

Glass Lens



Figure 26 An example of the fish-eye lens effect with the Glass Lens.

These KPT filters go further than any previous spherical filters that take a selection and "bump" or "spherize" it. The Glass Lens Filters actually use a special-case ray tracer, complete with a 10 position user-defined, shadow casting 3-D light source and ambient light.

The result will look like an anti-aliased 3-D rendered ball.
There are three versions:

- Glass Lens Bright
- Glass Lens Normal
- Glass Lens Soft

Bright has a low ambient setting, medium aliasing and high intensity spotlight, casting a "hot" spot.

Normal reduces the intensity of the light to about 60%, resulting in less harsh lighting and contrast. Smooth spheres with small highlights and soft, rich shadows can be easily created.

Soft has very soft settings of a low intensity sun (<15%) and higher ambiance, creating less hot spot and softer shadows on the sphere.

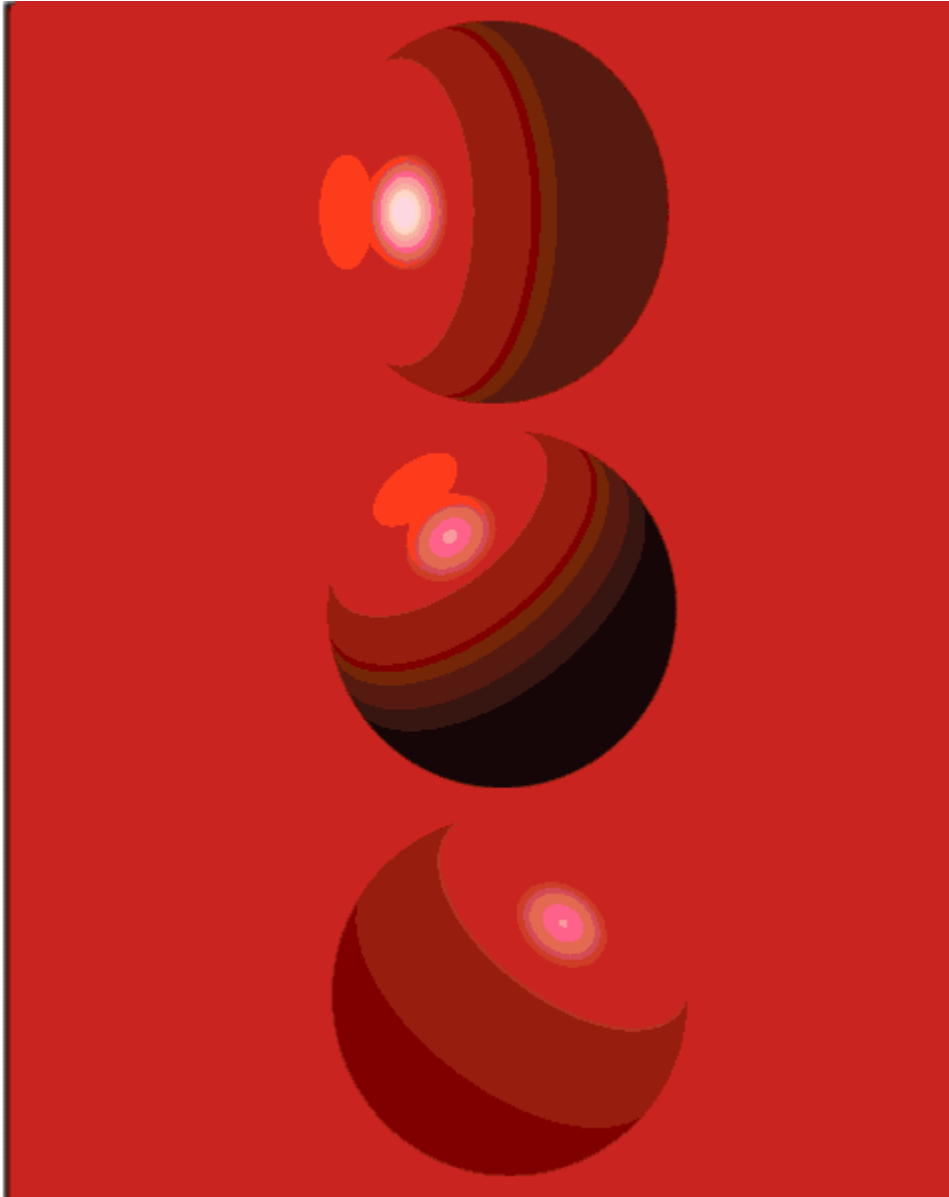


Figure 27 From top to bottom: Glass Lens Bright, Glass Lens Normal, Glass Lens Soft

Glass Lens Options

When using rectangular or free-form selections, you have the option of rendering the Glass Lens on the selection or on a black background. By default, the sphere is rendered onto the selection. Pressing the "Caps Lock" key will render the selection onto the sphere and fill the remaining portion of the selection with black.

Positioning the highlight

To vary the "sun" position on the sphere, there is a 10-position control via the numeric keypad.

Simply hold down the "7" key to have the light shine from the upper left and a shadow on the lower right and the "2" key to shine from bottom center. Using Scroll Lock key with the number pad will add eclipse effects. Using the Scroll Lock key and the "5" key simulates a total eclipse, including a halo around the outside of the sphere.

Glass Lens Walk Through

In Photoshop and Painter

1. Create a new document and fill the entire document with a solid color (this is to best show the capabilities of the Lenses).
2. Using the rectangular marquee tool, hold the shift key down and drag to select a square area.
3. Apply the filter Glass Lens Bright to create a sphere.
4. Without deselecting, apply Glass Lens Bright on the same selection while holding down "4" on the keypad.
5. Use the filter Glass Lens Soft on the same selection while holding down the "9" key. This will act like extremely complex multiple light-source renderings, diffuse spots, and ambient shadows.

Tips

- Try using Glass Lens Soft over a Gradient rainbow sweep with full intensity colors, creating small solid color spheres with very subtle hue modulation.
- You can use all the lenses in odd shaped feathered selections for non-"ball"-like effects.
- Try rendering glass lenses and then apply the Texture Explorer using the Procedural Blend Mode. This will simulate texture mapping which is very time consuming in 3-D rendering programs. If you want the exact colors used in the Texture Explorer blended onto the sphere, first create a glass lens on a separate document that is 50 percent black, procedurally blending the texture from the Texture Explorer and then cutting and pasting onto your final image.

- Use the Glass Lens Bright on scanned Photographs for "fish-eye lens" effects.

In Painter

To create a Glass Lens in the friskets find a feathered circular selection, then hold down the option key and drag the lens to another part of the image. This will make a copy of the selected area. By doing that repeatedly, you can add as many copies of the lens as you like, creating complex images in a matter of minutes!

Or drag the selection while holding down the <Ctrl-Alt> keys and do repeat applies using <Ctrl>-f.

In Photoshop

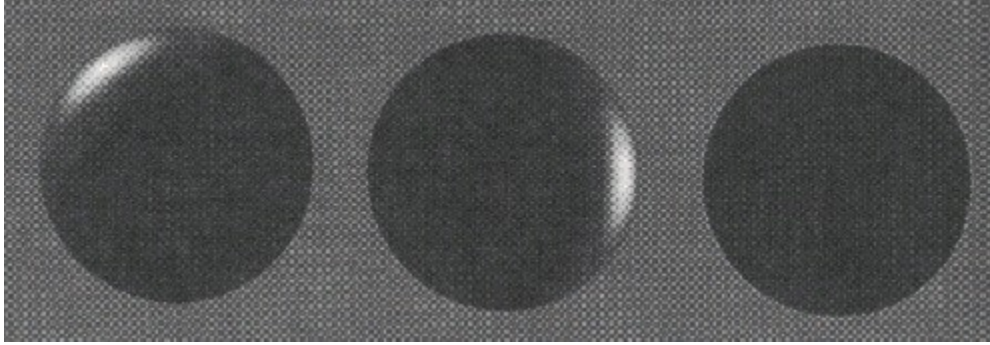
Use <Ctrl>-f to repeat the filter function and vary the light position with every new apply. To make multiple identical spheres, hold down the <Ctrl-Alt> keys and click-drag the selection away to a new position. <Ctrl>-f will reapply the filter to the currently placed selection. Interesting results can be obtained with large areas that are feathered at high settings. Dragging the feathered selection away leaves a glow in the background color. In Photoshop, repeat apply on dragged circular selections for 200 balls can be done in 10 minutes, which may well take a full day to compute otherwise.

In Painter

Try cutting odd shaped friskets and applying the Glass lenses for unusual partial spheres. This works especially well when the friskets are feathered.

In Photoshop

Create a glass lens in a circular selection, then hold down the option key and drag the lens to another part of the image. This will make a copy of the selected area. By doing that repeatedly, you can add as many copies of the lens as you like, creating complex images in a matter of minutes!



With the Scroll Lock on, from right to left: Eclipse view number 7, Eclipse view number 3, Full Eclipse, scroll lock, number 5.

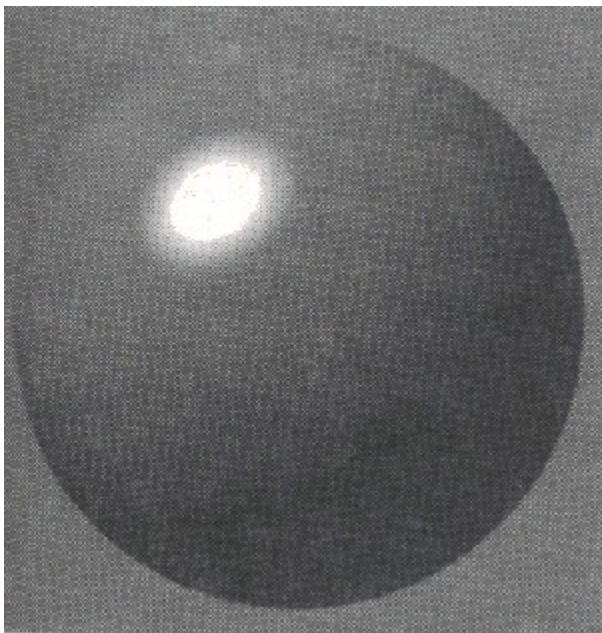


Figure 28 This sphere was created with one apply of the Glass Lens Bright.

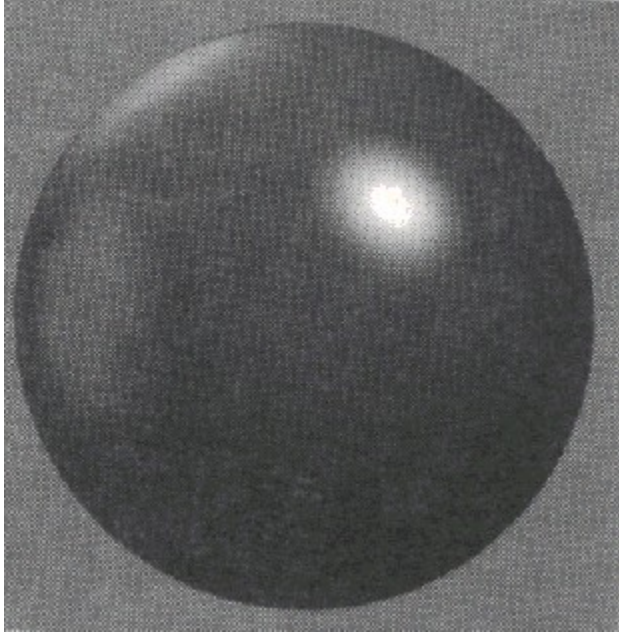


Figure 29 Glass Lens Bright was reapplied to the same sphere while the "4" key on the keypad was held down.

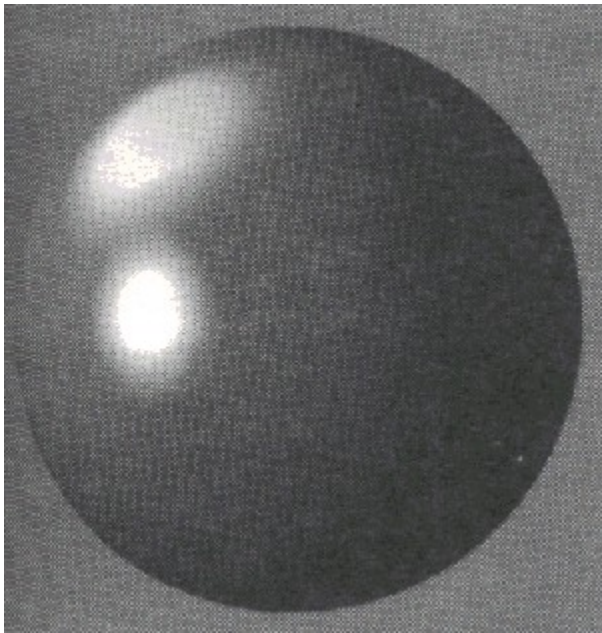


Figure 30 Glass Lens was then applied to the same selection while holding down the "9" key on the keypad.

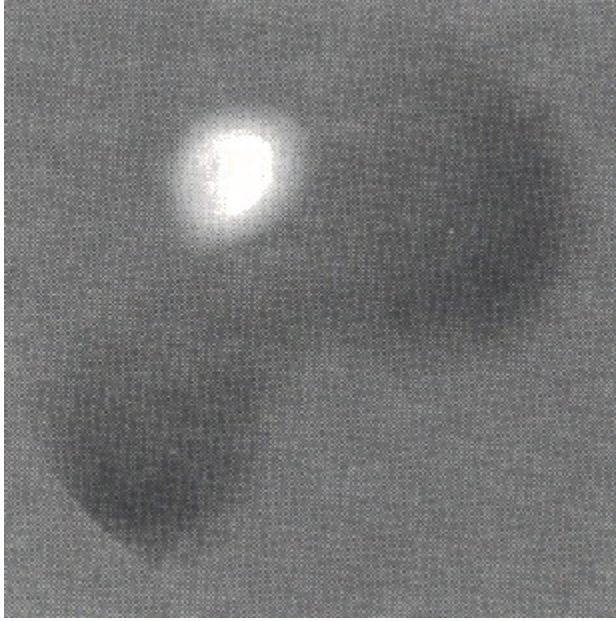


Figure 31 Using an odd shaped selection with feathering can create effects like this.

To go to any of the following topics, click on its title:

[Glass Lens Options](#)

[Glass Lens Walk Through](#)

Pixel Storm

This filter has been called the "Atomizer" by Russell Brown of Adobe. In principle, it is a super diffusion process that takes each pixel on the screen and disperses it by a factor of 200 pixels over the current selection area. It also includes a darkening apply transfer mode. Repeated application in small areas can suck in neighboring colors and intensity and dissolve them in a veritable pixel storm, hence the name.

It may be a tiny little filter and look like utter chaos if applied indiscriminately across an entire image, but in the hands of a skilled artist it becomes a subtle mean to an aesthetic end.

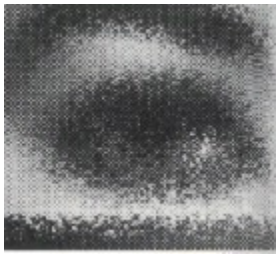


Figure 32. (Left) Original; (Right) Pixel Storm Applied

Key Controls and Apply Modes

On feathered selections, a different variation of PixelStorm can be achieved by holding down the Caps Lock key. By default, PixelStorm will decrease the amount of the effect on a feathered selection but will retain the color of the moved pixels. When the Caps Lock is applied, the effect will fade out over the feathered area, actually blurring and blending the pixels for a subtle effect. The difference is most noticeable on color documents.

The amount of diffusion can be controlled by using keys "0" through "9" on the keyboard or keypad. "1" is assigned as the lowest amount of diffusion and "0" the greatest.

See PixelStorm, PixelWind, PixelBreeze Walk Through for examples of how to use PixelStorm.

Pixel Wind

While PixelStorm diffuses pixels based on a 200 pixel size and uses a darken apply mode, PixelWind uses approximately 80 pixels but features a different apply mode that diffuses and enhances the image. So, two to three times PixelWind is not identical to one PixelStorm.

This filter is different from PixelStorm and PixelBreeze in that it uses a variation on the PixelStorm algorithm. For this reason, there is no variation when Caps Lock is applied. The amount of diffusion is controlled using the keyboard or keypad, same as PixelStorm and PixelBreeze.

See PixelStorm, PixelWind, PixelBreeze Walk Through for examples of how to use PixelWind.



Figure 33. Original with Pixel Wind Applied

Pixel Breeze

KPT Pixelbreeze is set at 30 pixels diffusion size. It features a lighten apply transfer mode, which will add light and fade the selection in repeated applies.

On feathered selections, different variations may be achieved by holding down the Caps Lock key. PixelBreeze will act similarly to PixelStorm with the Caps Lock key down. The amount of diffusion is controlled using the keyboard or keypad, as in PixelStorm and PixelWind.

Each of the PixelBreeze/Wind/Storm filters has a unique character in repeated application and will yield subtly different effects.

PixelStorm, PixelWind, PixelBreeze

Walk Through

To get a feel for what kind of effects these filters can create, here are some sample exercises to highlight the different effects.

1. Open the file named "KPTFACE.TGA" in the directory "KPT."
2. In Photoshop, with the rectangular marquee tool, select one-third of the area of the picture.
3. Apply PixelBreeze.
4. Select one-third of the remaining picture area and apply PixelWind.
5. Select the remaining area and apply PixelStorm. Once you have done this, you can see the differences between the filters. The different apply modes can be easily seen.

Photoshop Tips

Used with Photoshop's Paste Controls, opacity, blends and blurs, a whole array of new Photoshop effects are born.

- Open the file "KPTFACE.TGA" Choose Load>Selection from the Select menu. Try applying PixelWind or PixelStorm. The filters also work well with feathered selections (either double-click on the lasso tool to set a feather radius before selecting or select your path and choose Feather from the Select menu.)
- To create a PixelStorm framing effect, use the rectangular marquee tool to drag an even rectangular selection inside the image area. Choose Select > Inverse. Apply PixelStorm to the selection. Try this with feathering to make the edges of the images appear to disintegrate.

Painter Tips

- Use repeated applies of PixelStorm/ Wind/Breeze and the Fade command to build up complex grainy textures.

To go to any of the following topics, click on its title:

[Pixel Storm](#)

[Pixel Wind](#)

[Pixel Breeze](#)

[Walk Through](#)

Grime Layer



Figure 32. Starfield effect from repeated applies of KPT Grime Layer



Figure 33. After several KPT Grime Layer applies, KPT Smudge Lighten creates a needle like effect.

Grime Layer is a seemingly innocuous little thing, tiny and fast. It applies a special grayscale transparent noise over the selected area, subtly different from normal noise. It is handy as a quick way to add texture to an area, as a starting point for scratch textures and many other subtle uses.

A simple example of an implied effect: use Grime Layer on a plain white background and repeat 4-5 times. The dark regions will obscure more and more space and choke the white area into a perfect "star field" background! It will even create the anti-aliased "less than one pixel" stars that are necessary for realistic screen images. (Single pixel dots do not look like stars!) Try that!

Start with a new document and apply Grime Layer several times. Try using the Smudge filters repeatedly to create needle-like effects. Try inverting the document.

Grime Layer will create nice fogs when used in moderate amounts and blurred.

Keypad controls

The application of Grime Layer is controlled with the numbers on either the keyboard or keypad. Pressing the "1" key will lay a faint gray haze across your selection while the "0" key (here interpreted to equal "10") will create a mezzotint-like layer of

black grime.

Hue Protected Noise

The Hue Protected Noise filters act similarly to Photoshop's Noise filter but preserve the hues so that a slight random dither texture is created rather than random noise of different colors. This is very effective when color must be preserved, such as original scans or skin tones. (The Photoshop Noise function applied to an RGB image will create tri-colored speckles. Using that on a face will add red green and blue dots to the skin tones and "ruin" the look in the process.)

In combination with some of the other smudge, diffuse and scatter tools, this is a new small brush to paint with. These three filters work in CMYK, RGB, Lab, and Grayscale modes in Photoshop. Each of the Hue Protected Noise filters can be controlled using the number keys or the keypad to vary the effect about 20% more or less intense.



Figure 35. Notice the difference in pixellation between the top and the bottom.

The Maximum setting will create a serious amount of noise. The default is set at about 80% noise and may be controlled with the number keys "1" to "0" to cover a range of about 60-100% noise. The apply curve is weighted to preserve bright whites and blacks. This subtle feature makes a big difference as all previous noise generators would affect both highlights and background in black with high contrast opposite colors.

