.



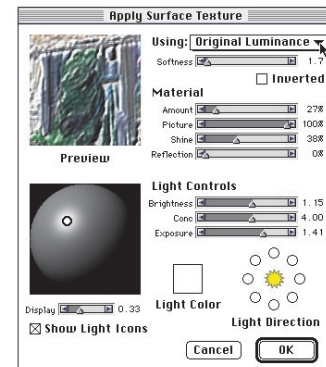
Texture based on an image floater's visibility mask. Notice the roundness of the sixes.

- Image Luminance uses the current document's luminance to determine where to add surface texture. This embosses the edges of the image.



Texture based on Image Luminance.

- Original Luminance uses the clone source's luminance. For an example, refer to "Creating Embossing Effects" on page 148.



Texture based on Original Luminance.

4. Click Inverted to create an inverted version of the option selected from the Using pop-up.
5. Use the following guidelines to adjust the Softness and Material sliders to achieve the texture you want:

- Softness controls the transitions in texture. Increasing softness creates more intermediate steps, which produces a smoother distortion.
- Picture controls the amount of color in the picture. At 100%, the full color of the picture shines through. Move the slider to the left to remove the color to black, leaving only the shine.
- Amount controls how much surface texture is applied to the image. Moving the slider all the way to the right applies the maximum amount.
- Shine controls the highlights. More Shine creates an aluminum-foil effect.
- Reflection maps the clone source onto the surface at a variable percentage. A discussion of Reflection Maps can be found in “Creating Reflection Maps” on page 147.

The Preview window shows how the options look on your image.

6. Set the number of lights and position them as described below.

If you like, you can have multiple colored lights interact with the Paper Grain (from the Using pop-up) to produce different textural effects.

The Lighting Sphere shows all possible surface angles and how the lights illuminate them. (Although the lighting sphere in this dialog resembles the lighting sphere for the Model window, they aren't related.)

You can either use the basic positions, offered by the Light Direction radio buttons, or you can create custom lighting by working in the sphere.



The Light Direction option should be used only as a starting point to develop more complex lighting. If you have developed complex lighting with several lights of different colors and you decide to use the basic Light Direction control to change a light's direction, it restores the default of one light and resets the color to white.



The Show Light Icons check box lets you hide or show the light icons on the Lighting Sphere.

- To create a new light, click the sphere. A new light icon (small circle) appears where you click.
 - To change a light's angle, drag its icon on the sphere.
 - To select a light, click its icon. Notice the selected light has a thicker, dark icon. You can change the selected light's color and other characteristics.
 - To choose a new color for the selected light, click the Light Color color chip.
 - To delete the selected light, press the Delete/Backspace key on your keyboard.
7. Use the following guidelines to adjust the Light Control sliders:
 - Brightness indicates the amount of contribution of the light to the overall lighting color.
 - Conc (concentration) adjusts the spread of the light's shine over the surface.
 - Exposure globally adjusts the overall lighting amount from darkest to brightest.
 - Display affects the lighting Preview sphere only. If you have a darker color for the display, it can be easier to see subtle lighting adjustments.



8. Set light positions in the Lighting Sphere.
9. When you're satisfied with the settings, click OK to apply the effect.

Creating Reflection Maps

The Reflection slider in the Apply Surface Texture dialog maps the clone source onto the surface at a variable percentage.



A typical reflection map.



To take advantage of reflection mapping:

1. Create the image you want to use as the reflection. Because the reflection describes the environment around the reflective surface, the image used is sometimes called an environment

map. You'll probably want to warp the image to approximate the reflection from a curved surface.

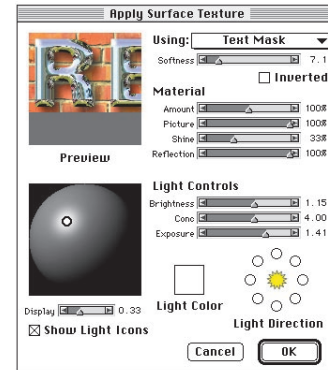
This is a purely 2D effect. Unlike a real reflection, if you rotate the model in 3D, the reflection moves with it.

2. Set the reflection image as the clone source. You can either make it a pattern and select it in the Patterns palette or open the file and choose **File menu > Clone Source > file name**.
3. Create a floater for the reflection surface. You use the mask to control the mapping. A floater simplifies the process because its mask matches the shape of the reflection area exactly.
4. Select the floater. When a floater is selected, effects apply only to the floater.



An image floater, ready to become reflective. In this example, the text shapes were converted to an image floater.

5. Choose **Effects menu > Surface Control > Apply Surface Texture**. The Apply Surface Texture dialog appears.
6. Choose the floater's usability mask from the Using pop-up.



The floater is titled "Text," so its visibility mask is titled "Text Mask."

7. Adjust the Reflection slider to control the amount of reflection you want.
8. Adjust the Softness slider to control the mapping from the edges of the floater image. Increasing Softness gives a rounder, more three-dimensional look to the surface.

9. When you're satisfied with the settings, click OK to apply the effect.



The resulting chrome-plated text.

Creating Embossing Effects

You can use the Effects menu to add an embossed effect to your images.

The Embossing effect is a 2D effect. It is not affected by the position of lights or the position of the model in 3D. This is a good effect to use if you're creating a model with only a texture map.

To create an embossed effect, you must begin with a clone document. Painter 3D uses the original luminance—the brightness of the source document—to create the surface texture in the clone. For

more complete information about cloning, refer to “Cloning a Document” on page 80.



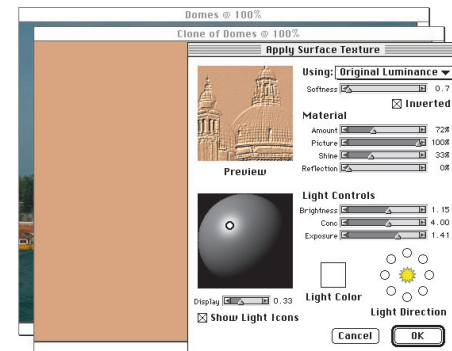
The original image.