The Medium setting, about 50%, will generate noise with the same characteristics as the Maximum, but the resulting noise will be visible yet not harsh. The variable range that can be obtained using the number keys is 30-70%.

The Minimum setting is at about 20% and is barely visible in most cases. That is exactly the purpose: an extremely fine control for ever-so-little texturizing. The variable range that can be obtained using the number keys is 1-40%. If you take standard blend you can create tiny micro perturbations with the minimum Noise and then use Levels or Sharpen or Find Edges to accentuate these little anomalies.

In fact, it is such detail work that can bring natural looking images to computer generated art, taking away the all too smooth linearity and adding the chaotic fractal-like micro-change that Nature so favors. Use it in many different situations. Dont give up if you dont see instant gross effects; this is a detailers tool.

Hue Protected Noise Walk Through

In Photoshop and Painter

1. Open the file, "KPTFACES.TGA" in the directory KPT.
2. Using the rectangular marquee selection tool, select a part of the image and then apply Hue Protected Noise Maximum.
3. Selecting other areas, apply the Hue Protected Noise Medium and Minimum. This will give you a good comparison of each of the filters.
4. Revert the image and try using the filters repeatedly on an image.

More tips

- Less noise will create "photo grain" effects.
- In grayscale, repeated heavy applications of noise will create images that simulate "random dot" halftones.
- This filter works with RGB, CMYK, and Grayscale images.
- The Hue Protected Noise Minimum applied in small amounts to blends will help prevent banding in printed work.

Painter Tip:

Using Hue Protected Noises with the Fade command will allow

you to control noise amounts with a preview. Apply one of the noise filters at its maximum setting and then fade the effect to the desired amount.

Special Noises

Here we have a trio of plug-ins providing unusual noises. These actually subscribe to the gradients (There's that old Lego block interconnectivity!). They can serve as a nice starting point or intermediate stage to build up backgrounds and textures.

Large feathered selections of Special Noise, when copied and pasted, then altered using paste controls can yield very new and subtle images. Also try processing the noises with the Smudge and Edges filters.

Each filter uses a different gradient with an alpha channel. The Blue Noise uses the gradient "True Blue Frame Round," the Green Noise uses the gradient "Floating Doughnut," and the Red Noise uses "Red Plastic Overlay Frame." The method of deriving the Noise from the Gradient presets implies that each one has unique alpha channel opacity behavior. This is not simply one noise filter with three hue settings. Experiment!

Special Noises Walk Through

Besides creating cool backgrounds, the Special Noises can be used for other effects like simulating spray can or sandstone text.

1. Create a new RGB document.
2. Set the foreground color to white.
3. Select the text tool and create a word or two, in a bold font, at least 96 points high.
4. You should have white text outlined by "marching ants" (selection marque) on a white background.
5. Apply one of the Special Noise filters to the selection area.

This will fill the selection area with colored noise, creating a sandstone look. Feather the text outlines about five pixels. Feather the text and try the Special Noise filter again. The edges will be soft as though the letters were created by spray paint.

Diffuse More

This is a basic example of an extension of an already useful standard Photoshop tool. Photoshop's Diffuse shuffles the pixels in a small cell area of less than 25 pixels. Diffuse More simply gives you a bigger brush, set to about 4 times the cell size.

This is not simply saving you three repeats of the normal Diffuse filter. No matter how many times a Diffuse filter is applied, the pixels affected will always be within a 25 x 25 pixel cell size. Diffuse More operates on a much larger set of pixels at once, so the diffusion effect will take place on a broader basis. Look at the sample images here to see how Diffuse More differs from Photoshop's Diffuse filter. Better yet, try it out yourself!

Number key and keypad controls ranging from "1"(least amount) to "0"(representing 10, the most amount) will vary the intensity of the Diffuse More effect.

Find Edges and Invert

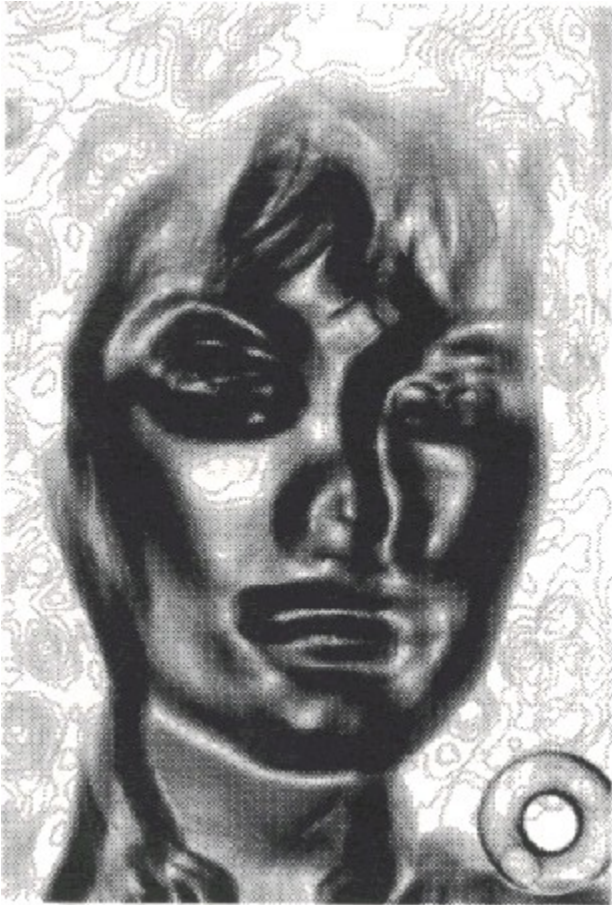


Figure 40. Find Edges and Invert creates a "negative" effect.

This filter originally began as a re-engineered version of the standard Photoshop 2.0.1 Find Edges algorithm (no, we did not have any code from Adobe to do that). An exact recreation of the original Find Edges,* this filter provides a remedy for an old problem: often you are after a positive image effect and after the Find Edges you routinely will run <Ctrl>-I to invert the image. Nice. Looks cool. Trouble is: if you don't like it and hit UNDO, only the invert step is undone. You're committed to the edge operation. Find Edges and Invert is a very simple cure combining Find Edges and Invert in a single one-step filter, undo-able on the fly.

Number key and keypad controls ("1"- "0", here the zero is interpreted to equal "10") will vary the intensity of the Find Edges effect from light to very intense.

[See Find Edges Walk Through for an example of how to use Find Edges and Invert.](#)

Find Edges Charcoal

This filter, with alternate settings in the algorithm, will also invert the image. On a full color RGB scan often the results are faint grayish lines on white wherever the edges pass a certain threshold.

While this can look strikingly like gray charcoal on white paper and earn its name, do not forget that these are algorithmic operations processing your existing image and the result will vary tremendously with different source material. It would be futile to name the filter across that broad spectrum and you should merely regard the name as a mnemonic reminder of the type.

You should acquire more knowledge of its real range and capabilities by applying it to a variety of images, feather settings, and other effects and tools used in your drawing program.

Number key and keypad controls ("1"- "0") will vary the intensity of the Find Edges effect from very light to intense.

Find Edges Soft

The third setting includes a softer algorithm than the original Photoshop Find Edges creating an effect that is less harsh and intense. This one will, for instance, not create full rectangles around single bright pixels, but rather smooth edge outlines. Using the number keys "1" to "0" will modulate the amount of Find Edges from very soft to very intense.

Find Edges Walk Through

The Find Edges filters can be useful in alpha channels by isolating and defining areas. The Find Edges filters can also create effects that can be used as colorful elements in your image, such as this "Electric Aura" effect.

In Photoshop:

1. Create a new RGB document. In this example, the image was 350 x 600 pixels.
2. Use the text tool and create some text, 60 points or larger.
3. Choose Select > Save Selection. This will automatically save a selection mask of your text in a new alpha channel.
4. Fill the text with a gradient from the Gradient Designer. The one used here was "Blue Cones." which can be found under the Metallic gradients submenu.
5. Deselect the active text choosing Deselect from the Edit menu. Apply the Gaussian Blur filter (Filter > Blur). Use a blur radius of about 25. This step looks to totally destroy your text image. It hasn't.
6. Apply Find Edges & Invert to the image while holding down the "0". The result will look similar to a topographical map or radiating energy waves.
7. Choose Select > Load Selection. You will see the outlines of your original text appear.
8. Choose Image > Invert. Your text will invert, creating an effect of radiating electric type. Other variations on this could be to fill your selection with a gradient from the Gradient Designer, or to feather the selection mask 5-10 pixels and apply Gradients on Paths for a neon glowing text effect. For other variations on the electric aura, try Find Edges Charcoal or Find Edges Soft. To create electric neon auras on a satin black background, use Find Edges Soft with a high keypad ("7"- "0") setting.

In Painter:

A similar "Electric Aura" effect may be obtained, but the image that results will appear to be grayscale.

1. Open the file "KPTFACE.TGA"
2. Under the Effects menu, choose Focus > Soften. Soften the image 10-12 pixels. This will blur the image extremely.

3. Apply "Find" Edges and Invert. This will create a depth gray stylized image.



The image shows the letters 'KPT' in a classic serif typeface, rendered in solid black against a plain white background.

Figure 41. The original text, to be used with KPT Find Edges and Invert.



Figure 42. Selection created with rectangle marquee tool, feathered 10 pixels.



Figure 43. Find Edges Charcoal applied to the selection.



Figure 44. Find Edges and Invert applied to the selection.



Figure 45. Find Edges Soft.

To go to any of the following topics, click on its title:

[Find Edges and Invert](#)

[Find Edges Charcoal](#)

[Find Edges Soft](#)

[Find Edges Walk Through](#)

Scatter Horizontal

Scatter Horizontal is an unusual special case filter: this one diffuses only on the horizontal axis, and it includes a lighten apply mode. This filter really comes into its own with several repeated applies, stretching a selection and swallowing certain features while bringing out others. A unique streaking trailing effect can result. It's an odd shaped brush in your palette, but it does have its moments.

Here's a suggestion to expand its use: you can rotate the window or selection 90 degrees to get a vertical version (multiple crossed repeats of both can do neat cloth-like stuff) or invert the image to have a "darken" effect. Many peculiar combinations with the other filters are yet to be tried by someone. Be the first one to discover them!

The degree of effect obtained with Scatter Horizontal can be controlled by holding down one of the number/keypad keys. "1" will render a faint effect, while "0" (here it equals "10") will render an extreme effect.

Walk Through

In Photoshop and Painter:

1. Open an RGB file. Apply Special Green Noise. Then do several applies of Scatter Horizontal until it seems as though most of the green has disappeared. Invert the image and continue.
2. Rotate the image by 90<Insert special character>. Select one of the Red, Green or Blue Channels. Repeat apply Scatter Horizontal to that channel only. Look at the result in full RGB view.



Figure 46 (Bottom) Scatter Horizontal repeatedly applied "noisy" background, then inverted and applied a few more times. A center selection was erased to white, and more Scatter Horizontal was applied to the entire file. (Top) Scatter Horizontal applied to one channel of a rotated file (this is the

blue channel).

Page Curl

Page Curl simulates the effect of a page being peeled back, with a highlight running along the center of the curl and a shadow being thrown beneath the image. (Your image must be light enough to see the shadow.) The color beneath the curl is determined by the background color selection by the application.

The curl begins in one corner of your selection and follows a perfect diagonal to the opposite corner. You may also notice a slight transparency to the curl if there is any pattern or texture in the selected portion of the image.

The origination point of the curl is controlled by using the numeric keypad. The placement of the numbers on the keypad is analogous to the corner that will be affected. The vertical or horizontal orientation of the curl is controlled by the Caps Lock key.

To curl this corner:

Upper left
Upper right
Lower left
Lower right

Press this key:

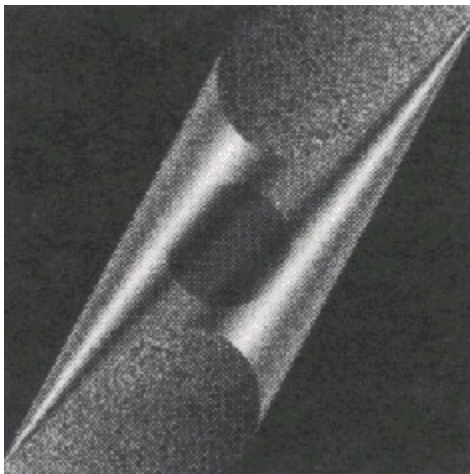
7
9
1
3

Curl Orientation

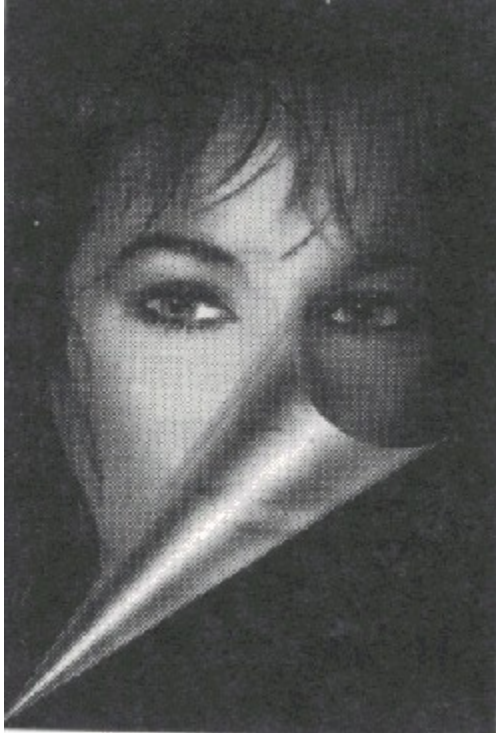
Vertical
Horizontal

Caps Lock key is:

up (off)
down (on)



A simple black circle with grime layer applied, and Page Curl holding "3" and then "7" on the Keypad.



Notice the translucent effects. The curl was done with the "3" on the number pad.

Page Curl Walk-Through

1. Create a new RGB or Grayscale document, 300 pixels by 300 pixels, 72 DPI. (Or load KPTFACE.TGA)
2. Select the entire image and fill with any color.
3. Apply the Page Curl filter. Notice how the page curl forms a diagonal line across the entire image.

Welcome to Kai's Power Tools Explorer's Guide for Windows!

Kai's Power Tools for Windows consists of 33 different filters for plug-in compatible graphics programs such as Adobe Photoshop®.

The Kai's Power Tools for Windows plug-in filters fall into two different classes: User Interface Filters (U-I) and One Step Filters. The User Interface (U-I) filters have a dialogue box that requires user input (read fun) before applying the output to a selected object. The KAI filters which use U-I's are the Gradient Designer, Gradients on a Path, Texture Explorer and the Fractal Explorers. The other KAI filters are one-step filters; select an object, choose the appropriate KAI filter, and enjoy the results.

Configuration

Windows

KAI for Windows requires an application that uses a compatible plug-in architecture like Photoshop®.

We recommend that Windows be run in Enhanced Mode. To ensure you are running in enhanced mode, choose [About Program Manager](#) from the Help menu. If you are not running in Enhanced Mode, please refer to your MICROSOFT WINDOWS USERS GUIDE.

You should also be familiar with basic Windows functions, such as working with documents, windows, menus, dialogs, and the mouse. If you are not familiar with these operations, please refer to your MICROSOFT WINDOWS USERS GUIDE.

Storage

KAI for Windows requires approximately of 8 MB (megabytes) of hard disk storage.

System Memory

If you have enough memory to run either Photoshop or Painter, you probably have enough memory to run KAI for Windows. In any event, 4 MB of RAM is the minimum and 8 MB of RAM or more is recommended.

VGA Support

KAI for Windows supports all video modes from Super VGA (640x480x256 colors) to 24 bit color (16.7 million colors) at any resolution. Some video cards attempt to simulate 24 bit color through their software drivers. These video drivers will typically allow the user 32,000 or 65,000 colors.

It looks much better on the screen than 256 colors. But, because all of software solutions used by various video card manufacturers are different, KAI for Windows cannot guarantee success with these drivers under all circumstances. Use 24 bit color whenever possible, even if it means moving to a smaller screen resolution, such as from 1024x768 to 800x600.

In the long run, the results are more impressive. Consult your graphics card's documentation for optimal setup parameters.

Mouse

KAI for Windows requires a mouse or compatible pointing

device.

Before you start

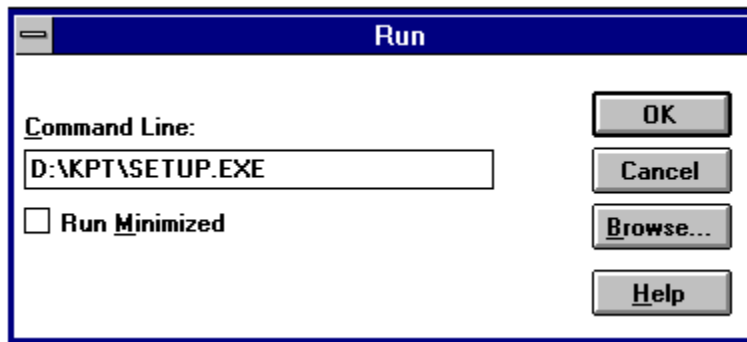
Your set of Kai's Power Tools contains the following items:

- Read Me- This file contains important information that may not be in your User Guide.
- Installer- This will install the KAI filters onto your hard drive.
- KAI Sample Tips and Images- Four of Kai's innovative tips for use with Adobe Photoshop along with example images.

Your package of KAI also includes a registration card, and this user guide. Please take a minute right now to fill in your registration card. It guarantees your notification of future upgrades and new products. You must be a registered user to receive telephone technical support.

Installing Kai's Power Tools for Windows

1. Insert Disk #1 "Installing KAI for Windows" in your "source" or floppy drive. (Usually A:\.)
2. Choose the "Run" command from the Program Manager File Menu. The "Run" Dialog box appears.



3. Type "A:Setup" on the Command Line text box, and push the "Enter" key or click "OK." (Use your source drive if it is not the A: drive.)
4. KAI for Windows Installer will suggest a default directory of C:\KAI. Press "Enter" or click "OK." (You may change this directory location if you wish.)
5. Another dialog box appears. Your options for this dialog box are:
 - a. Plug-ins
 - b. Install Presets (Presets are settings used by the Gradient Designer, Gradients on Paths, Julia Set and Mandelbrot Set Explorers so you have great color combinations from the start.)
 - c. Kai's Power Tips
 - d. Sample KAI Graphics

Note: If this is a new installation, please complete a full installation. The KAI for Windows Installer will create a default directory called "KAI" which will contain the "Sample Files" and the "Readme" files. The actual "Plug-ins" and "Preset" information will be installed in a "Plug-in" directory with the application that uses KAI for Windows. After making your selections, press "Enter" or click on "OK." The KAI Installer will begin to install KAI for Windows.

6. Insert the other installation disk(s) as prompted by the computer.

Technical Support

If you need technical assistance, registered users may call KAI Technical Support, 9 a.m. to 5 p.m. PST, Monday through Friday at (310) 392-8441. When you call for technical support, please let us know what products you are using with KAI, i.e. Photoshop under Windows 3.1, and have your video card information handy.

The information we are looking for is what type of video card you have and what mode you card is running in. The type of video card is either a manufacture's name, i.e. ATI Ultra Graphics Pro, or a chip type, i.e. S3. The mode describes the number of colors you can see on the screen. 24 bit color, for instance, refers to 16.7 million colors, or what is considered the light spectrum for the human eye. 16 bit color, which still looks pretty good on the screen, is roughly 32 thousand colors, while 8 bit color is 256 colors.

The very best way to reach us and receive technical support, updates, great hints and other information is either through America Online or CompuServe. To reach our forum on American Online, keyword GO KAISUPPORT. To reach us on CompuServe, GO KAISUPPORT. You may also send e-mail to KAISupport for technical assistance and general questions. If you wish to contact us through the Internet, send e-mail to kaisupport@aol.com.

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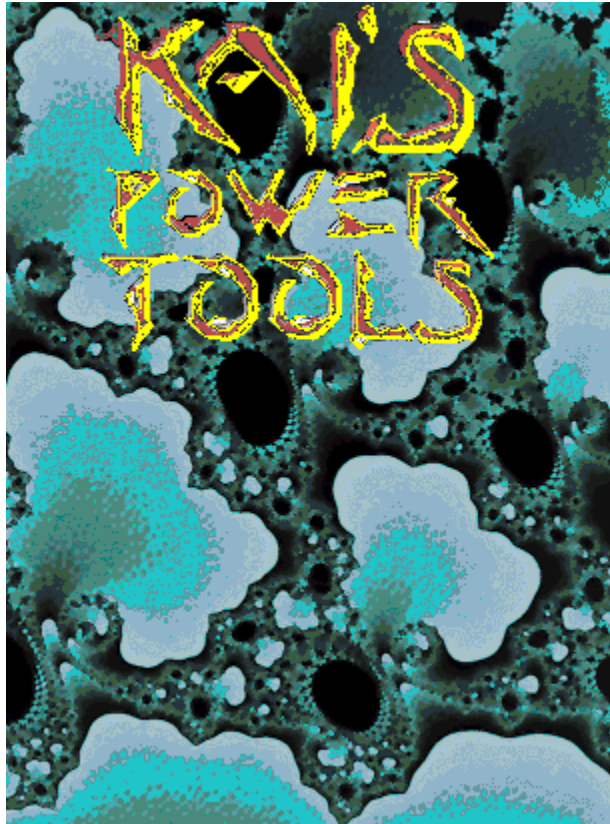
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FROM THE
PRESIDENT



FOREWORD
BY KAI
KRAUSE

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Your very best bet is to get onto America Online and get direct support from us. We have a company support section in Industry Connection in the Computing and Software department. Latest product news, discussion board, software and the full library of Kai's Power Tips are available there. E-mail should be sent to "KPTSupport."

If you are on CompuServe, GENie or other services, find out how to send mail via internet gateways.

Our Internet address is "kptsupport@aol.com"

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Editorial, content, and production assistance:

David Coy, Lawrence Coopet, Jon Swift, Rich Ripley, Gordon Cox, Tommy Ikuta, JoAnn Minsker, Lora Goodpasture, John Wilczak, and Sara Elder.

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KPT is the brainchild of Kai Krause. KPT for Windows was programmed from the original Mac code by Lawrence Coopet and Raymond Wang.

The "Kai Power Tools" lettering and KAI logo were designed by Roger Dean, digitally processed and colorized by Kai.

How to use the "Explorer's Guide"

The "User's Manual" or "Explorers Guide" is not designed to provide a detailed definition of how Kai's Power Tools work. In many cases the explanation is too complex, and in all cases, the tools are too much fun! Instead, all the Filters are explained, one by one, from the User-Interface Filters to the One-Step Filters.

We recommend starting with the User-Interface Filters, particularly the Style Setup and Gradient Designer, it's up to you. Just find a KPT Filter that looks interesting and turn to that chapter for an description (and some cool hints). You'll have some real fun on your own...With Kai's Power Tools the adventure is just beginning!

Filter	Select	Window	Help
Gradients on Paths	Ctrl+F		
Blur			
KPT Extensions			Gradient Designer...
KPT Filters			Gradients on Paths...
Noise			Julia Set Explorer ...
Sharpen			Julia Set II Explorer ...
Stylize			Julia Set III Explorer ...
Other			Mandelbrot Set Explorer ...
			Style Setup...
			Texture Explorer...

Filter	Select	Window	3-D Stereo Noise
Glass Lens Bright	Ctrl+F		Diffuse More
Blur			Find Edges & Invert
KPT Extensions			Find Edges Charcoal
KPT Filters			Find Edges Soft
Noise			Glass Lens Bright
Sharpen			Glass Lens Normal
Stylize			Glass Lens Soft
Other			Grime Layer
			Hue Protected Noise Max
			Hue Protected Noise Med
			Hue Protected Noise Min
			Page Curl
			PixelBreeze
			PixelStorm
			PixelWind
			Scatter Horizontal
			Sharpen Intensity
			Smudge Left - Darken
			Smudge Left - Lighten
			Smudge Right - Darken
			Smudge Right - Lighten
			Special Blue Noise
			Special Green Noise
			Special Red Noise

As you are reading this manual, we refer to Menu Items. These Menu Items are Pulldown Items and Hierachial Items. The actual syntax will be [Filter>KPT Extensions>\(U-I filter of your choice\)](#) for the U-I filters and [Filter>KPT>\(one-step of your choice\)](#) for the one step filters. The Pulldown Item is the first one mentioned. It belongs to the Application's Menu Bar. The second item listed will be a pulldown selection underneath the Menu Item. The third selection will be more menu choices. All of Kai's Power Tools are located in the appropriate "Plug-ins" sections of your favorite plug-in compatible program.

Style Setup

The Style Setup is the first of the user-interface (U-I) filters. This filter, or plug-in allows the user to change the default parameters of how they will interface with the other U-I dialog filters. It acts as a "Central Preferences" or "HUB" file for the U-I filters. When a U-I filter is selected, the user preferences file is scanned and user preferences displayed.

The selections are very easy. The first user preference is what the interface looks like. Your choices are a 24-bit style with turquoise green/orange, an 8-bit restrained "text objects in gray," or 256 color mode.

The second selection is "Pre-lighting." "Pre-lighting" is a feature where the buttons and balls can "sleep" and "awaken" only when the cursor comes close to them. These are the only choices to be made at Style Setup. Choose the U-I style of your choice and click on the "OK" button.



Figure 1.

The general controls for the U-I filters are shown in Figure 1. The "?" or help button and the "NO" and "OK" buttons are the only buttons that work in Style Setup.

Working with the KPT User Interface

The KPT User-Interface is the Dialog Box where the U-I Filter requests user information before carrying out its designed function. The KPT U-I filters are the Gradient Designer, Gradients on Paths, Julia Set Explorers, Mandelbrot Set Explorer, and the Texture Explorer. These U-I Filters have some common elements. These elements are the Temporary Re-size Option, the Moveable Interface and keyboard controls or Keyboard Equivalents.

Temporary Re-size Option



Clicking on the KAI circular logo changes the U-I to a small circle or icon displaying a subsample of the U-I preview window. If you need to make the interface smaller to refer to the original image, you can toggle the interface back and forth between full size and icon size by clicking on the KAI logo. With the U-I reduced, you can move it around your screen by clicking and holding while dragging to a new location. If you are a Windows power-user and frequently toggle between applications using <Alt> TAB, you will notice that with a U-I filter fully displayed, you cannot toggle between applications. When the U-I is reduced, you may toggle to other applications. When you return, the U-I redisplay at full size. If you reduce the U-I filter and cannot find it in your window (probably hiding behind something) just hit the <Enter> key.

Movable Interface

The U-I dialog boxes can be dragged around your screen by clicking and dragging anywhere on the U-I with the right mouse, OR with the left mouse button plus the Control Key. You may also drag by clicking on the Title Bar except for the Gradient Designer and Fractal Explorers. When you move the interface around on your screen, the image behind the dialog box will redraw itself.

Keyboard Equivalents

All KPT interfaces have keyboard equivalents for the buttons. They are:

OK	return, enter
NO	Esc
Add (preset)	A
Delete (preset)	D
Help (?)	? (shift-)

To go to any of the following topics, click on its title:

[Working with KPT
User Interface](#)

[Temporary Resize Option](#)

[Movable Interface](#)

Gradient Designer

Gradient Designer is the foundation for several U-I filters in the KPT filter set. It enables you to design complex color gradients and to save them as **presets** to be used by other KPT U-I filters. This is where the "Lego<Insert special character>" building block philosophy behind Kais Power Tools becomes apparent. Not only are Gradient Designer Presets part of a tool for the straight-forward creation and application of complex blends, they are a resource for other KPT filters too.

Gradient Designer Preferences

Clicking on the large top button that says "KPT Gradient Designer" brings up a dialog box asking the user to choose the Gradient Designer viewing preferences. These preferences determine which gradient the user wishes to view when the filter launches. They are:

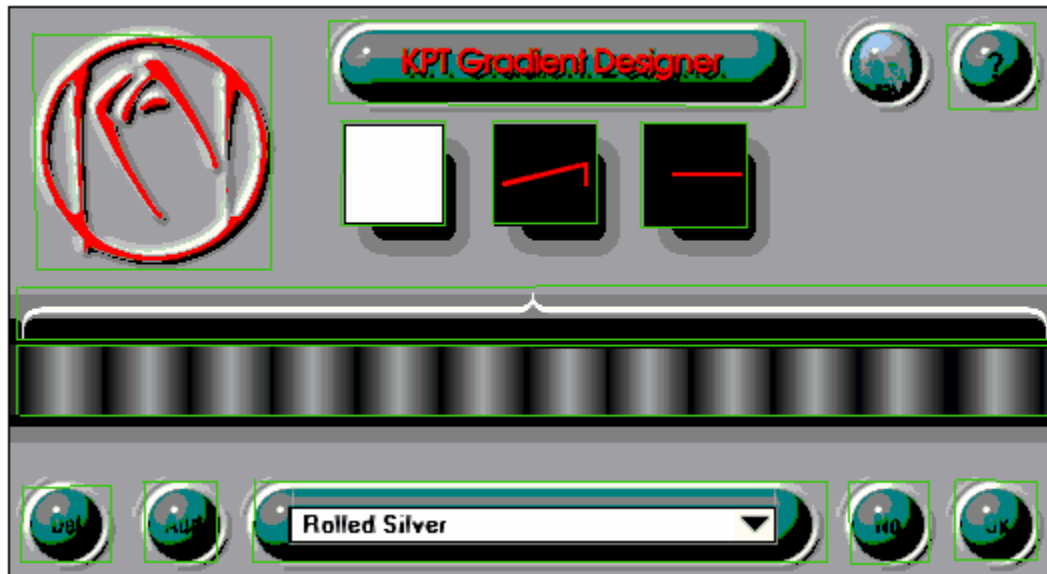
- Load normal gradient from image
- Load smooth gradient from image
- Return to previous state

The first two load a gradient based on your image or selection area. It loads color from a horizontal strip across the middle of the selection. "Load normal gradient from image" will load the color selection uninterpolated or anti-aliased. The second, "Load smooth gradient from image" includes the same colors as the normal gradient, interpolated to a smooth blend.

The third, "Return to previous state," remembers the last gradient you applied and will display that gradient the next time the filter launches. If you choose "*Return to previous state*" and you forget to save your selection as a preset, the gradient will be waiting for you the next time you open Gradient Designer. You may override any of these preferences and display a white Gradient Bar by holding down the Control <Ctrl> key as Gradient Designer is selected from the KPT Extensions menu, or you may clear the Gradient Bar to black by pressing <Ctrl-Z) just after starting the Gradient Designer.



Click on the boxes outlined in green for more details.



The Movable Bracket

The Movable Bracket (Figure 1, 6) defines the area within which the blending occurs. The default setting spans the entire width of the blend. You can:

- Drag the bracket ends to resize it.
- Drag the top center to move entire bracket.
- Double-click the center to reset to full size. (default)

If the Movable Bracket spans the middle third of the Gradient Bar, the blend affects only that area. It will not change the colors outside the bracket. Adding a new color at the left edge creates a smooth blend from the new color toward the right, but a hard blend to the color immediately to the left of that bracket edge.

Using the Movable Bracket enables you to make many short little blends and create composite long multi-colored complicated blends, as you will find in the presets.



Click on the boxes outlined in green for more details.

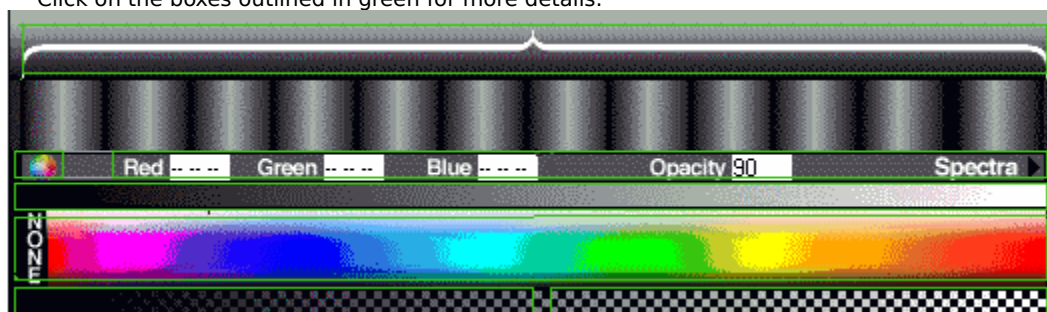


Figure 1.

The Gradient Bar

The Gradient Bar is directly underneath the movable bracket. It displays the gradient colors you have chosen and blend or interpolation of those colors. When you click on the Gradient Bar, the Color Spectrum Bar will appear.

The Color Spectrum Bar

The Color Spectrum Bar displays the main color selection area.

The Color Spectrum Bar has over 400 hues of the RGB/HSL (Red, Green Blue/Hue, Saturation, Light) color spectrum in the center at full saturation. Moving to the top of the Color Spectrum Bar, each full shade modulates toward white; moving to the bottom of the Color Spectrum Bar, each hue modulates toward black. This allows immediate access to about 40 shades of varying intensity within the one mouse click-hold-drag motion.

Also included are 7 additional spectra, including like full modulation (RGB range), Metallic Dark Glow, Light Pastels, and a spectrum optimized for CMYK reproduction.

The Color Picker

When you click and hold on the Gradient Bar underneath the Movable Bracket, you will instantly access the Color Picker. The Eye Dropper represents the Color Picker and samples any color displayed in the Color Spectrum Bar, or on the screen.

When you release the left mouse button, the color interpolates smoothly to the range of the blend area. There are over 500 shades of color. The gradient is applied and scaled to any size and resolution, so this is not 500 pixels "resolution", rather, there are over 500 possible separate colors in the gradient.

With this click-drag-release motion, it takes about a half-second to select a 24-bit color. Above the color spectrum bar is a grayscale ramp for instant selection.

To cancel a selection, release the mouse in the area immediately underneath the Gradient Bar (the numerical readout area) or hit the Escape Key.

Transparency

The Gradient Designer treats NONE (or completely transparent) as a color. That is, you may blend complete transparency as part of your gradient. The image underneath will "show through" at that spot. In the Gradient Designer, when you choose NONE, the underlying image is represented by a black and white checkerboard pattern, giving a quick and accurate overview of which parts of the underlying image will show through.

When applying the filter by clicking the "OK" button, there is, of course, no checkerboard pattern in the application area. The image underneath the area of the gradient represented by the checkerboard will be visible. Directly underneath the Color Spectrum Bar is the Opacity Selection Bar.

Opacity Selection Bar

The Opacity Selection Bar is a checkered bar that fades from totally opaque (black) to clear (transparent). Selecting from the right side, where it is clear, blends more transparency. A selection from the opaque (black) section on the left will blend in slight transparency.

The Opacity Selection Bar operates independently over the area. It differs from "none" which treats transparency as if it were a color. The Opacity Selection Bar controls the saturation of the color you are blending. See the Figures 2 and 3 for a comparison of the difference.

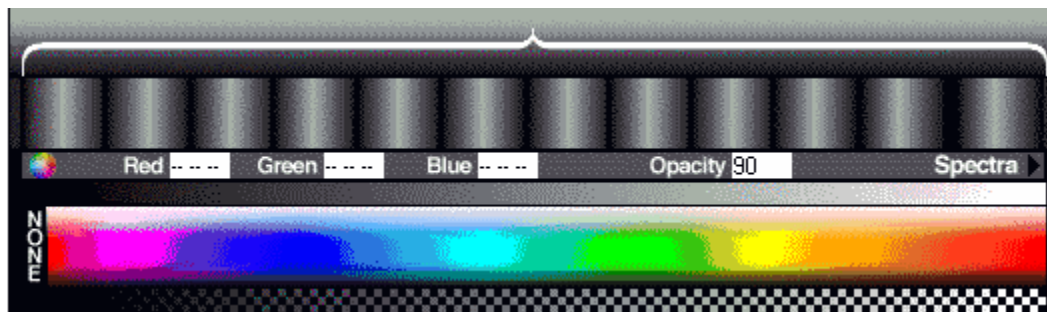


Figure 2.

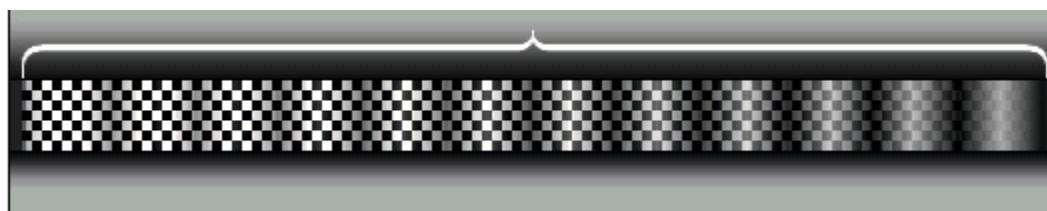


Figure 3. Notice how the blend moves from transparent(left) to opaque(right).

Use the "Silver Coils" ("Basic Gradients" Category) preset. Using the Opacity Selection Bar to blend opacity from the left side. Notice the checkerboard has appeared in the Gradient Bar.

The amount of checkerboard visible allows you to judge how much of the underlying selection will show through. Where NONE allows everything to show through, the Opacity Selection Bar allows control how much will show through (opacity), and the color you use to "veil" the underlying object. The coloring remains in the gradient; only opacity values have changed. The real-time preview allows viewing of the gradient with its relative transparency/opacity values and how it will apply to the selection area.

In **Figure 3** the preset is altered by blending in "NONE" from the left hand side. Note that blend moves from transparent on the left to the fully opaque on the right. It is a simple blend between two values.

Numerical Readout

When you click on the Gradient Bar to choose a color, you will notice a Numerical Readout directly underneath, between the Gradient Bar and the Color Spectrum. The numerical readout represents Red, Green, Blue and Opacity values from the sample color picker location.

As you drag the cursor across the screen notice the values change constantly. The numerical scale runs from 0-255. 255 represents full saturation of any or all of the red, green or blue color values. For Opacity, 0 represents full transparency, whereas 255 represents full opacity. These numbers are for display only, values may not be entered here.

At the left of the numerical readout bar is a circle giving access to the Windows System Color palette. Colors selected through the Windows System Color Palette are applied as any color selection with the Color Picker.

Gradient Designer Apply Modes

There are several options that change the application of the current gradient to a selection or image. The three boxes in the top center will show at a glance what the settings are at any one time.

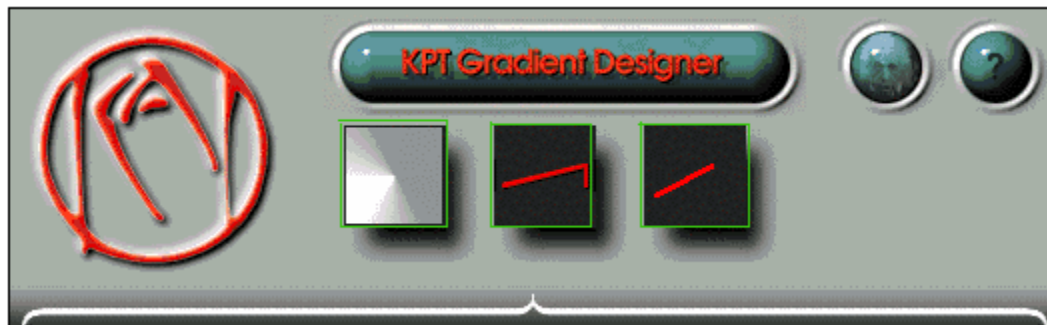
The left and center are pop-up menus. Click and hold to see all available alternatives, drag to your choice and select. The Direction Control, on the right, adjusts and previews in real time as you click-hold-drag-release.

The **Preview/Mode Control** (Figure 4), the left most box, shows the current style by rendering a sample gradient into the box. It is a pop-up menu with four choices:

- Linear Directional
- Circular Sunburst
- Radial Sweep
- Square Burst



Click on the boxes outlined in green for more details.



Linear and Sunburst (called "radial" in Photoshop) options have always been part of the Photoshop blend tool dialog. New application styles in the Gradient Designer include Radial Sweep style, which is like a clock hand or a radar screen sweep drawing 360 degrees, and Square Burst, which is a rectangular and can be used with transparency to create uniform framing effects.

The **Loop Control**, the center box, displays the repeat mode or loop. There are four options here:

- Starting the gradient at the left-most color and executing the gradient style to the right- most color once.
- Starting the gradient at the right-most color and executing the gradient style to the left- most color once.
- Starting from the left-most color to the right-most color and back.
- Starting from the right-most color to the left-most color and back.