To create a clone with embossed effects:

1. Open the image that you want to work.
2. Clone the image by choosing **File menu > Clone**.
3. Choose any color on the Art Materials: Color palette other than black. If you want the embossed image to be white, leave the screen blank.
4. Choose **Effects menu > Fill**.
5. Click the Current Color radio button.

6. Click OK to fill the clone file with colors.
7. Choose **Effects menu > Surface Control > Apply Surface Texture**. The Apply Surface Texture dialog appears. The Preview window shows how the embossed image will look.
8. Choose Original Luminance from the Using pop-up.



Use the Softness and Amount sliders to control embossing.

9. You can experiment with the other controls in the Apply Surface Texture dialog to see variations.
10. Click the buttons above Light Direction to change the location of highlights and shadows. Check the Preview window to see the effect of lighting changes.

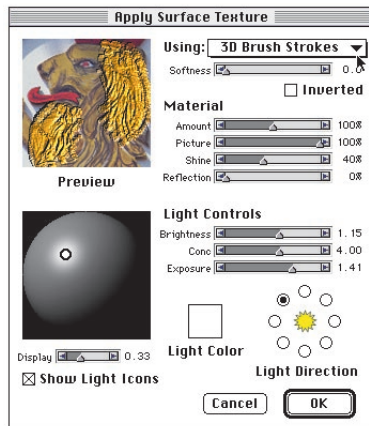
11. When you're satisfied with the settings, click OK to apply the effect.



The clone is now an embossed version of the original.

Creating Three-dimensional Oils Effects

The 3D Brush Strokes option in the Apply Surface Texture dialog makes brush strokes appear to be three-dimensional, giving them the illusion of oil paints. To create this effect, you must begin with a clone document.



Texture based on 3D brush Strokes.

The difference between the clone and the original defines the three-dimensional texture in the clone. For more complete information on cloning, refer to “Cloning a Document” on page 80.



To create a clone with three-dimensional effects:

1. Open the image you want to work with.
2. Clone the image by choosing **File menu > Clone**.
3. Paint the new clone imagery.

4. Choose **Effects menu > Surface Control > Apply Surface Texture**. The Apply Surface Texture dialog appears. The Preview window shows how the image will look.

5. Choose 3D Brush Strokes from the Using pop-up.

6. You can experiment with the other controls in the Apply Surface Texture dialog to see variations.

7. When you're satisfied with the settings, click OK to apply the effect.



You can also use the luminance of a source document to determine the character of brush strokes in a clone. If you want to experiment, try changing the source settings on the Brushes palette: **Controls menu > Sliders palette**. For instructions, refer to “Sliders Palette” on page 71.

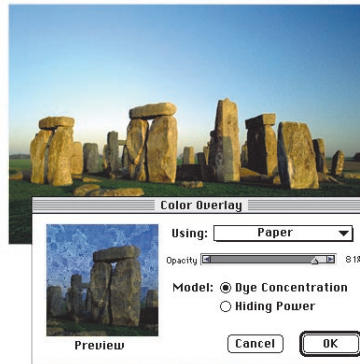
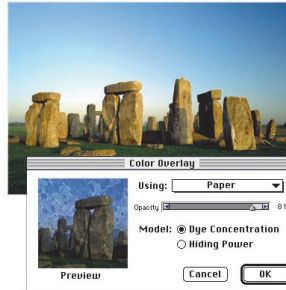


Color Overlay

Use the Color Overlay command to simultaneously add color and texture effects to an image.

To create a color overlay:

1. Open the Color and Paper palettes onto your Desktop.
2. Select the area you want to change. If nothing is selected, the effect applies to the entire image. If you want to apply the effect to a floater, select the floater.
3. Select a color from the Color palette you want to use in the overlay.
4. If you want to base the color on a paper grain, select a paper texture from the Paper palette.
5. Choose **Effects menu > Surface Control > Color Overlay**. The Color Overlay dialog appears.
6. Choose an overlay model.
 - Dye Concentration allows the paper to absorb the color.
 - Hiding Power allows the color to cover what's beneath it.



.Color Overlay adds both color and texture.

7. Move the Opacity slider until the preview reflects your preferred opacity.

8. Make a selection from the Using pop-up:

- Uniform Color adds a flat tint to the image.
- Paper Grain overlays color using the paper texture as a mapping model.
- Image Luminance uses the image's brightness as the model for the color overlay.
- Original Luminance uses the luminance of the clone source as the model for the color overlay.
- User Mask uses the values in the mask as the model for the color overlay. The pop-up lists each user mask in the document.

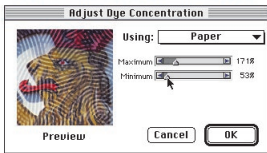
9. When you're satisfied with the settings, click OK to apply the effect.

Dye Concentration

The Dye Concentration effect adjusts color intensity and adds surface texture by adjusting pigments. You can use it, for example, to lighten an underexposed photo or to darken an overexposed one.

To adjust the dye concentration:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Surface Control > Dye Concentration**. The Adjust Dye Concentration dialog appears.



Using the Maximum and Minimum sliders in the Adjust Dye Concentration dialog, you can preview color intensity based on the model selected in the Using pop-up.

The Art Materials: Paper palette can be used while the Adjust Dye Concentration dialog is open.

3. Make a selection from the Using pop-up:
 - Uniform Adjustment adjusts color uniformly.
 - Paper Grain adjusts color using the paper texture as a mapping model.
 - Image Luminance uses the image's brightness as the model for the color adjustment.
 - Original Luminance uses the luminance of the clone source as the model for the adjustment.
 - User Mask uses the values in the mask as the model for the dye concentration adjustment. The pop-up lists each user mask in the document.