The **Mode Control** causes different gradient effects. For instance, the Sunburst ("radial") blend can create ball (with sawtooth) or doughnut (with triangular) shapes. The Radial Sweep style creates symmetrical color blends and "dimple" like center shapes. (Try twirling such a shape.)

The Direction Control, the right box, controls directional styles. Click inside and a vector will snap to that angle. It will apply to the linear and radial sweep styles. Holding the shift key while selecting direction constrains the angle to 45° increments.

About Presets

Click on the boxes outlined in green for more details.

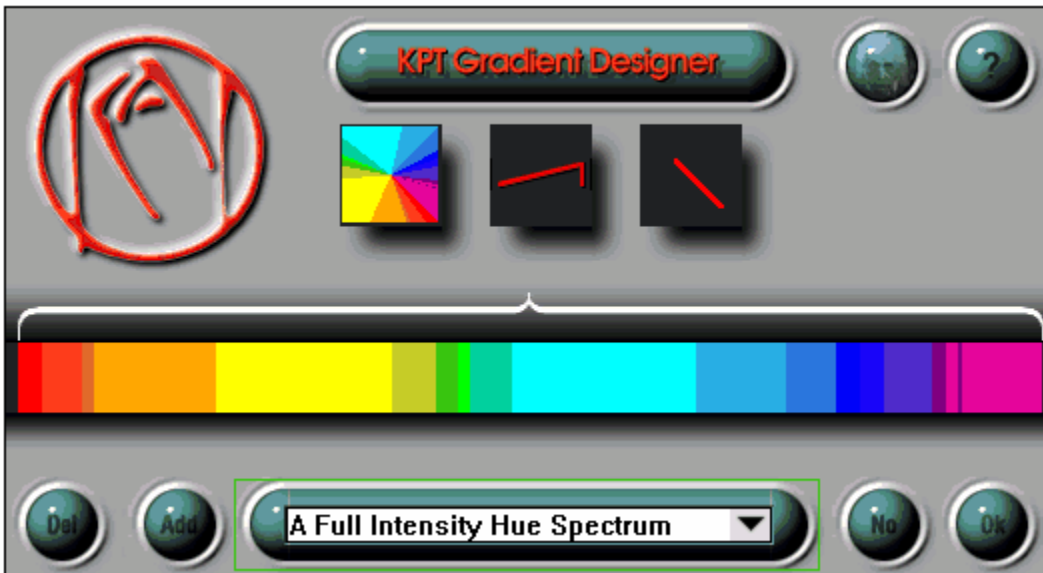


Figure 5.

The Gradient Designer comes with over 150 presets that you can use directly or gain ideas from for custom color blends. Presets are saved in hierarchical families. To cycle through the presets in a category, you can use the arrow keys.

To navigate to:

Next preset
Previous preset
Next category

Previous category

Press this key:

down arrow
up arrow
right arrow
(also page down)
left arrow
(also page up)

Presets can be added and deleted very easily. Click on

the ADD button to add the current blend as a preset. A dialog box will ask you to name your new preset.

When you add a preset, you can make your own categories as well, such as saving all your own concoctions in Bobs Weird Blends. When you add a category, you will go through a two-step naming process. First, you name the category, and second you name the preset. The top of the dialog box will direct you depending on whether you are naming a category or naming your new preset.

Presets are saved in their own central files called **GRADIENT.PST** and **PRESET.KPT**. **PRESET.KPT** and **GRADIENT.PST** are accessed by all other KPT filters using gradients. Whenever you make a new preset you are changing those files. Be sure to back up **PRESET.KPT** and **GRADIENT.PST** files as you would any other file or document you create.

Click the DEL button to delete the current preset.

Gradient Designer WalkThrough

This walkthrough will provide you with some rough "jumping-off" places for your exploration. Approach this with an open mind, and click "ADD" and save anything you like along the way!

There is really only one gradient rule:

If you see something you like, save it as a preset. Other U-I's will use those presets.

1. Click and hold on the far left side of the Gradient Bar, drag to the color you like and release, e.g. "red." Now repeat on the far right side of the Gradient Bar, e.g. "yellow."
2. Add a third color: After you set the far left and right edges the way you like them, you can now add another color anywhere in the middle of the Gradient Bar by clickdrag-to-colorrelease. It will interpolate smoothly to the side colors, e.g. "red" to "white" to "yellow."
3. Adjust the Movable Bracket. Make the bracket's size smaller so that it takes up a portion of the entire space. Sample and blend another color.



Click on the boxes outlined in green for more details.



Figure 6.

How to soften "hard" color edges

Make the smallest possible bracket (about 512 pixels) and position it over a hard edge. Then click and release at either edge of the bracket. It will pick up the color of the blend at that point and smooth it to the bracket edges.

How to add transparency

To make a blend from "Red" to "Nothing," choose red at the left edge and "None" at the right. It will smoothly fade out the red and become increasingly transparent, all the way to no color at the far right.

Working in RGB and CMYK

The Gradient Designer will output to CMYK as well as RGB. There are two ways to produce CMYK legal colors. First, design in RGB and change to CMYK before you save the file. KPT does not warn you if your colors are not CMYK legal as you choose them, however.

To ensure consistent CMYK legal values, start your new document as an RGB and choose the "CMYK Modulated" from the "Sprectra" menu on the color bar in Gradient Designer.

If you work solely in CMYK, it's probably best to code name your presets "CMYK" so you know which ones they are, even though you are still working in RGB, however. Working from the CMYK Legal Gamut means that you will not experience any change in color from KPT generated artwork when you convert from RGB to CMYK mode.

Tips

Painter's "Fade" Command will enable you to "undo" the last change you made to any degree of transparency you select. This allows for subtlety "after the fact."

To create a Fade, select Edit>Fade. The "*Fade Last Operation*" dialog box appears. Move the slider until the preview reflects the amount youd like to fade (use the hand icon to scroll around in the preview window). Click *OK*.

Designing Complex Gradients

The primary purposes of the Gradient Designer is the design and application of not one or two colors, but multiple colors, interpolated over a wide area or small area, including transparency, opacity. In some respects, the Gradient Designer is almost a sophisticated paintbrush, applying the colors, opacities and transparencies to the underlying image.

The Complex Gradient

Start with a new document, 540 pixels by 360 pixels, RGB. Select the Gradient Designer. Press Ctrl Z. This will turn the Gradient Bar (where the color selection are displayed) black.

Grab one end of the Movable Bracket and make the bracket as small as possible. (Figure A.)

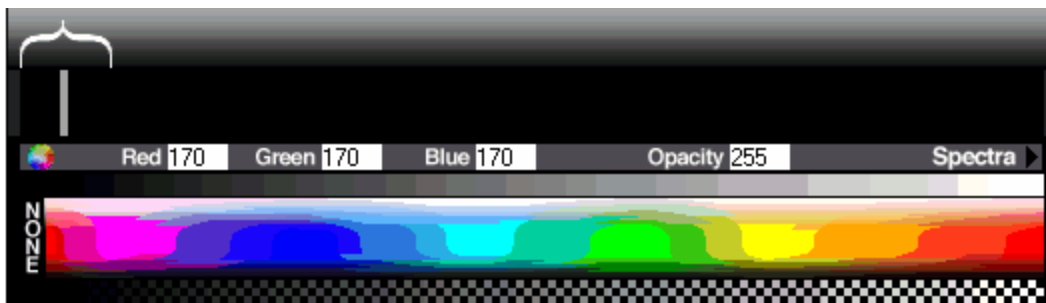


Figure A. The highlight directly underneath the bracket represents the selection area.

Center the eyedropper directly under the bracket, click and move to a gray portion of the U-I, and release. (**Figure B.** We are picking up a 170 gray.)

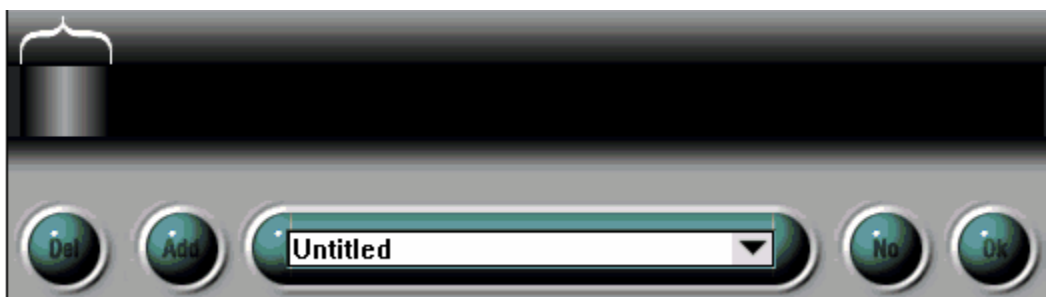


Figure B. After releasing in the body of the U-I the color interpolates over the selection area.

Move the bracket to the left side of the bracket is directly to the right and slightly past the gray band. (**Figure C.**)

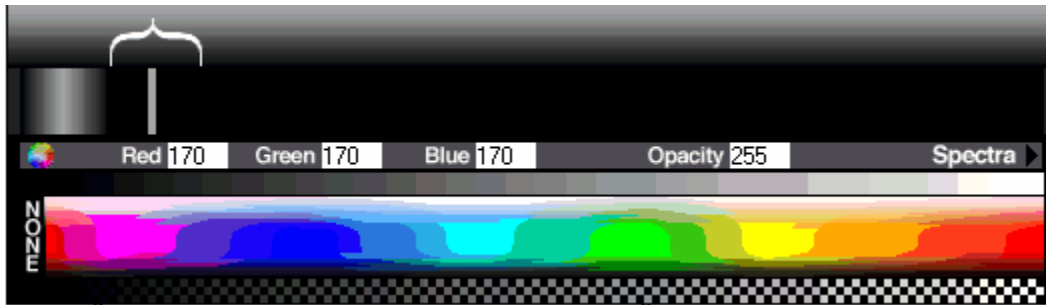


Figure C. Ready to select gray again.

Pick the same gray color. Continue until the entire Gradient Bar is full. Figure D shows the process partially completed. After completing the gradient, save it as Rolled Silver under Complex Gradients.

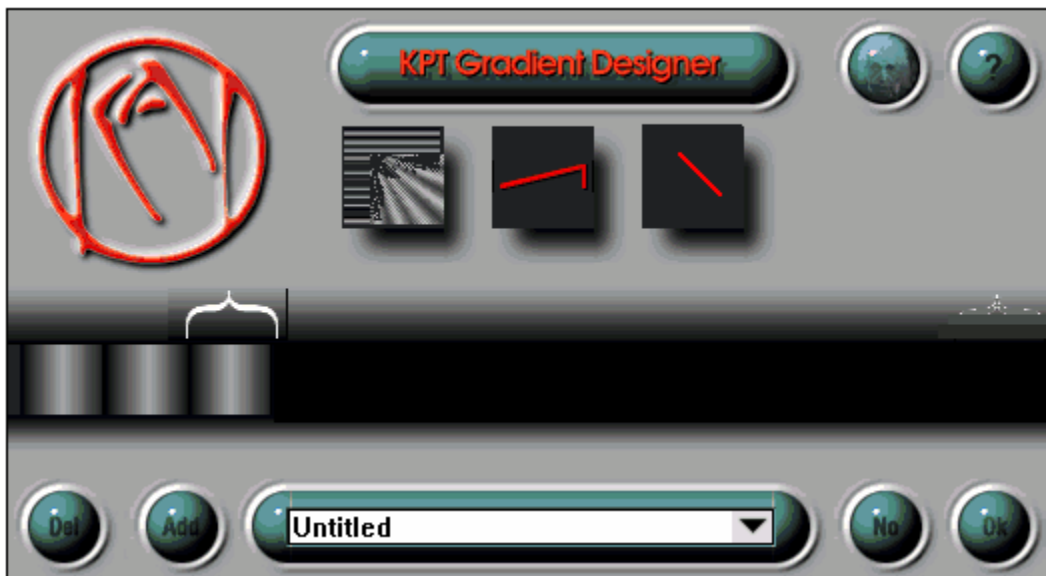


Figure D. Note the preview window.

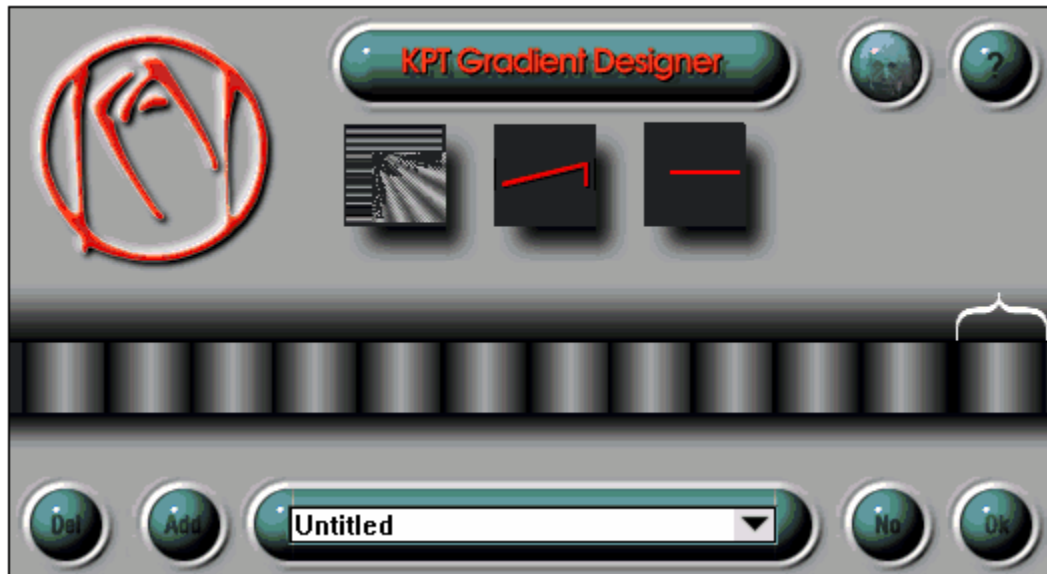


Figure E. Completed and ready to save as a preset.

The Framing Gradient/Transparency

Creating a framing gradient to wrap around or apply to a selection is the next step. Taking the "Rolling Silver" preset created earlier, add transparency to the right side. Shorten the Movable Bracket so that it only covers five or six of the "coils." Within the selection area, click and drag to "NONE." None is treated as a color in Gradient Designer. The Preview now shows the fanfold type displayed in Figure F. Save the gradient as "Rolled Silver Transparent" under the Complex Gradients category.

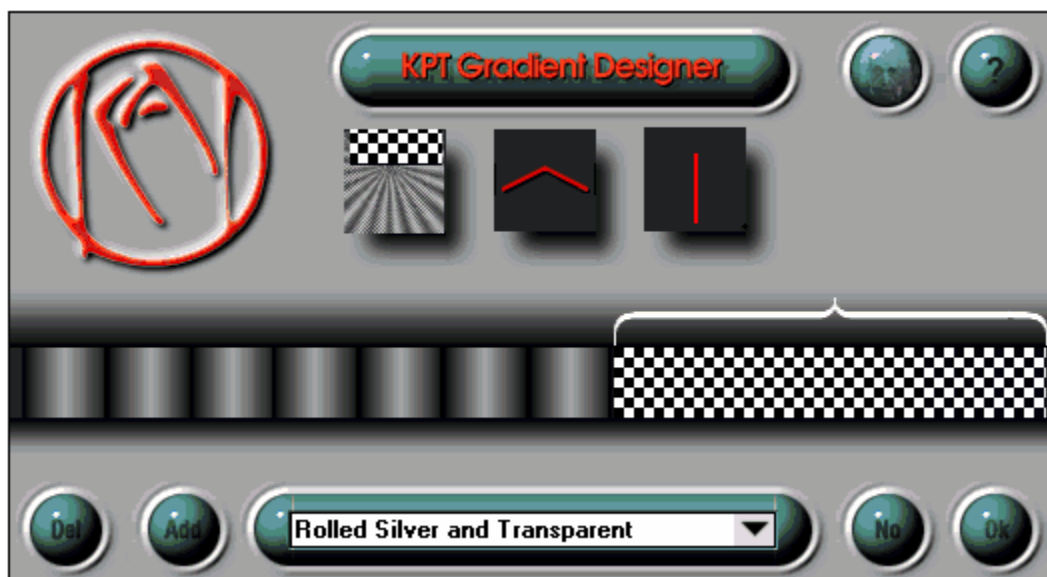


Figure F. Transparency is added which results in a "framing effect" gradient.

Load the file KPTFACE.TGA. Bring up Gradient Designer. Load the Rolled Silver Transparent preset. Apply the gradient to KPTFACE.TGA. The results should look like Figure H.



Figure H. KPTFACE.TGA after the framing gradient "Rolled Silver Transparent" is applied.

The "NONE" selected in the gradient allows the underlying image to show through. With a little experimentation, even neater effects can be achieved. Do not save KPTFACE.TGA with the gradient applied.

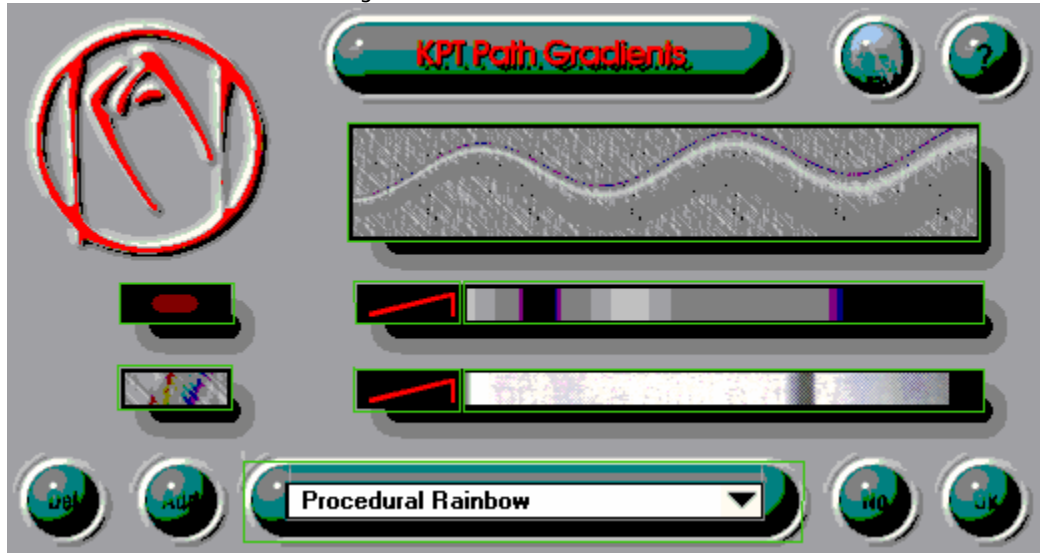
The Framing Gradient/Opacity

Load KPTFACE.TGA again. Load the preset "Rolled Silver" again. Use the Movable Bracket to select the right half of the Gradient Bar. Position the cursor to the far right of the Gradient Bar. Click (the cursor turns into an eyedropper) and drag to the Opacity Selection Ramp.

As the eyedropper moves up and down the Opacity Selection Ramp, the values in the numerical readout change. Select an opacity value of "10", and apply the gradient to KPTFACE.TGA. Notice the difference between using "NONE" as a color and using differing levels of opacity, particularly applying opacity as you would apply a color from the opacity ramp.

Gradients on Paths

Click on the boxes outlined in green for more details.



Gradients on Paths can "wrap" any blend smoothly around a free-form user defined path. This creates unique effects like glows, halos, rainbows, metallic tubes, lasers, fogs and complex type outlines. All gradients designed by Gradients on Paths are presets from the Gradient Designer. Gradients on Path uses two blends, one for color and one as an alpha channel to fade in and out and blend with the original image.

In order to access Gradients on Paths:

From Photoshop

To access and use this filter, you need to create a feathered selection in Photoshop. To do so, use the lasso and/or other marquee tool to select an area. Choose "Feather" from the Select menu. Enter a value from 1 to 99 pixels. This will determine the width of the path. Select the filter Gradients on Paths from the Filter > KPT Extensions menu.

From Painter

To access and use this filter, you will need to create and feather a frisket in Painter. Select the frisket using the Frisket Selection tool, and display it with marching ants showing. Then select KPT Gradients on Paths from the Effects > KPT Extensions menu.