When you choose Uniform Adjustment, moving the Maximum slider above 100% increases color density. A value below 100% decreases it. Moving the Minimum slider has no effect. With the other Using pop-up selections, both sliders are operable.

4. Adjust the Minimum and Maximum sliders as needed.

If you think of texture as peaks and valleys, the Maximum slider controls the dye on peaks and the Minimum slider controls the dye in the valleys. You can set Maximum as high as 800%. The lower you set Minimum (it can be set as low as 0%), the higher the contrast between peaks and valleys. The higher the Minimum slider, the flatter the paper will appear.

5. When you're satisfied with the settings, click OK to apply the effect.

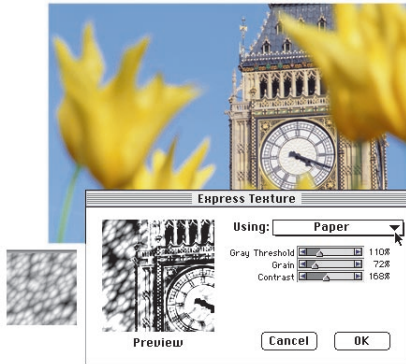
Express Texture

The Express Texture effect generates a high-contrast version of an image in grayscale. With this feature, you can create a visual effect similar to a custom halftone screen, like a mezzotint or line screen.

Express Texture is similar to Apply Screen with anti-aliasing built in.

To apply express texture:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Surface Control > Express Texture**. The Express Texture dialog appears.



Using the Express Texture dialog.

3. Make a selection from the Using pop-up.
You can base the effect on the current paper texture, a user mask, image luminance, or original luminance (clone source).

4. Use the following guidelines to adjust the sliders:
 - Gray Threshold determines where the threshold is, between pure black and pure white.
 - Grain determines how deeply the texture penetrates the surface.
 - Contrast determines how many levels of black and white there are. For example, low contrast generates pure gray, medium contrast produces levels of grayscale, building up to a high contrast black and white screen.
5. When you're satisfied with the settings, click OK to apply the effect.

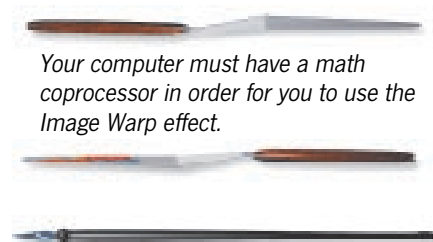
If you want to add color back in after using this effect, try using the Edit menu > Fade command. This will bring back the original colors of the image.

If you want to add a new set of colors, you can apply a gradation to the image. First, choose a gradation, then select Art Materials palette: Grads menu > Express In Image.

Image Warp

The Image Warp command lets you distort the surface of an image as if it were a sheet of pliable film. With this

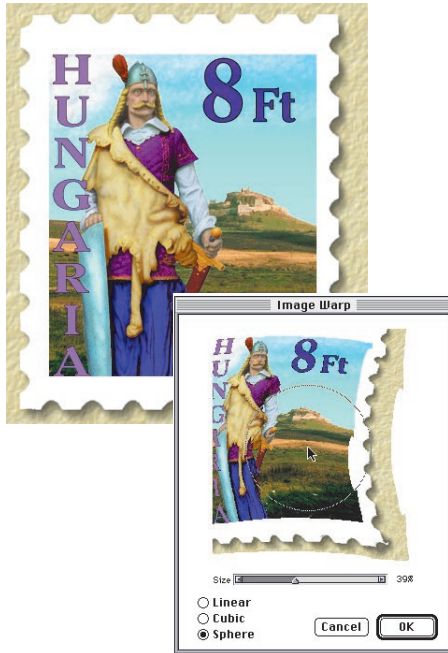
command, your images can look as though they're reflected in a fun house mirror.



To warp an image:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.

- Choose **Effects menu > Surface Control > Image Warp**. The Image Warp dialog appears.



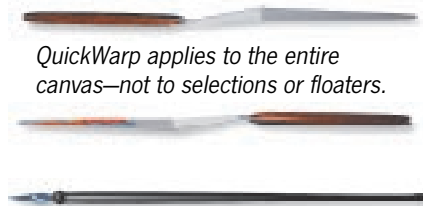
Use the Image Warp dialog to warp your image.

- Adjust the Size slider. This slider controls the size of the area affected by dragging the cursor. The higher the number, the smaller the affected area.
- Select a warp method:

- Linear pulls the selected area as if you were pulling from the top of a cone.
 - Cubic pulls a flat surface.
 - Sphere pulls a surface as if it were a lens.
- Drag the cursor over the Preview window to distort the image. A circle appears as you drag, denoting the area affected.
 - When you're satisfied with the settings, click OK to apply the effect.

QuickWarp

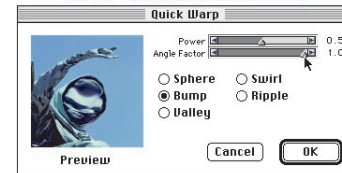
The Quick Warp command lets you easily create some of the basic distortions. These distortions are useful in preparing images for the Apply Surface Texture Reflection map feature.



QuickWarp applies to the entire canvas—not to selections or floaters.

To apply QuickWarp effects:

- Choose **Effects menu > Surface Control > QuickWarp**. The Quick Warp dialog appears.



Using the Quick Warp dialog.

- Adjust the Power and Angle Factor sliders to control the warp effects.
- Select a warp method:

- Sphere warps the image spherically, like a reflection on a polished silver ball. Use the Power and Angle Factor sliders to intensify and twist the effect.
 - Bump warps the center of the image toward you, making it appear convex. Use the Angle Factor slider to twist the effect.
 - Valley warps the center of the image away from you, making it appear concave. Use the Angle Factor slider to twist the effect.
 - Swirl distorts the image in a spiral. The Angle Factor controls how many times the image spirals. Use the Angle Factor slider to twist the effect.
 - Ripple distorts the image in concentric rings, like a reflection in a pool of water when you drop in a stone. Use the Power and Angle Factor sliders to intensify and twist the effect.
4. When you're satisfied with the settings, click OK to apply the effect.



Focus Effects

The Focus commands in the Effects menu let you create sharpening, softening, motion blurring, and glass distortion effects.

Glass Distortion

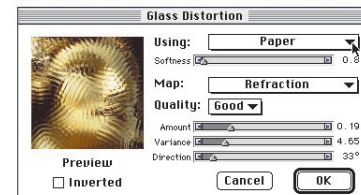
Glass distortion offers powerful tools for distorting an image. You can use it to simulate everyday “looks”—such as making your image appear like it's behind the pebbled glass of a shower door—or you can use it to distort your image beyond recognition.

A myriad of effects are possible with Glass Distortion. So many, in fact, that you'll probably want to experiment for a while before settling on the effect you like.

Glass distortion works by relocating the pixels of the image. Painter 3D lets you control the rules used for relocating the pixels. The primary controls are the displacement map type and what information it uses to create the map.

To apply a glass distortion effect:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Focus > Glass Distortion**. The Glass Distortion dialog appears.



Using the Glass Distortion dialog to create a blur.

As you make changes, the Preview window shows their effect.

3. Make a selection from the Using pop-up to specify the basic information the displacement map begins with. The amount of displacement depends on the value assigned to the image pixels from the Using source.
 - Paper Grain uses the selected paper texture. Paper texture is good for creating the pebbled glass effect. Unless you want frosted glass, you'll probably want to increase the scale of the paper.
 - 3D Brush Strokes uses the difference in luminance between the clone source and the current document.
 - User Mask uses a mask's luminance. The pop-up lists each user mask in the document. This is a good choice for a controlled distortion map. For example, gradations in the mask lead to a progressive distortion effect. Shapes in the mask distort in the fashion of their shape.
 - Image Luminance uses the current document's luminance.
 - Original Luminance uses the clone source's luminance.
4. If you want to work with an inversion of the option selected in the Using pop-up, click the Inverted check box.

5. Adjust the Softness slider to control the transitions between displaced colors. Increasing Softness creates more intermediate steps, which produces a smoother distortion. If you experience aliasing in a glass distortion, try increasing Softness.
6. Make a selection from the Map pop-up to choose the type of displacement to use:
 - Refraction displaces pixels like an optical lens bends light. This is the best map type for distortions you'd expect from looking through glass.
 - Vector Displacement moves pixels in a specific direction.
 - Angle Displacement moves pixels in different directions.
7. Choose Fast or Good from the Quality pop-up.
8. Adjust the following sliders:
 - Amount controls the degree of displacement. Increasing the Amount distorts your image more.
 - Variance creates multiple variations in the neighborhood of the displacement. The result of increasing variance depends on the type of image and other settings.

- Direction controls the direction of displacement. Three o'clock corresponds to 0°. The Refraction map type is not dependent on direction.

9. When you're satisfied with the settings, click OK to apply the effect.

Motion Blur

This effect makes an image appear as if it has been blurred by movement.



To apply a motion blur effect:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Focus > Motion Blur**. The Motion Blur dialog appears.



Motion blur applied to a photograph.

3. Use the following guidelines to adjust the sliders:
 - Radius sets the amount (distance) of blur. Moving the slider to the right makes the image look like it's moving faster.
 - Angle sets the direction in which the image seems to travel. Zero degrees blurs in the direction of 3 o'clock.
 - Thickness blurs the image in a direction perpendicular to the angle you choose with the Angle slider.

4. When you're satisfied with the settings, click OK to apply the effect.

Sharpen

This effect heightens contrast by intensifying highlights and shadows.



To sharpen focus:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Focus > Sharpen**. The Sharpen dialog appears.



Using the Sharpen dialog to sharpen the focus.

3. Use the following guidelines to adjust the sliders:
 - Radius determines how much of the edge of an element is affected. The farther the slider is to the right, the wider the affected area will be.
 - Highlight determines the intensity of the bright areas. Move the slider to the right to brighten the highlight.
 - Shadow determines the depth of the shadows. The farther the slider is to the right, the darker the shadows will be.
4. When you're satisfied with the settings, click OK to apply the effect.

Soften

This effect increases the transition from one part of your image to another, enhancing the anti-aliasing of strokes.



To soften focus:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Focus > Soften**. The Soften dialog appears.



Using the Soften dialog to soften the focus.

3. Adjust the Radius slider. The farther the slider is to the right, the more steps there will be between one image element and another, which will mean more blurring.
4. When you're satisfied with the settings, click OK to apply the effect.

Super Soften

This effect is simply a much stronger version of Soften.

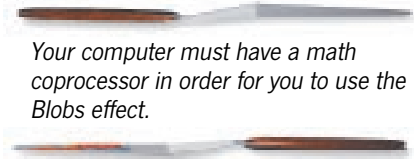


Esoterica Effects

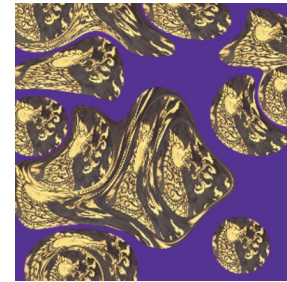
Esoterica holds some of the more interesting and specialized effects.

Blobs

This effect is a good step to take before doing marbling because it involves simulating a pattern in paint floating on liquid in a pan, modeling the way that traditional marbling is done. It takes whatever you copy or cut to the Clipboard (or uses the current color if the Clipboard is empty) and puts it in a swirling pattern by placing blobs into the liquid image.