Title Bar

Help Button

Direction Control

Loop Control

Gradient Bar

Apply/OK Button

Cancel/No Button

Preset Menu

Add Preset Button

Delete Preset Button

Moveable Bracket

Kai Logo

Real Time Preview

Moveable Bracket

Color Picker (System Palette)

Opacity Selection Ramp

Numerical Readout Bar

Grayscale Ramp

Color Spectrum

Transparency Ramp

Preview/Mode Control

Loop Control

Linear Direction Control

Preset Menu

"Shortened" Bracket

Add/Delete Preset Buttons

"Hard" Edge

Blur Control

Apply Modes

Gradient Presets

Color Loop Control

Alpha Channel (inside) Gradient

Framing (outside) Gradient

Preview Window

To go to any of the following topics, click on its title:

[Gradient Designer
Preferences](#)

- [The Movable Bracket](#)
- [The Gradient Bar](#)
- [The Color Spectrum Bar](#)
- [The Color Picker](#)
- [Transparency](#)
- [Opacity Selection Bar](#)
- [Numerical Readout](#)

[Gradient Designer
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[Gradient Designer
Walkthrough](#)

- [How to Soften "Hard"
Color Edges](#)
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- [Working in RGB and CMYK](#)
- [Tips](#)

[Designing Complex
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- [The Complex Gradient](#)
- [The Framing
Gradient/Transparency](#)
- [The Framing
Gradient/Opacity](#)

[Gradient On Paths](#)

Sharpen Intensity

Sharpen Intensity applied to an image will yield stronger contrast and brighter colors. This is a good tool for brightening up an image. Use it as a first step. For correction of scanned images it will "unch up" the colors. In the best situations, the resulting image will look so much more vivid, that an undo to the previous version will seem as if it had a drab hazy gauze layer over it.

Repeated applies of Sharpen Intensity will posterize an image. With extreme repetition you may converge on black and oversaturate your image, but used in controlled dosage the filter is extremely effective.



Figure 36. Original Image



Figure 37. Three applies



Figure 38. Five applies



Figure 39. Ten applies

Modulating Sharpen Intensity

The degree of Sharpen Intensity' effect is controlled with the keyboard/keypad. Pressing the ""key will faintly increase the intensity while the "0" key (here interpreted to equal "10") will intensify your image to the point of saturation.

Tips for Photoshop and Painter

- Punch up the colors on scans that are too light or lack color.
- Try it on a face or flowers or similar strong hue scanned image. Applying the filter to rectangular strips can create visual accents and variety.
- Multiple applies creates a posterized look with intense high contrast colors.
- Use with grayscale documents to create images that simulate photocopies or line shots from a process camera.
- Try applying the filter to feathered selections to boost the color and contrast on dull areas.

Tip for Photoshop only

After converting an image from RGB to CMYK, try applying this filter. It is not an instant color-correction filter, but will sometimes help regain some of the bright, contrasting colors that were lost.

Previews and Controls

The top right Gradients on Paths Preview Window displays the combined effect of the current gradient and alpha channel.

The Framing Gradient Preview

This displays in color, any preset from the Gradient Designer. Depress the mouse in Gradient Preview and it displays a menu of Gradient Designer presets.

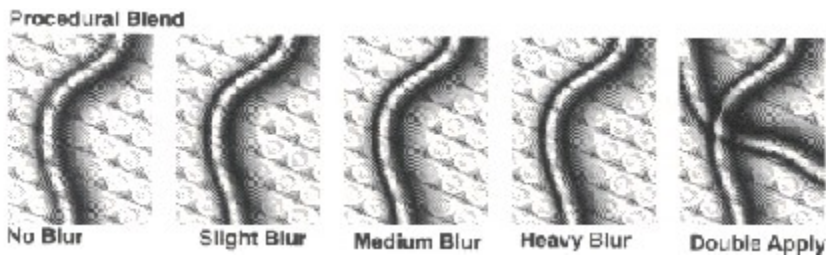


Figure 8a. Beginning with the Gradients on Paths setting "**Luminous Metal Tube**" This row was actual rendered with Procedural Blend (the actual preset is "**Medium blur**"). Notice how the background texture affects the manner in which the gradient is rendered. You can also see this where one gradient is applied on top of another, right.

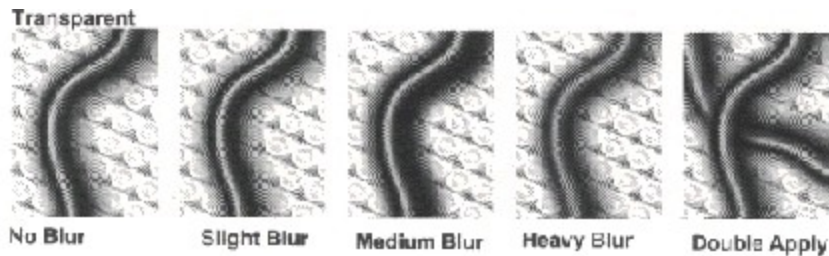


Figure 8b. This row was rendered using the "transparent" setting. Where the Alpha Channel Gradient is darker, the gradient is translucent. You can see this in the double apply: a bit of light "halo" overlays the first "metal tube."

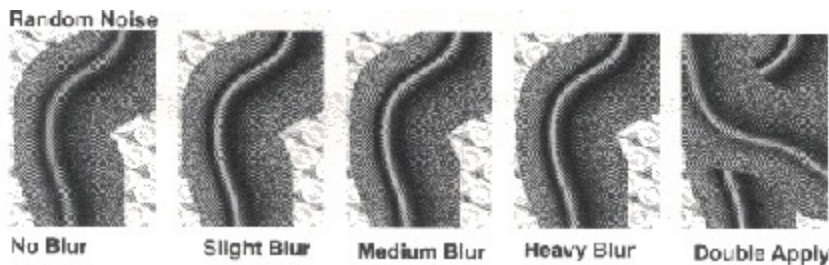


Figure 8c. Random Noise applies noise where the Alpha Channel Gradient is dark. The darker the gradient, the more noise. On the overlay, the second Gradient on the Paths

overlay was rendered using the Alpha Channel Gradient Transparency Masks>Black to White Linear.

The Alpha Channel Gradient Preview

This displays the current alpha channel setting. It, too, is a pop-up menu that accesses all the presets from the Gradient Designer and displays them in grayscale. It has three other settings in addition to those presets. They are "Full Opacity," "50% Opacity," and "Default to Color Gradient."

A full explanation of Alpha channels is available in the Photoshop Manual. A brief recap: Alpha channels serve as masks. Masks "block out" areas and let other areas "show through." Whenever the channel is white, the channel lets the image or effects show through. Whenever the channel is black, it blocks out the image or effect. Values between black and white block out or show through some degree of image or effect. The Alpha Channel Gradient controls what portion of the Framing Gradient will show. (This function is different from an alpha channel's, or Painter's Frisket Mask's function of storing a selection.)

Blur Control

The box to the left of the Framing Gradient controls blurring of both the color gradient and the Alpha Channel Gradient. The choices range from "None" to "Heavy." (Figure 8)

Apply Mode Control

The Apply Mode Control box allows you to control the effect that the alpha channel has on the rendered path effect. There are three settings:

- Normal Transparency
- Random Noise
- Procedural Blend

Normal Transparency will "airbrush" your effect onto any path to a degree modulated by the alpha channel. A white, "100% Opacity" alpha channel will completely wipe out whatever is below the path; darker shades of gray will let more and more of the underlying image show through.

Random Noise replaces transparency with hue-protected noise (see KPT Hue-Protected Noise for a detailed description). "100% Opacity" as an alpha channel yields no noise effect; darker gray areas of the alpha channel yield higher amounts of noise.

Procedural Blend will "wrap" the airbrushed path around the contours of the image below. More details on the Procedural Blend are in the description of KPT Texture Explorer.

A side-by-side comparison of the different types of effects you can get with the Blur and Mode controls is shown on the previous page in Figure 8.

Photoshop Walk Through

Here's an example of how Gradients on Paths combined with Photoshop's channel calculations can create stunning effects.

1. Create a new file. Since we are going to be doing some channel calculations, begin with grayscale. Our file size is 540 x 360 pixels. We will change to RGB later. Open "Show Channels" from pulldown menus. Window>Show Channels or F6.

2. Create a feathered selection. In this case we use a value of 15 by double clicking on the lasso tool and entering the value of 15 at the feather radius dialog. After making the feathered selection, go to the Select menu and choose Save selection (selection is now #2).

3. The Channels Dialog now shows both the black channel and the selection #2. If you click on selection #2 you will see a feathered white selection surrounded by black.

4. Deselect the "marching ants" <Ctrl D> and select the Type Tool. Create a character or two at 128 point type or larger, with the anti-aliased option checked. Align the type in the center of the screen. With the type selected (marching ants around its perimeter), go to the Select menu and choose Save Selection > New. This is now channel #3, a source for selections for future feathering.

5. Delete the character(s) if they were "dropped" onto the surface of channel #1, so that there's a blank white window and deselect. Load selection #3 (Select>Load>#3). There should be marching ants for the type outlines.

6. Go to Select > Feather. Here we entered a value of 4. Select > Save selection > New. There is now a Channel #4 in the channel dialog box. Deselect.

7. Now is the time to enter into fun things with Photoshop's channel calculations. We are going to combine the two feathered selections and derive a new selection from that to render a gradient along a path. In this case, we will use the Difference command.

Channel OPerationS (CHOPS)

8. Under the Image menu, select Calculate >Difference. For Source 1, select Channel #4 (the feathered type). For Source 2, select Channel #2. If you switch these around, it will not affect the outcome. Make the destination the

file you are working on, New Channel. The channel dialog now shows 5 channels.

9. Switch back to Channel #1. Under the Select menu, choose Load Selection > #5. Now you have a selection with a lot of "gray" area along which the gradient will be rendered.

10. Select KPT Gradients on Paths from the Filter menu. Select a Gradients on Path preset. Click OK.

To render the gradient in color:

11.

a. Duplicate Channel #1 (Image >Calculate>Duplicate) to a new/new destination. (This should be a completely blank window; erase if necessary.)

b. Under Mode, select RGB.

c. Now select Image>Calculate>Duplicate> Source <the first file/Channel #5> Destination <New File/Selection> Click OK.

12. Select and apply Gradients on Paths.

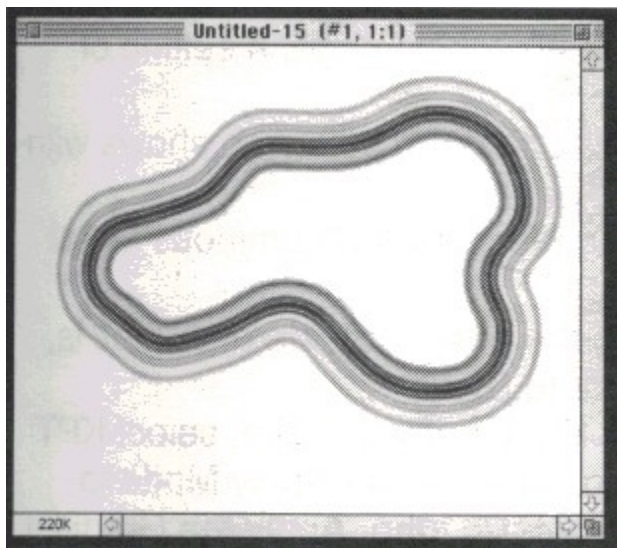


Figure 9. A feathered selection saved as a channel.



Figure 10. The final result.

This walk-through used just one of the channel calculation functions of Photoshop. Let this be your starting point for exploration of the other dazzling calculations. For instance, instead of calculating the difference between a freeform feathered path and the feathered outline of some type, try creating a smooth vertical gradient from black to white with Photoshop's blend tool, and calculate the difference between the gradient and the feathered type! The key is to create areas of gray in which Gradients on Paths can work its magic.

Painter Walk Through

This walk through takes advantage of a cool feature that Fractal Design Painter has: Feathering is an independent function of the frisket. So you can make a frisket active, feather it, apply a gradient along a path, feather it to a different setting, and apply the same or different gradient on a path to it.

1. Create a new document in Painter (For this one, we made ours 6 x 4 inches at 72 dpi.) Double-click on the Frisket Type tool. You'll get a dialog box that will allow you to select an outline font. Select a font and size. Click *OK*. (For this document, we made our type 96 point.)
2. Click on the Document window and type your word or words.
3. Using the Frisket Selection tool, select the type. You can select one letter at a time, or the entire thing or anything in between.
4. Feather your selection using the slider at the bottom of the Frisket Palette. For this image, a setting of around 30 was used.
5. Make sure that you click on the bottom right square of the frisket palette, so that the selection shows with both anchor points and the "marching ants" marquee.
6. Under the Effects menu, choose KPT > Gradients on Paths. For this example, choose "Luminous Metal Tube." Click *OK*.
7. The result of Gradients on Paths should be blobby and blurry. We'll keep the effect outside of that as is, but put back the inside definition of the type. Move the Feather slider back to 0.
8. From the Colors Palette, select a color to fill the letters with. Fill <CTRL> F). Or, if you'd like, select KPT Gradient Designer. Under the Metallic category, select Metallic Reflection. Change the Apply Mode to Linear, and move the direction indicator to bottom (six o'clock) to make a metallic tube. Apply the Gradient.
9. This last apply completely obliterated that heavily feathered blobby outline. With Painter's "Fade" command, that fill can be made partially transparent. Select Edit > Fade Scroll around in the preview window to see whatever portion of the image. Adjust the slider to the desired transparency. Click *OK*.
10. Now we'll do another Gradients on Paths outline of the text. Adjust Feather to a number somewhere

between 3 and 8. Select KPT Gradients on Paths. Select Luminous Metal Tube (It should be the default when you open up the Gradients on Paths Dialog box.)

Click *OK*.

Your result should look something like Figure 11.

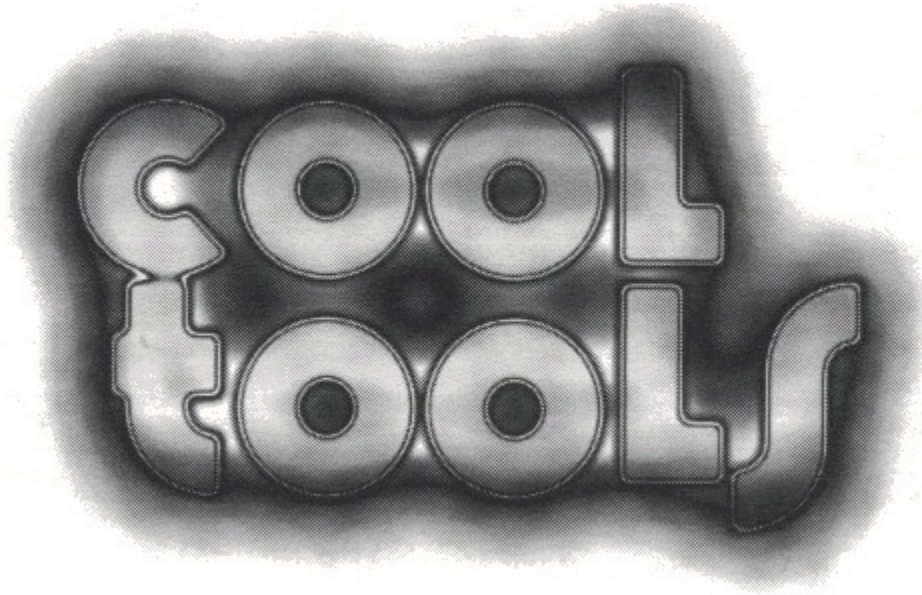


Figure 11.

To go to any of the following topics, click on its title:

[The Framing Gradient
Preview](#)

[The Alpha Channel
Gradient Preview](#)

[Blur Control](#)

[Apply Mode Control](#)

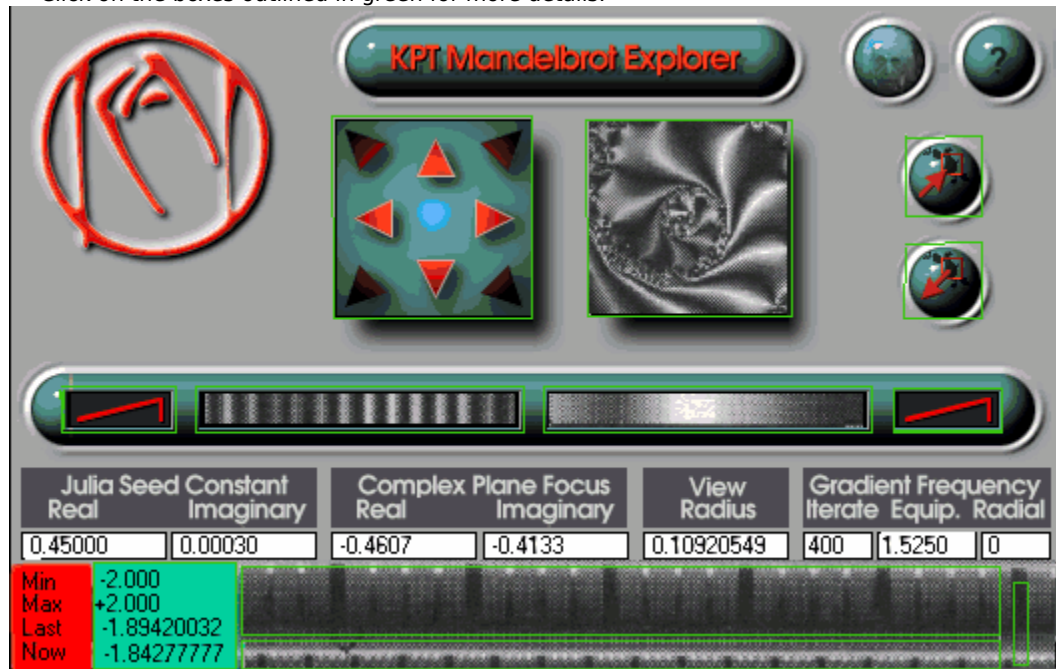
[Photoshop Walk Through](#)

[Painter Walk Through](#)

Julia Set and Mandelbrot Set Explorers



Click on the boxes outlined in green for more details.



The Mandelbrot Set and Julia Set Explorers are another jewel in the KPT collection. They are four filters that create and explore Julia and Mandelbrot Set fractals. For those that have not played with fractals, this will be an enjoyable, almost game-like, exploration of the space. Those familiar with fractals will welcome the easy interface and its placement inside Photoshop and Fractal Design Painter. The output is immediately accessible for manipulation by other the tools of the application.

The fractal filters subscribe "lego block" style to the Gradient Designer blends including the opacity alpha channel. The filter wraps the 24-bit blends around the Julia and Mandelbrot Sets, with control over looping, repeat count, and spiral angle settings.

As plug-ins for Photoshop and Painter, these are a source for fractal backgrounds, blends, and textures, taking advantage of Photoshop and/or Painter for very powerful post-processing.

Exploring Fractals

At every point of the famous Mandelbrot Set, there exists another four-dimensional complex space inside which lays an infinite domain of Julia Sets. They can resemble Mandelbrot fractals, but are often more complex and asymmetrical, varying from needle shapes to circular regions all the way to dragon-like twists.

Many of the functions in the filter interface and controls for the Julia Sets and the Mandelbrot Set are identical to one another. To always refer to any particular function as "this aspect of the Julia Set and Mandelbrot Set" quickly becomes cumbersome. Unless we're speaking of a specific Julia or Mandelbrot Set function, we may lapse into an umbrella term, "Julia," "Julia Set," or "Fractal Explorer" even though we're actually referring to both the Julia and Mandelbrot Set.

Julia Set Explorer

This plug-in explores the "classic" Julia Set. It takes advantage of additional algorithms that render gradients in the Sets interior and implement the radial (spiral) effect.

Julia Set Explorer II

Type II features a faster version of the Julia Set with two fewer variables, but a modified central formula that explores a different 4-D space. About one-dozen presets are included.

Julia Set Explorer III

Type III features an especially unusual new algorithm that yields astonishing self-similarity at all levels of magnification. One can find triplets of set features and zoom dozens of millions of times deeper and find an equally complex substructure.

Mandelbrot Set Explorer

This filter explores the classic Mandelbrot Set. This allows users to search for well-known features and published set locations, and/or compare to images they may have generated in other programs. In fact, recreating a known Mandelbrot area and then using the KPT 24-bit gradient technology with translucency will surprise even the most jaded Mandelbroter.

Special Features of KPTs Fractal Explorers:

The Julia/Mandelbrot Explorers will not only provide access to all parameters necessary to locate any published Julia Set, but also extend the vocabulary and complexity of the images with revised algorithms and proprietary extensions.

Specifically:

- The color scheme is executed in full smooth 24-bit, rather than the 8-bit dwell band approach of many other programs.
- The colors are not only computed in a hue wheel rainbow, but are taken from the complex gradients created in the Gradient Designer, featuring up to 512 key colors which are interpolate at 2,000 lines, with looping controls, continuous transparency, etc.
- A new algorithm allows the rare case of coloring the interior of the set in addition to the exterior and, better yet, is able to utilize separate color blends for each!
- In addition to the standard "equipotential" lines, the algorithm can also resolve the field lines which run perpendicular outward towards infinity.
- There are separate variables for the number of the field gradients and a powerful twist parameter that can vary from concentric circular modes all the way to tightly wrapped spiraling around the sets.
- With these new methods, a variety of never-seen-before pictures are at your disposal. The dozens of presets supplied are a mere preview of the dynamics inside this most complex space.

Julia/Mandelbrot Set Controls

Preferences Dialog:

There are three changeable control factors in the Preferences Dialog:

- The stepsize or Zoom Ratio. Zoom a lot or zoom a little with each click.
- The Panning distance. Scroll over in minute or gigantic distances with each click.
- Place Gradient Bar at top of image, or keep it out. You can have the gradients that created the fractal show at the top of your window. This is good for some special gradient designing effects. (See How to Make More Cool Gradients from the Fractal Explorers! below for more information.)

Preview Window

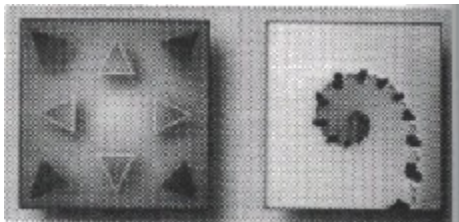
The Preview Window shows what the final rendered image will be. The preview is generated by iteration so that a rough idea is visible in about a quarter of a second, with three steps of increasingly defined previews. Repeat clicks pre-empt the computation. This allows extremely fast exploration of the space. Color choices are instantly mapped into the set.

Data Picker

The Data Picker is similar to the Color Picker: a momentary pop-up with a slider control. The slider has a 400 step resolution factor and features a secondary full Vernier scale for each point, essentially creating a 160,000- step resolution slider.

Panning Control

The Panning Control allows 360° continuous panning of the Set through the Preview Window. Pan size increments can be set in the Preferences Dialog.



Click on the Panning Control to scroll the Preview Window

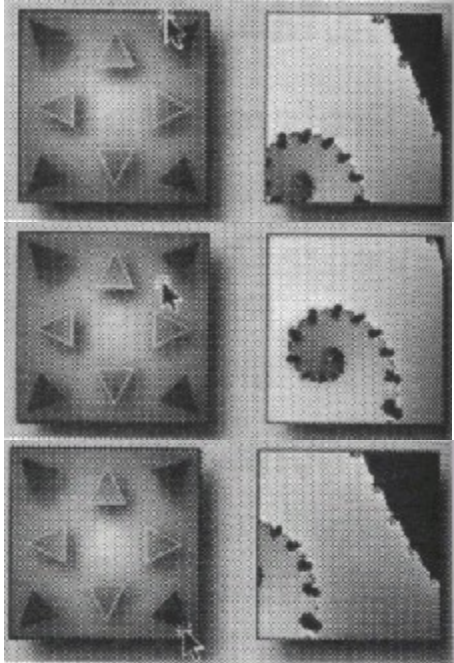


Figure 13. Here is a sample of scrolling using Panning Control. On the left is the location of the cursor selection. On the right you see how the Panning Control moved the fractal view.

How to Pan:

You will often find interesting regions and features. To position them "just so," you need to scroll around with the pan control.

To the left of the Preview Window is the Panning Controller that provides continuous control in a 100x100 pixel area.

You can use the 8 arrows as shown to move about as you would expect: to see a little more of what's above the current picture, click on the UP arrow and a new section will come into view.

Instead of clicking exactly on the 8 arrows, though, you can click anywhere on the Panning Control window to move in that direction. Clicking in the upper left corner will essentially scroll up and left in a large step. Clicking in dead-center will not move at all.

Selecting Normal in the Preferences, clicking inside the pan becomes the new center of the preview window.

Other methods of roaming around the set at a given zoom setting include zoom setting the Plane Focus numbers. They reflect the position in the crosscut of the 4-D space. Though it is much more intuitive to use the direct Panning Control, the numerical variables are

provided, so you can enter published data on specific sets.

Zoom Controls

Zoom In/Zoom Out Controls allow centered zooming; clicking on the Preview Window enables zooming directly. Zoom size increments are set in the Preferences Dialog.

How to Zoom:

There are three ways to zoom into the set, revealing more and more of the detail.

- **Centered Zooming**

Use the two controls to the right of the Preview Window. The upper one zooms IN; the lower one OUT, with the center of the window staying constant.

- **Direct Zooming**

Simply click on the spot you want to magnify inside the Preview Window. It will zoom in and make that the new center of the preview. Holding down the Alt key while clicking will zoom out from that point.

- **Data Picker "View Radius Zooming"**

The third method is the most precise. The "View Radius" variable is an exact expression of the zoom degree. Overall, the basic range is in the millions, allowing you very, very fine control. Setting the View Radius to "5" shows the set at full distance with all edges. You can start with a new set this way, zoom out to "5," then set the gradient frequencies, find the blend you want, then hunt for the Set's r (real) and i (imaginary) values and zoom in, or the other way around. If you become lost, set the View Radius to "5."

Gradient Pop-Up Menu

There are the two gradient pop-up menus in the center of the dialog box. The Fractal Explorers render the gradient blend samples here. The left gradient governs the exterior of the set (usually the dominant area and in most other programs the only area), the right gradient governs for the interior of the set.

The gradient selections are arranged hierarchically. The first categories are Blends (Basics, Frames, Special Effects, Translucent, Metallic, Julia Gradients, and personal categories you have created using the Gradient Designer), then the actual gradients in each family. This is the same menu that's used by the Gradient Designer. The triangle/sawtooth icon shows the looping control (more on that in the Gradient Designer) and has further effect on the draw method.

Gradients in the Julia Explorer:

If a particular Julia Set region intrigues you and has a pleasing zoom and pan, you can alter the set by playing with the gradients. This will provide a huge array of new ways to view that region.

The resulting render is also affected by the Equip and Radial values! See the upcoming section "About all those numbers in the lower half of the filter interface" for more on the Equip and Radial values. Different portions of the gradient are stretched, twisted, twirled, spiraled and distorted differently with every new setting.

Check out the presets to get a better idea of the possibilities.

Notice that some gradients have dark regions that will render portions of the Julia Set to "vanish." Others have highlights, such as the metallic ones, which, in Triangle Loop Mode, can create thick 3-D shapes.

Many gradients include translucent portions, indicated by a checker board pattern. Wherever that pattern is visible to some degree, any image in your window is visible in the background. You can use the Julia Explorer to create interesting overlays and shadow effects. Painter's "Fade..." command gives you another means of adjusting the overall opacity of the rendered fractal.

About The Data Picker

Whenever you need to change numbers, click and hold on the numbers on the interface, and the Data Picker will pop up.

The action is similar to the Color Picker. Select a number you wish to change and a sliding scale appears. This slider allows you to change the values of the numbers within the Julia Set. Holding down the <Shift> key will freeze your selection until you release the <Shift> key.

At the far left there are fields displaying the legal range of the variable. (For instance, if percentage was a field, the minimum number would be 0 and the maximum 100.) It also shows you the last value set and, next to it, updates the current value in real time.

The Data Picker contains two scales/sliders. The large scale allows a 400 step resolution. A secondary scale (called a "Vernier" scale) allows for additional fine resolution. At any one point on the main scale, you can drag down to the smaller Vernier and have another 400 point of resolution! The two combined are just like a slider that spans 160,000 pixels.

With this Vernier scale you can set variables such as the imaginary Julia Seed Constant that spans from -2 to +2 with 5 digit precision in continuous increments:

The main slider steps like this: -0.02 -0.03 -0.04.

The small Vernier scale steps between -0.0201 -0.0202 - 0.0203, etc.

This way you can access -0.0001 to +1.9999 and get every increment. (In Julia Set exploration, these tiny differences can have major effects!)

It works better than one long slider, because you can separate the tasks: Use the main slider to get yourself into the numerical "ballpark." When you need to "just bump it up a little," you can go right for the small scale and it will move in small increments.

When you drag the main scale pointer around, only the rough horizontal motion counts. At any point you can drag further down and then pick up the Vernier slider.

About all those numbers in the lower half of the filter interface

There are 8 parameters in the basic Julia Explorer. Three of them can be set using direct controls as well as the Data Picker. They are the zoom depth and the 2-D cross-section position. The direct method to change this was explained in the Zoom and Panning Control descriptions earlier in this chapter. The five remaining parameters are set only with the Data Picker.

Julie Seed Constant

The Julia Sets "Seed Constant" is the first of many traditional methods to define the Julia Set. It is a complex number with a real and an imaginary component. For any point of the real there are a very large number of potential "imaginary" settings. It has nothing to do with "imagination," of course; "imaginary" is a mathematical term.

These values vary for every preset. The legal range is -2 to +2 with 4-8 digit precision after the decimal point. There are numerous books on the subject, many with exhaustive examples of r and i values.

Complex Plane Focus

The Complex Plane Focus deals with a complex number that defines the position of the 3-D space within the 4-D "potential," of which a 2-D cross-section is the picture we are rendering. The Complex Plane Focus can be changed by the 360° Panning Control or set directly by the Data Picker.

The View Radius is an expression of the size of the rendering window and adjustments made in the Data Picker in fine increments or by using the Zoom Controls.

Gradient Frequency

The Gradient Frequency comprises three variables that form the nucleus of the determinate draw engine.

- **Number of Iterations (Iterate)**

The Number of Iterations, (abbreviated as "Iterate" in the filter) controls the repetitive or iterative process to find the color for each pixel. This is determined by the Julia Set formula expressing whether a given point belongs to the set or not and is colored according to its potential to fall toward so-called "attractors" inside the set.

The number of iterations has a dramatic effect on the ability to discern small changes, particularly inside the sets interior. The larger the number of iterations, the longer your computing time.

You might note certain speed differences between presets. The majority of examples will use closed sets and only one gradient. Here low settings of the Iteration number are used, often between 10 and 90, whereas other examples show very deep zoom levels and subtle details near the attractors. To resolve any dynamics at that depth, iterations on the order of 500-999 are necessary.

- **Equipotential Gradient Frequency (Equip)**

The Equipotential Gradient Frequency ("Equip") is a

number that controls how fast the color cycles as one moves from one equipotential line to the next. (The lines are expressing the potential of any point in 4-D space to fall towards the attractors, roughly analogous to rings around a planet with equal attraction to their gravitational center. Within a ring, the gravitational pull is the same and there can be many such rings as you fall towards the center of the planet.)

- **Radial Frequency**

This number interacts closely with the last one. The Radial Frequency (Radial) defines how often the gradient repeats over the entire 360° unit circle around the set.

To see "traditional" Julia Sets, set the Radial to "0," creating seamless images. The legal values here are -50 to +50. This corresponds roughly (but not always) to the number of gradients repeated. A setting of 5 would cycle 5 gradients.

They will be affected in large degree by the "Equip" number which at "0" would render straight spikes outward. Values here range from -50 to +50 in fractional increments. Variations in the Equip setting will result in widely divergent effects. Some settings will render lines that go straight out, others will wrap a spiral around the set, and still others will create concentric circular blends.

Manipulating just these two Radial and Equip number values will give you a wide range of image variance.

Note that the Radial setting affects only the outside of the set, while the Equip value also affects interior detail.

Setting the Radial Frequency to anything other than "0" may allow pixellation or other artifacts at certain regions of unfilled sets. The variety and unusual nature of the images makes it well worth accepting the limitations of computability. If you find a region with artifacts, either look elsewhere or try to "close the set" by lowering the Imaginary component of the Constant. If all else fails, you can use Photoshops or Painter's tools to spot clean the final image.

More about the Presets

There are large number of presets that you can add or delete as you wish. All parameters and settings are remembered including the named gradients!

The names are a little crazy sometimes, but they help to remember what feature you were pursuing at the time. It can also evoke a certain mood or trigger mnemonic associations.

Before you try to understand the variables in detail to gain predictable results, you can meander through the possibilities by using these controls first:

1. Zoom. For any given preset effect (Here we've used Julia Set III, Spiral Study 1), click anywhere in the Preview Window and zoom in to that point (Alt click to zoom out). The controls on the right will zoom in and out of the exact center. (See illustration earlier in this chapter for zooming.)
2. Pan. Use the panning field to navigate in 360 degrees at a given zoom setting.
3. Gradient. Favorite quick and easy exploration: change the color gradient for the inside and outside! To match what we've shown here, select Yellow Fever from the Special Effects gradient category. Try the other ones shown here. Better yet, try others we haven't discussed.

When you choose the new gradient, the set will be redrawn. You never have to wait for the complete preview, by the way. Click, zoom, pan, as fast as you like to pre-empt the process.

Guided Exploration of the Parameters

Basic Exploration of Julia Sets

The easiest way to explore the Julia Sets is to start with the basics. The first basic is controlling the form or shape of the fractal.

1. Select the Julia Set Explorer. Under the [Preset](#) control, choose Classic Julia Set.
2. Choose the left Gradient Menu. This controls the outside color of the fractal. (Click on the interior, of the gradient image to access the menu.) Change the color to white. Make sure the gradient pattern indicator shows "Sawtooth: A to B".
3. Choose the right Gradient Menu. This controls the interior color of the fractal. Change the color to black.
4. Click on the Zoom Out (small globe with the arrow pointing down) Control. As you click on this button, notice the "View Radius" is increasing. Click until the view radius is at its maximum value to 5. This is a maximum out zoom.

Results

The gradient is now at its base form. It should resemble a circle with an odd shaped center. Using the data picker, change all the remaining values (except for "View Radius"), such as the Julia Seed Constant, etc., to zero. With all the parameters changed to their lowest value or zero, the shape should represent the outline of a CD. Now, let's vary the values and observe the changes.

Changing the Julia Set

1. Change the outside color, (left Gradient Pop-Up Menu) to a "Full Intensity Hue Spectrum" under "Texture Blends." The "CD" has changed from white to red.
2. Under the "Gradient Frequency", change the radial setting to 5. There are now multi-color spikes running straight out from the center.
3. Under the "Equip" setting, change the value to -5. The Spikes are now moving in a circular pattern. Changing the "Equip" setting value to a 5 turns them in the opposite direction and partially fills the center with a similar pattern.

Applying this fractal to an open canvas allows other KPT Filters to act upon it for even greater effects. For instance, applying "Glass Lens Bright" renders a

multicolor round mobeous type strip.

4. Change the "Complex Plane Focus" settings to .2 each.

5. Change the Julia Seed Constants to .7 each. Observe the change to the hole in the middle. We now have two. For illustration, change the "Real" Julia Seed Constant to -.7. Notice how the two holes become a large oblong hole.

Continue to experiment with the different options. Remember, when you find something you like, something that may be needed in the future, SAVE IT as a preset.

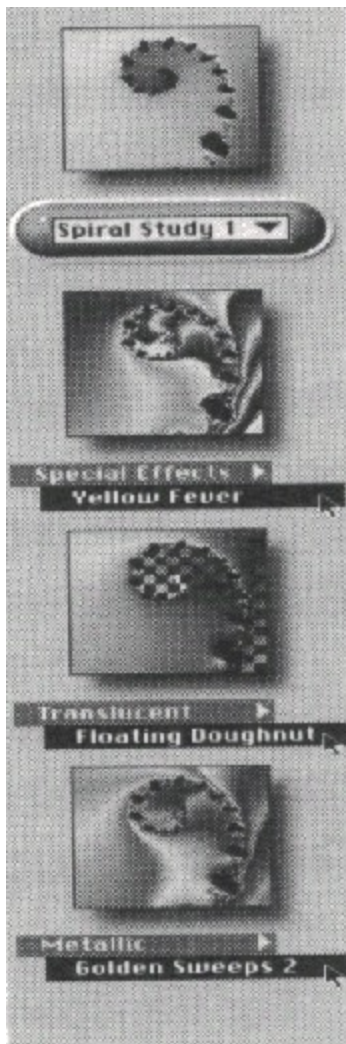


Figure 14. The same Julia set rendered with different gradients will give you a variety of looks. Here are three alternatives to the preset for Spiral Study 1. (Julia Explorer III)

Another Julia Set WalkThrough

Use the Julia Set Explorer. The salient features are illustrated here for some other quick ideas.

1. Select the preset Moire Field Lines. Notice the Gradient Frequency settings on the right hand side. Iterate: 19, Equip: 50, Radial: 50. (Note: The maximum values for both Equip and Radial are +50.) This is the high end of the range for both of these. Lets change the values.

2. First, change the outside gradient. Select Basic > Avacadoid Universe.

3. Using the top slider on the Data Picker, change the Equip to lower values, say 30, 35, 16, 10, 5, 1.25.

When in the 14-15 range, use the bottom slider to change the Equip value by factors of 0.1 or so. What is 14.2 like? 14.6? 14.8? See how you can get differing effects with just one gradient with adjustments made at seemingly minute levels. The minor changes affect what part of the light part of the gradient in the center is bumping out or receding. Before moving on to the next step, leave the Equip value at 1.25.

4. Now, lets look at the Radial. Adjust the number down about every 10 points or so to 40, 30, 25, 10, 8, 5, 1, 0. Compare positive values with negative values (2 and -2; 10 and -10.)

5. Change both the Radial and Equip values so that they are positive and negative. Compare 19, 1.25, 8 with 19, -1.25, -8.

Do you have a feel for the way that the different Data Picker numbers change the appearance of the fractal? Keep on playing and have fun!

After you've rendered

One main thing to realize is that you are in Photoshop or Painter! There are zillions of ways to modify these fractals once youve rendered them. Think of them as mere starting points that beg for further processing. Try Embossing, Find Edges, Adjust Curves, Levels, Diffusion, Arbitrary Maps, Hue Changes, Sharpen, Distorts, etc. Use Spherize (or the Glass Lens) on it, Twirling a region or channel, sharpen, diffuse, etc.

Painter's "Fade" command will allow you to layer translucent fractals upon one another. Or, create a paper texture from a fractal and render other imagery and effects on top of that. (See the section on creating paper textures in the chapter on the Texture Explorer, or refer

to Painters manual.)

General Suggestions

For greatest effect, try out the presets on a larger window, at least 300x300 pixels.

For transparent fractals, make sure there is an image underneath. Start with a 24-bit image of a face or other recognizable feature and color.

As a tip: select a smaller rectangular area and apply the filter to see your preset. You can make larger ones and just use <Ctrl>-f (Photoshop) or <Ctrl>-/ (Painter) to repeat the filter.

You can also achieve something akin to Draft, Medium, Best quality by creating a window that is only a third of the size of your monitor. After rendering a fractal, enlarge the size by typing <Ctrl>+ (Photoshop) three times. In Painter, set the zoom factor by choosing Windows > Zoom Factor. This will render nine times faster and give you blocky pixels but at the correct final size. If you like it, go for the final.

For a huge file, or if your PC is under powered, consider rendering your fractals overnight if you need extremely high quality.

If you encounter aliasing or other artifacts, read the section earlier in this chapter for technical explanations of the mathematical source. You can smooth out the gradients, set the loop to Triangle, change the viewing area to other regions, change the Radial and Equip settings, or simply touch up anomalies with tools such as the clone tool, or the water drop blur (set it to 33% in the dialog or hold down the "3" key). To smooth out long straight lines, use the shift key and click on the end points, the tool will travel in a straight line (use multiple vectors for curves).

A good book on fractals will have many new suggestions, and settings for many of the areas discussed in this walk through.

Consider that far and above the plain old "fractal" pictures, this provides you with a source of highly unusual blends and gradients with distorted paths. In fact, you can use it simply to generate complex shadows or overlays without any hint of their fractal origin. This is not just for Mandelbrot groupies...

[Image-To-Gradient Transfer and How to Make More Cool Gradients from the Fractal Explorers!](#)

Here is a powerful feature using the Gradient Designer and Julia Explorer in combination to make cool gradients.

Its the non-obvious way to come up with some very nice surprises.