Your computer must have a math coprocessor in order for you to use the Blobs effect.



Called a Stone pattern, the Blobs effect is used as a starting point in marbling.



To apply a blob effect:

1. Select the image content for the blobs. You can copy an image, set the primary color, or choose a pattern.
Tip: Copy a circular selection that's shaded like a sphere. This will produce blobs that look like bubbles.
2. Open or select the image where you want to create the blobs.
3. Choose **Effects menu > Esoterica > Blobs**. The Create Marbling "Stone" Pattern dialog appears.

4. Enter a value for the Number of blobs. To experiment, try entering 20.
5. Enter values for Minimum Size and Maximum Size. To experiment, try setting Minimum Size at 50 and Maximum Size at 60.
6. Enter a Subsample value. This option creates the anti-aliasing steps. To experiment, try entering 8.
7. Make a selection from the Fill Blobs With pop-up. Your choices are Paste Buffer (what you copied), Current Color and Pattern.
8. The Seed is a number used in randomizing the blobs. Each time you “Blob,” a different seed number is generated. You can enter a specific number if you like.
9. Click OK to apply the effect. Painter 3D creates blobs in the image.

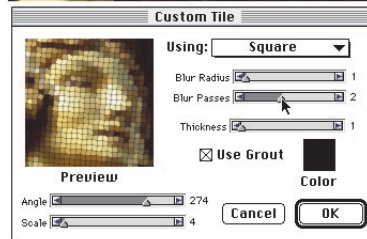
Custom Tile

This effect translates the image into tiles. You can use one of the built-in tile patterns or generate tiles from a paper, pattern or user mask. Each tile gets a single color—the average of the image pixels it covers. Custom tile can lead to a variety of interesting image styles.



To apply custom tiles:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
2. Choose **Effects menu > Esoterica > Custom Tile**. The Custom Tile dialog appears.



Using the Custom Tile dialog.

3. Make a selection from the Using pop-up to the control medium that describes the tile shape you want. In whatever source you use, lighter

patches (higher luminance) become tiles. Dark regions become grout—the cracks between tiles.

Brick, Hex, Square, Triangle, and 12-6-4 are built-in tile shapes. You can also choose the Original Luminance (source), Paper or user mask.

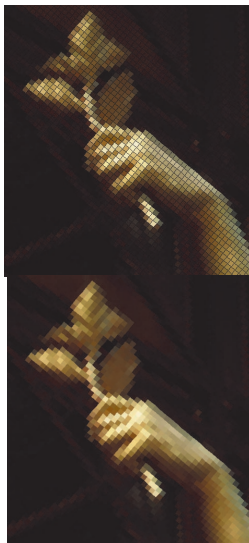
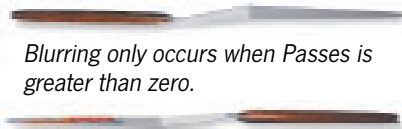


You can create your own tile design in a pattern.



4. For Bricks, use the Brick Width and Brick Height sliders to adjust the size of the bricks.
5. For the other built-in tile shapes, use the Angle and Scale sliders to adjust the tile orientation and size.
6. For Current Pattern, Paper, and User Mask, use the Threshold slider to control the distinction between “what is light” and “what is dark.” The Threshold slides along the luminance range—with everything above becoming tiles, and everything below becoming grout.
7. Adjust the Thickness slider to control the width of cracks between tiles (grout lines).

- Adjust the Blur Radius slider to set the sampling radius for blurring the crack or grout color. Increasing the Blur Radius adds more neighboring colors to the crack pixels in each pass.
- Blur Passes sets the number of times the crack pixels are blurred. More passes mixes more tile color into the cracks.

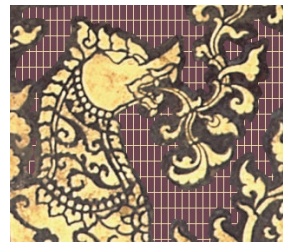


Blurring changes the grout appearance.

- If you want grout to show between the tiles, enable the Use Grout option. If you don't use grout, the image shows between the tiles.
- Click the Grout color chip to set a color for the grout.
- When you're satisfied with the settings, click OK to apply the effect.

Grid Paper

Using Grid Paper in the Effects menu, you can add horizontal or vertical lines or a grid to part or all of your image. The lines become part of the image canvas, and thus become an element in your design.



Grid paper becomes part of the image.

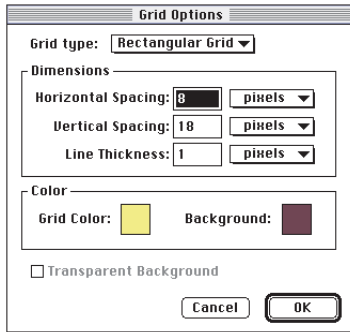
Unlike the Grid Overlay, a transparent layer that floats above your image as a reference, Grid Paper becomes part of your image.



To apply grid paper:

- If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.

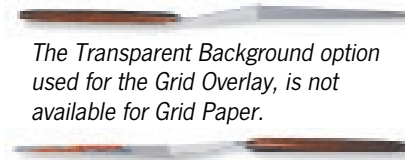
- Choose **Effects menu > Esoterica > Grid Paper**. The Grid Options dialog appears.



Grid Options dialog.

- Make a selection from the Grid Type pop-up to determine the appearance of the grid pattern. You can choose from Rectangular Grid, Vertical Lines, Horizontal Lines, and Dot Grid.
- Set the dimensions of the grid using the following options:
 - Horizontal Spacing determines the amount of space between horizontal lines.
 - Vertical Spacing determines the amount of space between vertical lines.
 - Line Thickness sets the width of grid lines.
- Select Grid and Background colors.

- Grid Color changes the color of grid lines. Click the color chip to display the Color Picker. Choose a color in the Color Picker, then click OK.
- Background changes the grid's background color. Click the background color chip to display the Color Picker. Choose a color in the Color Picker, then click OK.



The Transparent Background option used for the Grid Overlay, is not available for Grid Paper.

- When you're satisfied with the settings, click OK to apply the effect.

Highpass

Highpass suppresses low-frequency areas containing gradual or smooth transitions of brightness levels. This leaves the high-frequency areas (or just the edges of an image), containing stark shifts between brightness levels.

You can make the highpass more pronounced by using the Equalize command.

To apply a highpass effect:

- If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.
- Choose **Effects menu > Esoterica > Highpass**. The Highpass dialog appears.



Highpass introduces stark shifts between brightness levels.

3. Move the Radius slider to determine the amount that the low-frequency areas will be suppressed. This value defines a radius in pixels around each pixel in the selected image area. Moving the slider to the left suppresses larger amounts of low-frequency information. Moving the slider to the right suppresses smaller amounts of low-frequency information.
4. When you're satisfied with the settings, click OK to apply the effect.

Pop Art Fill

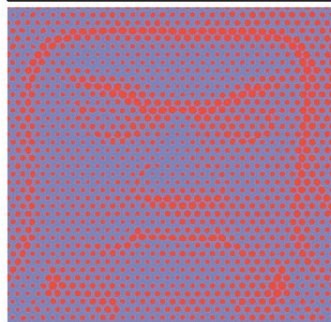
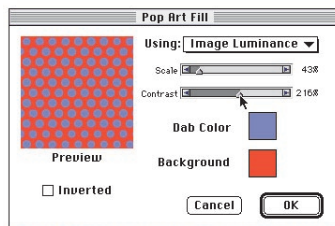
This effect lets you cover the image with pseudo half-tone dots.



To apply pop art fill:

1. If you want to apply the effect to only one part of an image, select that part. If nothing is selected, the entire image is affected. If you want to apply the effect to a floater, select the floater.

2. Choose **Effects menu > Esoterica > Pop Art Fill**. The Pop Art Fill dialog appears.



Using the Pop Art dialog.

3. Make a selection from the Using pop-up to set the control medium: select either Image Luminance, Current Grad, or Original Luminance.
4. If you want to invert the control medium, check the Inverted check box to enable it.
5. Adjust the Scale slider to set the dot size.
6. Adjust the Contrast slider to mix in the luminance of the control medium. This is particularly useful when using Image Luminance as the control.
7. Click the Dab color chip and use the color picker to choose a color for the dots.
8. Click the Background color chip and use the color picker to choose a color for the background.
9. When you're satisfied with the settings, click OK to apply the effect.



Printing



Printing Painter 3D Images

Most of the time you'll probably use Painter 3D to create image maps for your 3D models. There might be times, however, when you want a hard copy printout of the work you've put into painting your models.

You can print rendered images or the 2D image maps from Painter 3D. In fact, Painter 3D provides sophisticated printer settings so you can get the highest quality printout from your printer.



Printers

You can print Painter 3D images on many kinds of printers including PostScript, QuickDraw, Windows GDI printers, and high-resolution imagesetters.

Although your final goal may be to print high-quality color prints, it's a good idea to first print proofs on a basic printer. For example, you can use a black-and-white printer to check page size and placement of images on the page. And if you have a color printer, you can print proofs to get a general impression of what your image looks like.

Keep in mind that the proofs are not an accurate representation of your final, offset-printed product. The print process, inks, and paper types all affect the final output.

Before Printing

While it's easy enough to send a print job to your printer from Painter 3D, it's a good idea to spend a few moments prepping the job before you print. Specifically, you should consider color

matching the job between your monitor and the printer, and setting print/page options with the Page Setup command.

Color Matching

In an ideal world, each color on your monitor would match the respective color on the printed page. Due to the number and kinds of things that affect the color at each point in the process (from a monitor adjustment to the mixing of inks, to the porosity of the paper) a perfect match of all the colors used is unlikely. Nevertheless, it is important to adjust those elements that you can control.

Color Calibration

Color calibrators are hardware devices that use software to balance the color and gamma (brightness and contrast) of your monitor.

Calibration software can be used to adjust your monitor to reflect what your printed piece will look like. This is done with printer profiles that are either packaged with a software program or created with the program. Some image-editing software packages, such as Photoshop, have color calibration capabilities built in.

Trial and error

In the final analysis, calibration is a matter of trial and error. If you have no calibration software, but you do have access to the output device, you can print your file, hold it up next to your monitor and see how close the match is. Use the brightness and contrast controls on your monitor to make adjustments. If you have software that can adjust the RGB values of your monitor, use these adjustments to achieve an even closer match.

Printing Options

Options for setting up your file for printing depend on several factors: the output device, color versus black-and-white printing, and whether or not you are printing separations.

The Macintosh print options are in the File menu> Page Setup dialog. The Page Attributes pop-up at the top of the dialog lets you select either Painter 3D (where you can enable or disable the Size to Fit Page check box) or PostScript Options (where you can set the Visual Effects and Image & Text options).

The Windows print options are in the File Menu> Print dialog. This dialog contains the Size to Fit Page check box, as well as radio buttons that let you select the print type.

The features offered in the Macintosh and Windows dialogs are the same. If you don't have a PostScript printed selected, the PostScript options won't appear.

Size to Fit Page

Choose this option (File menu> Page Setup> Page Attributes pop-up for Macintosh and File menu> Print for Windows) if you want Painter 3D to shrink an image that is larger than a selected page size. For example, when this option is checked, a 12" x 12" image would be resized to fit on an 8-1/2" x 11" page. Painter 3D resizes the image to fit the page.

If an image is larger than the page size and you haven't checked Size to Fit Page, you'll see an alert message when you print. Click Continue, and the image will be clipped to fit the page. Click Cancel to stop printing. You can then check the Size to Fit Page option via the Macintosh Page Setup dialog or the Windows Print dialog.