1. In the Gradient Designer, change the Preferences to "Load Smooth Gradient From Image." Click "OK" to exit back to the Gradient Designer. Click "NO." (You dont want to render a gradient at this time. The Gradient Designer will remember the new preferences.)
2. In the Julia or Mandelbrot Explorer, open up the Preferences pop-up menu and select "Display Gradient Strip Across Top."
3. Find a Julia/Mandelbrot Fractal of your liking. Render it by clicking "OK."
4. Select Image>Adjust>Variations. Make your changes in the RGB values, midtones, shadows, etc., and apply them to the image. There are now two ways to save the color scheme as a gradient. Either select the Gradient Bar displayed across the top of the fractal, or launch Gradient Designer. Gradient Designer extracts the gradient from a single scan line across the vertical midpoint of the selection and displays this in the Gradient Bar. Save the new color scheme as a preset.
5. Open up the Julia/Mandelbrot Explorer and pop up the Gradient Preview menu to the gradient you just created. Now you can render any Julia with it, inheriting all the subtle color advantages that you so masterfully tweaked.

When you normally create a gradient, it is a conscious choice of tools and a straightforward effort to get something that looks good. Remember, it is almost impossible to predict how a blend will look when applied to the fractals. This feedback process totally disassociates the gradient design from the tools. (Note: Many of the blends in the Gradient Designer presets were created this way and the non linear transitions, odd gaps and highlights, etc., would have been very hard, if not impossible, to design as a conscious choice.)

Alterations to the image using techniques such as filtering and spatial distorts will change the image in ways that cannot be transferred back to the gradient. After developing a pleasing gradient, save it as a preset, and recall it at will.

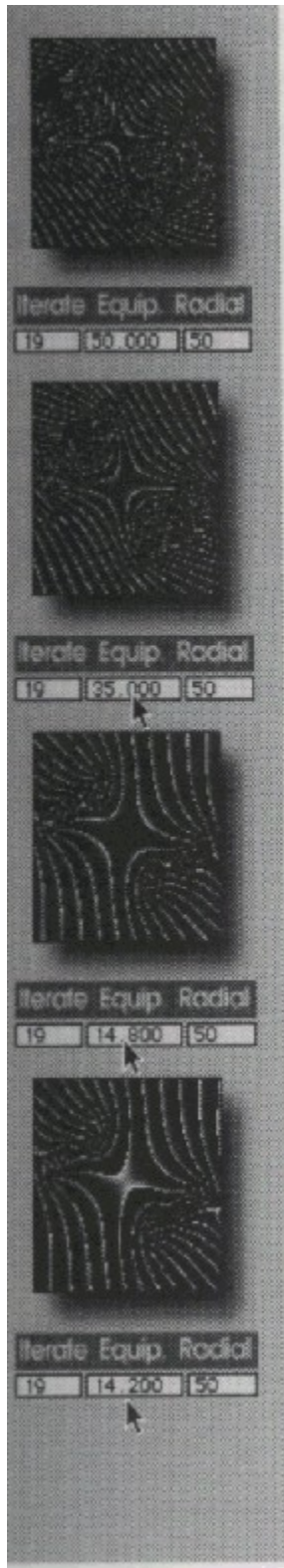


Figure 15. Julia Set with the Equip. settings gradually reduced. Maximum setting is 50 (top). Below a medium setting of 35 shows fewer light-edged ridges. Bottom two demonstrate the dramatic changes which result from small adjustments. (Low settings

shown last)

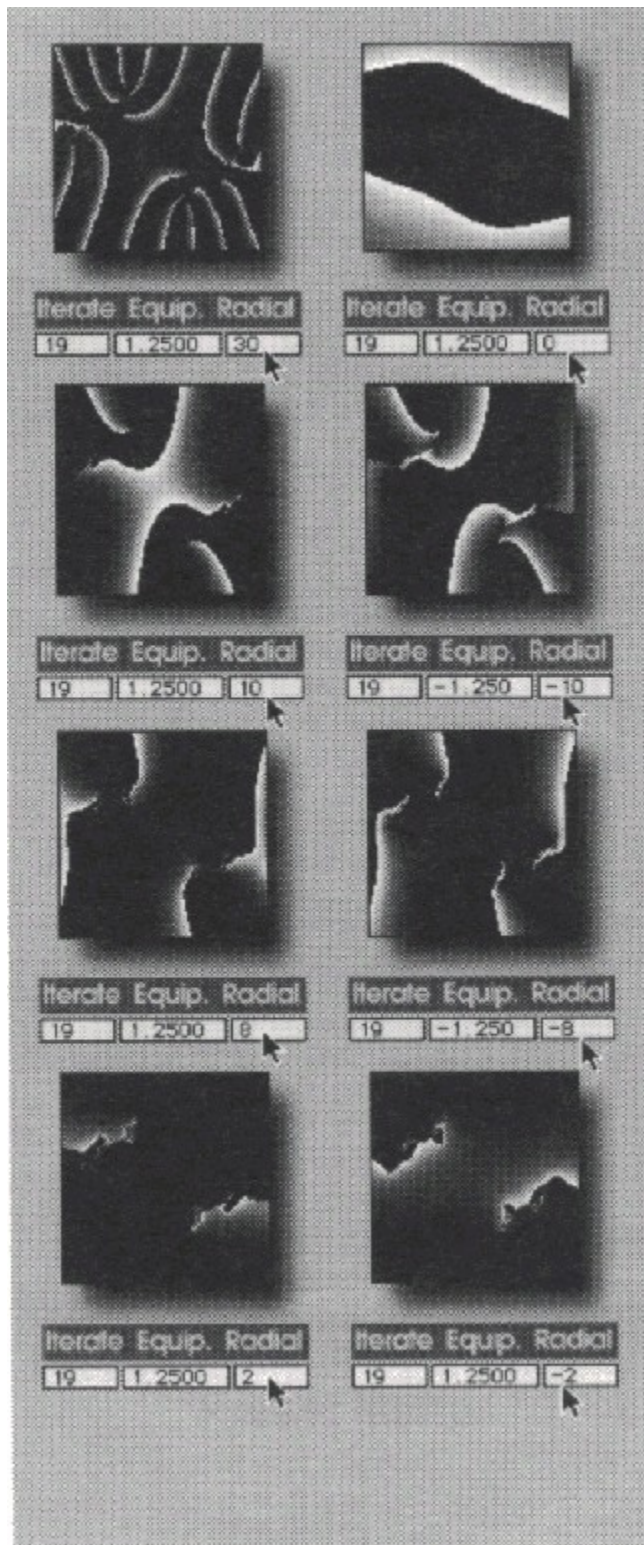


Figure 16. Julia Sets and Different Radial Settings. The top two images show a range

from 30 (roughly halfway between the maximum possibilities) and zero. The lower three sets of images are side-by-side comparisons of positive and negative values of Equip and Radial. As the radial setting moves closer to zero, the gradient rendering effect decreases in complexity.

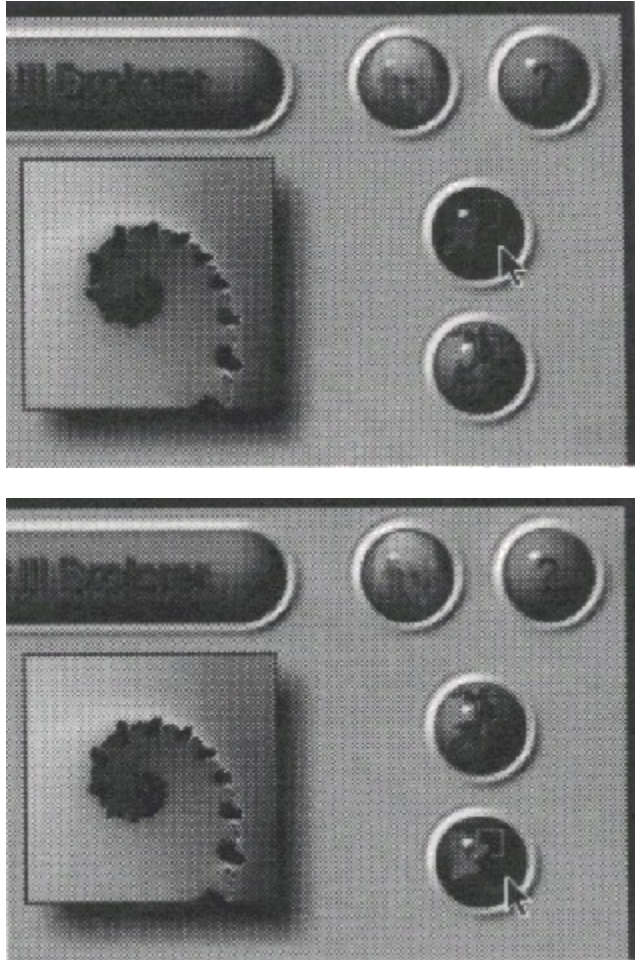


Figure 17. The arrows demonstrate the zoom in (top) and zoom out (bottom) controls.

Panning Control

Framing Gradient

Loop Control

Numerical Readout

Secondary Number Scale

Primary Number Scale

Vernier Scale

Loop Control

Alpha Channel Gradient

Zoom out

Zoom In

Preview Window

To go to any of the following topics, click on its title:

- [Exploring Fractals](#)
 - [Julia Set Explorer](#)
 - [Julia Set Explorer II](#)
 - [Julia Set Explorer III](#)
 - [Mandelbrot Set Explorer](#)

- [Special Features of
KPT Fractal Explorers](#)

- [Julia/Mandelbrot
Set Controls](#)
 - [Preferences Dialog](#)
 - [Preview Window](#)
 - [Data Picker](#)
 - [Panning Control](#)
 - [How to Pan](#)
 - [Zoom Controls](#)
 - [How to Zoom](#)

- [Gradient Pop-up Menu](#)
 - [Gradients in Julia
Explorer](#)
 - [About the Data Picker](#)
 - [Julia Seed Constant](#)
 - [Complex Plane Focus](#)
 - [Gradient Frequency](#)
 - [More about Presets](#)

- [Guided Exploration of
the Parameters](#)
 - [Basic Exploration of
Julia Sets](#)
 - [Another Julia Set
Walk Through](#)

- [General Suggestions](#)

Texture Explorer

Click on the boxes outlined in green for more details.



The graphic (above) was created in Photoshop with Texture Explorer and Gradient Designer.

After a basic texture was applied (with normal apply, 96x96), the magic Wand, set at 10 pixels was used to select the lighter portions of the texture. Gradient Designer then did a procedural apply of a gradient to the Magic Wand selection. Finally, the HSC logo was pasted from a mask developed in a previous session.

Textures have become a staple component in graphic arts creation. As technology has progressed, it has become standard practice to embellish components with more than trivial color. The term "Texture" encompasses anything that "fills a shape with something more than a simple flat color." Now readily available, scanned marble, wood and stone have become common fare as backgrounds. The Texture Explorer puts a new twist on this background texture movement.

Algorithmically Generated Textures

The Texture Explorer generates completely algorithmic mathematical output, there are no scans or pict files involved. It can render any texture it creates into the current window, selection, or feathered selection and then be able to use all Photoshop and Painter tools to process them.

While the possible "space" of textures is vast, including a variety of natural components like woods, marbles, minerals, cloth, and clouds, the door opens to a much larger space of things not seen before, like plasma and fire and luminous blobs and alien hieroglyphs. These textures are not "scannable" since they do not exist.

Textures the Easy Way

Inside the heart of the Texture Explorer there are very complex math routines involving dozens of variables and parameters and interactions. These parameters include things such as waves, frequency, correlators, diffusion, distortions, stretch, squeeze, overlays, blends, multi layer combinations, twirliness and bumpiness, scale factors and constants, a dozen color control variables and looping, repeat, transfer modes, gradient indices, multiple alpha channels and so on.

Each parameter and variable is a "gene" contributing to the final texture produced; to change the texture, mutate the genes! This gene mutation is not the gene mutation that concerns geneticists and ethicists. It is using various algorithms that scientists use to describe the mutation process. Applying basic gradients, colors and shapes derives a vast array of texture space.

Preview & Variations

In the center of the preview box is the current texture, shown at 96 x 96 pixels. Around the preview, you will

notice 12 small previews produced on the fly that are derivatives of the main texture. These 12 outer previews change depending on which "mutation ball" is selected.

Clicking on any of the outer preview squares moves that particular texture into the middle, and the mutation process begins all over again around the outside.

The Mutation Tree



Figure 19 Texture Explorer with no mutation.



Figure 20 Texture Explorer with highest level of mutation.

The only control necessary for the process of exploring textures is the series of control points, represented by little balls ascending a tree. The lowest ball, partially in the ground, represents very little change. Rising higher on the tree approaches an abstract "mutation rate" of 100 percent. If we vary one percent of the genes in 100 parameters, that means in every generation, one number will have changed randomly, or "mutated."

The highest point creates vast change, or 100 percent mutation. Every time the Texture Explorer creates a derivative "cousin" of the current texture, it will vary every parameter by some random amount. The result: in one cycle there are 12 new textures that bear very little resemblance to the current one in the center.

What is really happening (outside the mutation metaphor) is a demonstration of random examples of textures, spread throughout the universe of possibilities. You get to see random areas of the potential space what certain combinations can look like.

If you click on the Main Texture Preview itself you'll see another reason for the vastness. Without changing a single gene or color you are re-seeding the starting values of all our stochastics (read "random generators"). It's like buying a huge roll of textured wallpaper. Visible is a square inch. With every click in the center, there is a different "square inch" from the same roll. There are roughly 16 millions variations to each theme.

Color Mutation

The Color Only Mutation Ball has a special decoupled mutation function. It will keep all parameters of the texture frozen and simply change the colors. The Texture Explorer subscribes to the endless array of Gradients that are available from the Gradient Designer.

If the Gradient Designer has a puce-mauve-off-lilac-lime blend, those blends will eventually show up in the TEXTURE EXPLORER and completely redefine the textures displayed.

If the textures looks interesting, but the color isn't quite right, use the color mutation ball.

The Options Menu

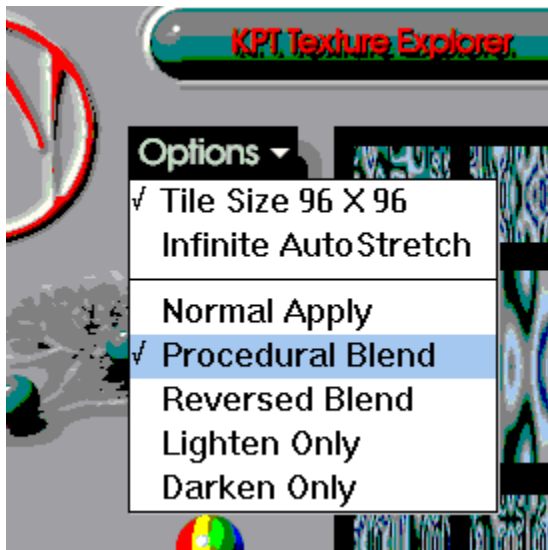


Figure 21. Apply Options for Texture Explorer

The Texture Explorer contains a pop-up menu when the Options feature (on the user-interface) is selected. Five selections are possible. Two deal with tiling the pattern, and three deal with applying the selections.

Tiling Options

The textures apply as repeating 96 x 96 pixel seamless tiles. Another option recalculates the algorithm as an "Infinite Autostretch," scaling the texture to any size and resolution. CapsLock, when depressed, will force the texture to Autostretch into the current selection.

The Infinite Autostretch, too, can be tiled seamlessly (in a square or rectangular selection). This will go to the

Walk Through section under Photoshop. Make a selection. Apply a texture using Infinite Autostretch. Under Edit, select "Make Pattern." Select all. Under Edit, select "Fill"
Click on the radio button that says "Pattern" then click okay.

The Apply Modes

The Texture Explorer has several methods of application of the texture to the existing image. These apply modes are:

- Normal apply
- Procedural blend
- Reverse Blend
- Darken only
- Lighten only

Normal Apply

This acts similarly to the paint bucket in Photoshop, except that it fills an area with texture.

Procedural Blend

This is an innovation with KPT. In the Procedural Blend mode, the Texture Explorer blends the texture over a selected area based on light/dark value. Where the selection is light, the texture is lightened accordingly. Where the selection is darker, the texture is darkened. This creates the effect of "wrapping the texture around" the existing image or selection. To see this in action you need something with shadows. The accompanying image file "KPTFACE.TGA" is provided for this purpose.

Theoretically, if you apply a texture to a white window when Procedural Blend is selected, nothing will happen. However, the Texture Explorer senses when there is an all white or all black image and automatically reverts to "Normal Apply" in these cases.

Reverse Blend

This is similar to procedurally blending. Instead of applying the texture to the image, the image is applied to the texture.

Lighten Only and Darken Only

These functions are the same as in Photoshop. Lighten only will only affect values in the image that are darker than the values in the texture. Darken only will darken those values in the image that are lighter than the texture.

Keyboard Shortcuts

Arrow Keys

To cycle through the presets in a category, you can use the arrow keys.

To navigate to:

Next preset
Previous preset
Next category

Previous category

First preset/category
Last preset/category

Press this key:

down arrow
up arrow
right arrow
(also page down)
left arrow
(also page up)
home
end

Global Transparency

Holding the number keys down when applying the filter will vary the transparency. The number keys 1-0 correspond to opacity, with 1 representing 10% , 5 representing 50% and 0 representing 100%. The number keys modulate global transparency (applied on top of whatever transparency the original texture contained) and should work in all apply modes.

Try holding down '6' while procedurally blending a texture onto KPTFACE.TGA. Much clearer 3D features are retained this way than when using the full 100% procedural apply.

Exploring textures: A "Ramble Through"

Due to the random nature of the Texture Explorer, it would be impossible to give a walk through in which we'd say, "click on the third mutation ball and observe. Now click on the variation second down from the right and observe...", to guide you to a specific place or feature. There is no way of predicting exactly where you'll end up. Instead, we'll provide you with some general guidelines to launch you into Happy Texturedom.

1-ish. The Texture Explorer arrives with over 200 presets. Roam through them and choose a preset name that strikes your fancy. It will render a main image with twelve derivatives all along the outside.

2-ish. Click on a mutation ball, and watch the derivative cousins change. If one of the twelve intrigues you, click on it and POP, it becomes your new chosen current texture, now drawn in full-size in the center. Before you can say "algorithmic mutation process," it starts the mutation cycle anew! Not only did you get the one you wanted, you get 12 new cousins right with it. This cycle may be repeated indefinitely creating an infinite number of textures.

Traverse the space and sample the results every time you click. You can even do this in mid-cycle, trying out new ones just about every second if you like.

3-ish. Suppose you really have become interested in one texture and you don't want it to keep generating wild mutations. Click on a lower ball and the mutation rate will go down, reducing the difference between cousins so you slowly converge on your favorite texture.

You are ending up seeing dozens and maybe hundreds of examples of the potential space of possibilities. What you finally end up with and call "my happy magma blob" is something where you don't know quite what it is or even why you like it and most certainly you would not have the foggiest idea of how to create it from scratch.

Saving Your Own Presets

At anytime that you're exploring textures, you can say, "I like it! save it, saving just the algorithm definition in a few hundred bytes. The process is as easy as clicking on the "Add" button and naming your preset. You may save as many as you like for future use.

When you see one you like, save it! Save it now, because if you don't, there's no guarantee you'll see it again. (If for some reason, you end up not liking it, you can always delete it later.) . One idea would be to set up a new

category called "Textures In Progress" or "Continue Exploring Me" for textures that need more attention than you're able to devote at the moment with that urgent deadline looming!

Texture Explorer Tips

You can overlay multiple layers with GREAT results. Try choosing complementary color schemes and complexity. Or slightly mutate a texture and then use a darken-only second layer, adding depth shadows and get bump map-like effects. The sky is the limit!

Large feathered selections work well consider using a selection with one texture then the Select > Inverse area with another.

Try a Texture in individual channels, like RGB or just the hue channel, for instance. (Or do it to a floating selection <CTRL>-C then <CTRL>-V your selection.) Then use paste controls for even more apply options.

Woods. Create a new document. Make a rectangular selection in the top fourth of the file across the image.

Open Texture Explorer. Select the Preset Woods > Bleached White Ash. Under the Options Pop-up menu, make sure that "Normal Apply" is selected. Click *Ok*.

Select Image > Effects > Scale. Drag the bottom part of the rectangle to the bottom of the window. Voilá! Stretched wood!

Texture Explorer and Paper Textures in Fractal Design Painter

Any texture created with the Texture Explorer can be used to create a paper texture in Painter. (For that matter, anything that you create with KPT can be made into a paper texture with Painter!) The paper texture will be grayscale.