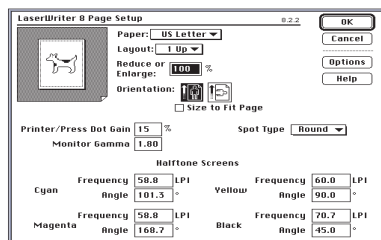
Printing

Once you've set your options, you're ready to print your renderings and 2D images.

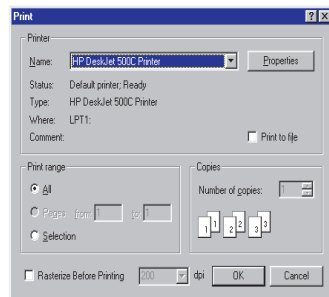


To print:

1. Make sure the rendering or image you want to print is in the active window.
2. Choose **File menu> Print**. The Print dialog appears. The top half of the dialog contains the standard print commands.



The Macintosh Printer dialog.



The Windows Print dialog.

3. Using the pop-up, select one of the four printing methods Painter 3D supports:

- QuickDraw
- GDI
- Color PostScript
- Separations

These options are all described in the next section.

4. Click Print to begin printing.

Printing Methods

For Macintosh only, check Color QuickDraw if your printer uses color or black-and-white QuickDraw. (A common color QuickDraw printer is the Hewlett-Packard PaintJet.) You cannot print separations to QuickDraw printers.

For Windows only, check GDI Printing if your printer is not a PostScript printer. Some common examples are the Hewlett-Packard DeskJet, the Canon BubbleJet, and the Epson Stylus. You cannot print separations to non-PostScript printers.

Check Color PostScript if you plan to print to a color PostScript device. (The QMS ColorScript and Tektronix color thermal printer are examples of PostScript printers.)

Check Separations to print separations. The output consists of four pages, one each for cyan, magenta, yellow, and black. You can print separations from Painter 3D with any PostScript device, including high-resolution imagesetters. Good separations depend on the right screen frequency and angle.

Windows Tip: Although Painter 3D uses the PostScript Setup dialog information for screen angles and frequency, Painter 3D still uses the color separation data in the PRINTER.STG file.

When you save a file as EPS-DCS, Painter 3D uses the PRINTER.STG file in your Painter 3D folder to make the separation files. If you want to use the screen angles and frequency specified in the PostScript Setup dialog, check the box next to Use Page Setup settings in the EPS Options dialog.

Painter 3D places a color bar, registration marks, and color name on each of the four separated plates. If you want to print negatives of your separation, check the Invert Image box in the Macintosh Printing Options dialog or check the Print As Negative Image box in the Windows Print Setup > Properties > Graphics dialog. If you are using a service bureau to print your separations, check with them on the proper setup for their equipment.

Check the Black and White box if you're printing on a black-and-white PostScript laser printer.

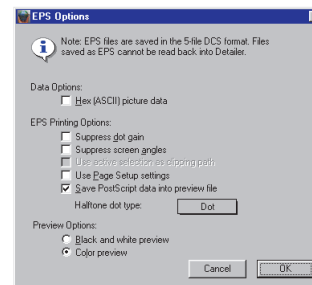
Options for Files Saved as EPS

Painter 3D files that have been saved as EPS files conform to the Desktop Color Separation format (EPS-DCS 5-file format). Remember, when you save a file as EPS-DCS, Painter 3D uses the Printer Settings file (Macintosh) or PRINTER.STG (Windows) in your Painter 3D folder to make the separation files. If you want to use the screen angles and frequency specified in the Page Setup (Macintosh) or PostScript Setup (Windows) dialog, check the box next to Use Page Setup settings in the EPS Options dialog.

Saving in EPS for Printing

Painter 3D's EPS files conform to the Desktop Color Separation format (EPS-DCS 5-file format). Although Painter 3D saves files in EPS-DCS, it can't read EPS-DCS. If you plan to save an image in EPS-DCS, it's a good idea to save it in another format first so you will have a copy of it that you can reopen in Painter 3D.

When you save a file in EPS-DCS, you'll see the EPS Options dialog.



Although you can save your images as 5-file CMYK EPS separations, Painter 3D can't open or edit CMYK files.

Hex (ASCII) Picture Data

This is just another way to store PostScript information. Some programs this option to be checked. The file size will be approximately twice as large when the file is saved with this option.

Use Page Setup Settings

Painter 3D includes a file called Printer Settings file (Macintosh) or PRINTER.STG (Windows), which is calibrated for an imagesetter at 133 lpi,

standard screen angles, and a dot gain of 16%. If you want to override these settings and use your own settings in the Page Setup (Macintosh) or PostScript Setup (Windows) dialog, click the box next to Use Page Setup settings.

Save PostScript data into File

To save a printable preview of an EPS-DCS document, check Save PostScript data into preview file. The two radio buttons under Preview Options tell Painter 3D whether the preview data should be saved in black and white or color.

If you have an older laser printer, you may have to use the black and white preview to print these files on your laser printer. Although the preview or display is black and white, the color information remains intact.



Printing Tips

This section offers some printing tips you may find useful.

Size and Orientation

Most printers cannot print across the entire page. Any given printer has a maximum printable area, which is largely

determined by the paper-handling mechanism. For example, the maximum printable area on an 8 1/2 x 11" sheet of paper may be 7 1/2 x 10".

You can visually confirm if your image fits by clicking and holding on the "i" icon in the lower left corner of the Image window. This will display a print preview box. The rectangle with the "X" in it represents your image. The white box is the printable area of the page, and the gray border is the nonprintable area. If your image is too large to fit, you have several options:

- Use the **Canvas menu > Resize** command. Enter a lower value for either the width or the height. For this purpose, it's easiest to set the measuring units to inches or centimeters, not pixels.
- Change the printer page orientation from portrait to landscape or vice-versa. Depending on your image dimensions, changing the orientation may allow your image to fit. The new orientation will be visible when you press the "i" icon.
- Use the Size to Fit Page option. Selecting this option will always make your image fit the maximum printable dimensions. This means that if your image is large, Painter 3D will shrink it to fit. And if your image

is small, Painter 3D will enlarge it to fit. For more information on this option, see "[Size to Fit Page](#)" on page 173.

Print Quality from Windows

If you're not satisfied with the quality of your output, take a close look at your printer settings. To access these settings from within Painter 3D, choose **File menu > Print Setup**. Click the Properties button.

The settings you find here vary, depending on what make and model of printer you have. For non-PostScript printers, you'll usually find controls for color, brightness, and dithering. Refer to your printer documentation for details.

Microsoft maintains a large library of Windows-related printing information that is available on the World Wide Web. Connect to the Microsoft Knowledge Base at <http://www.microsoft.com/kb>.



For Windows, Painter 3D includes a PRINTER.STG file that contains color calibration information for obtaining a quality color separation on a high-resolution imagesetting device.

The Printer Settings Dot Gain is set to

16%, Screen Frequency for all four process colors is 133 lpi, and Angle is set to 15° for cyan, 75° for magenta, 0° for yellow, and 45° for black.



MetaCreations License Agreement

THIS LICENSE AGREEMENT IS A LEGAL AGREEMENT BETWEEN YOU, THE END USER, AND METACREATIONS CORPORATION. IT IS A LICENSE AGREEMENT AND NOT AN AGREEMENT FOR SALE. PLEASE READ THIS LICENSE AGREEMENT CAREFULLY BEFORE OPENING THIS SEALED PACKAGE. IF YOU DO NOT AGREE WITH THE TERMS AND CONDITIONS OF THIS LICENSE AGREEMENT, PROMPTLY RETURN THE PACKAGE UNOPENED TO THE PLACE YOU OBTAINED IT AND YOUR MONEY WILL BE REFUNDED.

MetaCreations Software License

1) License

This software can only be used on a single computer at any one time. This means that the software should be loaded on only one hard drive at a time. If you wish to use this software on more than one computer, you must either erase the software from the first hard drive when you move the software to a second hard drive, or else purchase two copies of the software. You may not under any circumstances have this program loaded onto the hard drives of two or more computers at the same time. You also may not copy this software onto a hard drive and then use the disks on another computer. The software may be executed from a common disk shared by multiple computers provided that one authorized copy of the software has been licensed for each computer executing the software.

2) Copyright

This software is owned by MetaCreations and is protected by United States copyright laws and international treaty. By law, you, the end user, may do the following:

- a) make a copy of the software solely for backup or archival purposes; or
- b) transfer the software to a single hard disk, provided you keep the original solely for backup or archival purposes.

United States copyright laws prohibits you from making any other copy of the software for any reason without our permission. These federal copyright laws also prohibit you from copying the written materials accompanying the software without first obtaining our permission.

3) Restrictions

You may not rent, lend, lease, or assign this software. You may, however, transfer the software and the accompanying written materials on a permanent basis. When you transfer the software on a permanent basis, you may not keep any copies, and you must remove the software from your hard disk. Also, the person to whom you transfer the software must agree to the terms of this License.

You may not alter, modify or adapt the software or accompanying materials. In addition, you may not translate, decompile, disassemble or reverse engineer the software. You also may not create any derivative works based on this software. A derivative work is defined as a translation or other form in which the software may be recast, transformed or adapted.

4) Limited Warranty

MetaCreations Corporation warrants that this program will perform in substantial compliance with the published specifications and documentation supplied in this package, provided it is used on the computer hardware and with the operating system for which it was designed. This warranty is limited to a period of 90 days from the date of the original purchase.

MetaCreations Corporation warrants that the original disks and documentation are free from defects in material and workmanship, assuming normal use, for a period of 90 days from the date of purchase.

5) Remedies

If you report a significant defect in performance of the software in writing, within 90 days of purchase, MetaCreations Corporation will attempt to correct it or, at its option, authorize a refund of your license fee.

If a defect in the disk or documentation occurs during this period, you may return the faulty disk or documentation, along with a dated proof of purchase, and MetaCreations Corporation will replace it free of charge.

6) No Other Warranties

Except as specifically provided above, MetaCreations Corporation makes no other warranty or representation, either express or implied, with respect to this software, the disks or documentation, including their quality, merchantability, or fitness for a particular purpose. In no event will MetaCreations Corporation be liable

for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the software or documentation, even if MetaCreations Corporation has been advised of the possibility of such damages.

The warranties and remedies set forth above are exclusive and in lieu of all others, oral or written, express or implied. MetaCreations Corporation is not responsible for any costs including, but not limited to, those incurred as a result of lost profits or revenue, loss of time or use of the software, loss of data, the costs of recovering such software or data, the cost of substitute software, claims by third parties, of other similar costs. In no case will MetaCreations Corporation's liability exceed the amount of the license fee.

The warranties provided give you specific legal rights. You may have other rights which vary from state to state. Some states do not allow the exclusion of incidental or consequential damages, or the limitation of how long an implied warranty lasts, so some of the above may not apply to you.

7) U.S. Government Restricted Rights

MetaCreations Painter 3D and documentation thereto are provided with RESTRICTED RIGHTS. Use, duplication or disclosure by the Government is subject to restrictions as set forth in subparagraph (c) (1) (ii) of the Rights in Technical Data and Computer Software clause at 52.227-7013. The contractor/manufacturer of Painter 3D and documentation thereto is MetaCreations Corporation, P.O. Box 66959, Scotts Valley, CA 95067-6959, (408) 430-4000.