To create a Painter paper texture:

1. To take advantage of the textures which seamlessly tile, create a Painter file that's 96x96 pixels.
2. Select Effects > KPT Extensions > Texture Explorer from the Painter menu.
3. From the Texture Explorers preset pop-up menu, select Grids > FbOaRcEkground (fore/background). Under the Options menu, select Normal Apply and Tile 96 x 96. Click *OK*. The pattern rendered into your new file is one tile size. Now we'll make it into a paper texture

that will tile seamlessly throughout any selection or Painter document.

4. In Painter's Toolbox, click on the selection marquee tool. Select all. Under the Options menu, select Capture Texture.

5. You'll get a dialog that will allow you to name your texture and to set the cross-fade amount. For those textures which seamlessly tile, no cross-fade is necessary to get a smooth paper texture tiling. For this sample, move the cross-fade slider to zero. Name your texture and click OK. You should now have a new paper texture in your Papers palette!

6. To see how the texture applies to a document, create a new one, larger than 96 x 96 pixels of course! (300 x 200 will be adequate to give you a test sample.)

7. Color it a solid color, say a medium gray. Select the color using the color palette and then type <Ctrl>-f (fill).

8. Select Effects >Surface Control >Apply Surface Texture. You'll get a dialog that will allow you to adjust lighting and shininess, with a preview. All paper textures shown here were made with the default "light from 1 o'clock direction."

Incidentally, this is how the backgrounds for the Gradients on Paths sample images were created.

To see how this fore-back texture was used with cross fading and the resulting paper textures, see Figure 22.

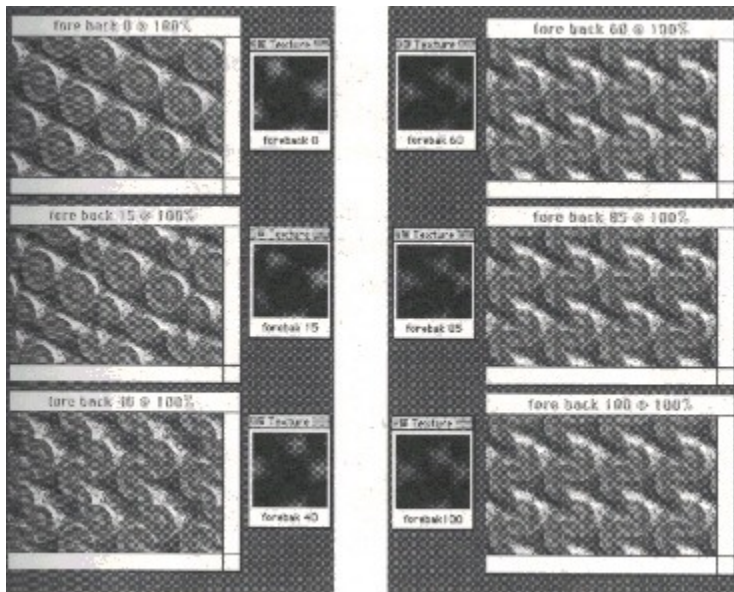


Figure 22. Paper textures created with the Texture Explorer and Painters "Capture Texture" command. This set of diagrams shows different levels of cross-fading. Paper textures applied to a middle-gray file are on the left. The actual textual swatch is on the right. (Numbers refer to the amount of cross-fade.)

Paper textures created with the Texture Explorer and Painters "Capture Texture" command. This set of diagrams shows different levels of crossfading. Paper textures applied to a middle-gray file are on the left. The actual texture swatch is on the right. (Numbers refer to the amount of cross-fade.)

Options Bar

Texture Mutation Tree

Color Mutation Only

Preset Menu

Cancel Button

OK/Apply Button

12 Derivative Previews

Main Texture Preview

To go to any of the following topics, click on its title:

[Algorithmically Generated Textures](#)

[Preview & Variations](#)

[The Mutation Tree](#)

[Color Mutation](#)

[The Options Menu](#)

[Tiling Options](#)

[The Apply Modes](#)

[Normal Apply and Blends](#)

[Lighten Only and
Darken Only](#)

[Global Transparency](#)

[Exploring Textures](#)

[Explorer Tips](#)

3-D Stereo Noise

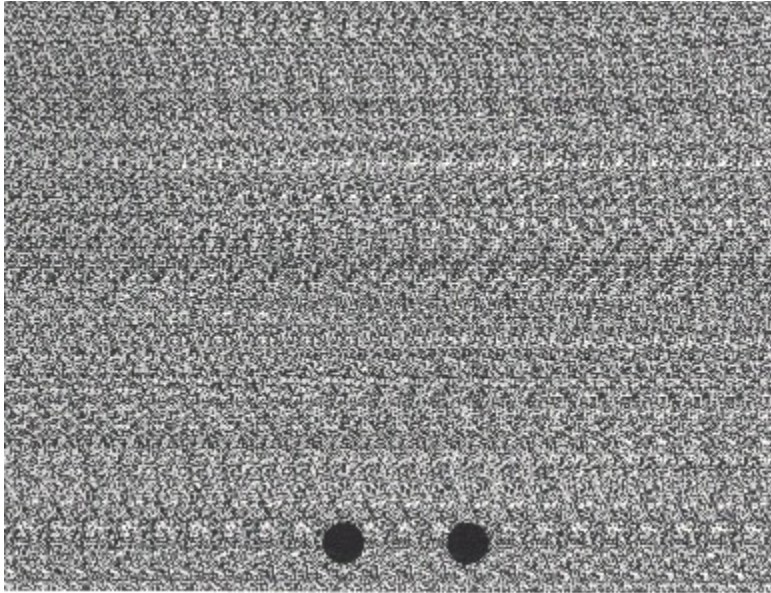


Figure 23. Stereo Noise for you viewing enjoyment.

A researcher at Bell Labs discovered a method to create a special dithered noise where certain points will be seen by both eyes as if they converge on a plane. This filter creates this effect by processing any grayscale image into a single-bit black and white noise. The result has incredible stereo 3-D depth properties and can be seen without special glasses.

You would swear there is a hole in your monitor when certain figures or letters seem to mysteriously appear 3 to 6 inches inside your monitor. Printed versions have been shown with great response in Omni and Games magazines. Its a specialized interest. Some people cannot perceive the depth effect at all. Still, it will amuse the majority and drive others completely bonkers.

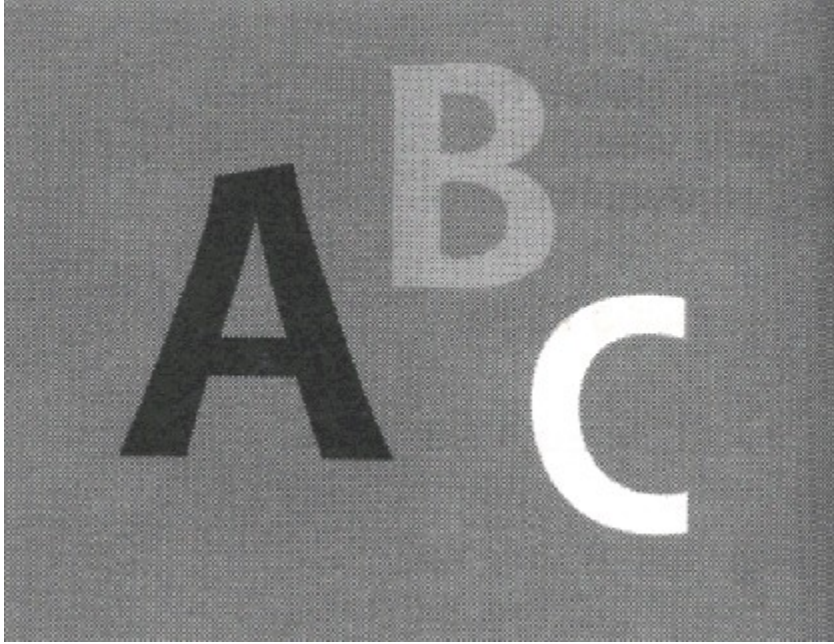


Figure 24. This is the image converted to gray scale stereo noise in Figure 23.

The images that produce the best results with the 3-D Stereo Noise filter use gray levels, are blurred slightly, and don't use extreme contrast. The filter generates a pixellated noise pattern that has horizontal frequencies that correspond to the gray levels of the initial image. This means that white maps to the highest frequency and appears closest to the viewer; black maps to the lowest frequency, appearing furthest away.

In Photoshop

Create a grayscale image that uses text and simple objects. Although the filter will apply in all modes, the best images use gray levels initially. The smaller and more detailed the image you choose, the harder it will be to focus the stereo image. Apply the standard Photoshop filter, "Blur More." This will soften the edges of the image for easier viewing. Apply the 3-D Stereo Noise filter to the entire image. The results will appear to be a random array of black and white noise.

In Painter

Using black as your selected color, create an image using large text or simple images. Under the Effects Menu, scroll to Focus and select Soften. Soften the image with a radius of 1-2 pixels. Apply the Stereo 3-D Noise filter to the image to produce the random noise.

Viewing 3-D Stereo Noise pictures

Now that you have created a stereo noise picture, it is time to

focus your eyes and energies to see the image. Try our A B C example first. Don't feel bad if you don't see it right away; it may take a few tries. There are several ways to view the image in-depth. Try placing two black dots about a half-inch apart at the bottom of the image. Defocus your eyes and gaze through the image as if you were looking in the distance. The dots you placed at the bottom will separate into four. If you focus so the middle two dots fuse, depth will pop in or out. Another way is to try crossing your eyes to fuse the four dots into three. You may also try holding a thin object like a floppy disk or your hand between your eyes to separate each eye's vision.

Controlling Depth in Stereo Images

When you see a 3-D object close-up, the object seems to be in a slightly different place depending on which eye looks at it. Hold your finger about five inches from your computer monitor and look at it with one eye, then the other. Observe how it seems to move left and right with respect to objects on the screen. This discrepancy gives your brain information on how far away the object is. Against the background of your screen, for instance, your finger that is five inches away is displaced about one inch depending on which eye views it.

Using this principle, it is possible to fool your brain into perceiving this binocular 3-D effect on a flat surface. For example, if you have a texture on a piece of paper that repeats itself every inch horizontally, consider what happens if your eyes focus about five inches beyond the texture. The texture will still appear to be one inch displaced depending on which eye views it, but notice that in this case each eye will see exactly the same thing! The texture will appear to your brain to be located five inches further back than it really is.

Now, what if the pattern is spaced every half-inch horizontally? The same trick still works, but the texture will now appear to be two and a half inches back, instead of five. The higher the horizontal frequency of the pattern, the smaller the depth effect.

The amount of depth is modulated by the keypad, using keys "1" through "9." The default setting is "5." Using the "1" key setting is very shallow, whereas "9" is so deep that it can be very difficult to see the effect up close.

Creating Colored 3-D Stereo Noise RGB Files

In Photoshop only

This filter may be applied to individual channels as well as entire documents. For best results, create your image in grayscale mode and then convert to RGB mode. Apply the filter to each channel (Red, Green, Blue) in your document (be sure that you only write to the channel you are working on). When you are done, you have a tri-colored noise image.

Smudge Darken/Lighten

These Smudge filters are two sets of symmetrical effects decoupled to be standalone. They are directional motion blurs that take the current selection and create a multi-level blurry blend using a transfer mode (either lighten or darken). They are unlike Photoshop's Motion Blur in that the latter extends in both directions and has no apply mode. They are also totally unlike other blur filters in that they are constrained to horizontal features, not cell-based, and utilize lighten and darken apply modes.

Tips on using smudges

You can easily create subtle trailing motion and wind effects, as well as interesting alterations of textures.

The Darken version will slowly build up the dark content in the selection. After about 4-6 repeat applies the image converges on black. Repeated Darken works particularly well on a mostly light background with black speckled noise. Darken creates smooth trails which eventually result in needle-like structures.

Smudge Darken Right is a complement to the left version. Note that a Right after a Left Smudge will not recreate the original image. In the multi-layer process information is irretrievably lost. Consider it a donation to entropy.

The Smudge Lighten filters are similar except they use a lighten transfer mode. The combination of darken and lighten can be very effective.

Consider making macros of multiple applications and/or combinations of the four.

Smudge Filters Walk Through

This demonstration shows the versatility of the Smudge filters.

In Photoshop

1. Create a new document, 300 x 300 pixels.
2. Under the Filters menu, select "Add Noise" from the Noise menu.
3. Set the value to 99 and select "Gaussian Noise."
4. You should now have a document speckled with RGB noise. Select a small rectangular area and apply the filter "Smudge Darken Left."
5. Repeat this filter on the same area five or six times.
6. Repeat this process using Smudge Darken Right, Smudge Lighten Left and Right. Try overlapping areas of each to see how combinations of the filters affect each other. To achieve variations on these you can rotate 90 degrees and apply, obtaining a perpendicular vertical smudge once you rotate back.
7. Create another document as you did in step three. Double-click on the lasso tool and specify a feather radius of ten.
8. Create a freeform feathered selection. Experiment with the four filters using feathered selections. Try overlapping the selections.

In Painter

1. Create a new document, 300 x 300 pixels.
2. Under the Effects menu, apply the filter "Grime Layer."
3. You should now have a document speckled with noise. Select a small rectangular area and apply the filter "Smudge Darken Left."
4. Repeat this filter on the same area five or six times.
5. Repeat this process using Smudge Darken Right, Smudge Lighten Left and Right. Try overlapping areas of each to see how combinations of the filters affect each other. To achieve variations on these you can rotate 90 degrees and apply, obtaining a perpendicular vertical smudge once you rotate back.

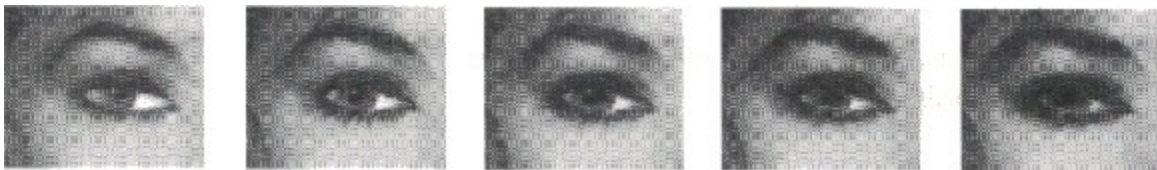


Figure 25 Far left: Smudge Right, 1 apply. Form left, Smudge Darket Left with 1,3,5 and 10 applies.

To go to any of the following topics, click on its title:

 [Tips on Using Smudges](#)

 [Smudge Filters Walk Through](#)

Foreword by Kai Krause

Really, I ought to write two totally different introductions here, one for those of you who have never seen the KPT plug-ins before, the virgins, the innocent souls who don't know what's coming...

...and those who know better and already lost countless hours of productivity over the stuff. I get an awful lot of mail along the lines of Dear Kai, I haven't seen my husband in three days..., and sometimes I work myself into a mood where the guilt creeps up on me.

Then of course, I snap right out of that and go back to wreak even worse havoc, which you can experience when the next series heads your way.

Just to create the proper mindset as you encounter the loss of a perfectly good weekend, let me explain a little of what I would like you to get out of this, what it is and what it is not.

KPT is not:

...brain surgery or accounting software. This should be fun, dudes and dudettes. Please don't forget that. A lot of the design was approached that way. Push the buttons, yank the dial, click everywhere and see what happens. There is nothing to break.

KPT is:

...almost a little game at times. We spent a fair amount of time creating a certain play value within the context of a tool. But, it is not a mere toy. Not by a long shot. There has been some very serious fine art created with the first edition for the Macintosh, as well as lots of down to earth, bread and butter production work. Now that the tools are available for Windows, I expect even more serious accomplishments. It may sneak up on you just how useful and universal the individual components can be. In fact, we ourselves had not anticipated what all the combinations could suddenly concoct.

Explore!

So, I encourage you to explore with the knowledge that only a fraction of the territory has yet been seen by anyone. You may tread on the proverbial "virgin snow." Check out the presets we have supplied, (by the hundreds), but do understand that they are merely that: examples we have saved as we looked around the "potential space."

There are seriously trillions of combinations between the

Gradients, Fractals and Textures. Since many of them deal with blending and translucent effects, even your own initial image will change how the final result will appear. I am convinced that some of the best output has not been seen yet. (If you happen to be the one who stumbles upon the motherlode, drop us a note on-line, or pop a floppy in the mail accompanied with a one page "how to.")

A few notes about the User-Interface.

Here is my philosophy on the successful User-Interface (U-I).

The whole notion of the interface is for it to fade into the background and be forgotten and taken for granted.

My criterion for a successful U-I is that those folks who really get the use of these tools still find it enjoyable and rewarding to come back to the dialog the 101st time, not whether a stranger without reading an explorers guide can make a great effect instantly. I did not design things here for the first three minutes of entering the dialog.

For this reason, I created an interface that has a semi-faded type, and buttons that go to sleep. Not every element on the Interface is labeled. In fact, many elements are part of a whole visual metaphor.

Concerning those buttons with faded type. After the second or third time you used the damn things, they fade into the background...as well they should. That's why the writing, where there is some, is not the big black on white or strong colors. It is simply not done for legibility. Once you realize where the ADD PRESET button is, I don't even want you to read those letters any longer, and neither do I think would you.

In contrast, consider some other contemporary user interfaces. There are those cars that will squeak at you "the door is ajar" or beep relentlessly when the belt isn't fastened. In that same vein the mirrors will bear that constant reminder about "objects in mirrors are nearer than they appear." I don't know about you, but I find these things annoyingly condescending. Those kinds of user interfaces are "in your face" and do not accomplish their goals with grace and finesse.

In designing the KPT Interface, the goal was to make things friendly and fairly intuitive, without insulting your intelligence or including eyesores for labels. So you'll see that there isn't a title and description for each and every element; each and every pop-up menu is not indicated. Some new concepts such as our Gradient Designer Moveable Bracket and Texture Explorer Mutation Balls have neither description, title or precedent. Had I written "Bracket" over the Moveable Bracket or labeled the marbles in the Texture Explorer, or spelled out the metaphor in excessive detail, I would be losing sight of the long-haul use of

the tools in the interest of making something easy to understand in the first two minutes. After going into the Texture Explorer for the ninety-fifth time, a label on each marble declaring what the mutation percentage is, or numbering the balls simply wouldn't be pretty. Rather, there is a tree with some balls, an abstract metaphor loosely mirroring the concept of increasing complexity in each new texture derivative.

Software designers have studied the user interface for years. Apple had a great idea when it released its human interface guidelines initially. Out of the universe of possibilities it condensed a series of common rules and parameters to unite the efforts of software designers. However, a decade has passed and it surely is time to redefine what has become more confining than enabling in the almost Holy Grail of User-Interface.

I predict that our children will laugh at us for having used computers with single bit interfaces and non anti-aliased fonts, in coarse pixel grids. The entire interface is forced to be compatible with the lowest member of the chain. You may be running a \$20,000 dollar machine, with a million pixel 24 bit screen and yet the U-I is designed to run on machines designed more than a generation ago, with simple 1 bit screens.

Ideas such as radio buttons I take serious issue with. Showing you all choices at all times, including all the ones you have not chosen, leads to the "Boeing 747 Cockpit" effect very quickly. The five boxes in the Gradient Designer act rather as a quick overview of the current state, i.e. the chosen settings. While the process of changing these is accomplished separately by a click-double click-release motion. The distinction is not subtle, and it has other consequences. Not only does the 'state-display' take up a lot less space and can be understood on an almost subconscious level by the experience user, the pop-up list of choices can also always be extended at any time without disturbing the original U-I.

This may sound simple, but I know for a fact that often times programmers will enable functionality or new parameters which then are locked out in order not to disturb the user interface. There may already be several new choices in the radio buttons in many dialogs, but the marketing department may not want to print new screen shots, etc....so they won't get used.

Problems such as this have had a habit of lingering around much too long, and merely because everyone else does it, does not make a 'standard' a good thing, as a quick laughing gesture at eight character file names attests.

Blasphemously, I refused to use other color picker conventions. They reminded me of going to another room to pick a small sample patch of color and then returning to see if it worked, all the while building up a dialog, clicking on buttons to exit, etc. Worse yet, color space in 24 bits RGB is intrinsically a three

dimensional entity and what most color programs use is a 2-D representation of the hues and an additional vector for the third axis, i.e. a slider to darken the chosen color. At no time can you even see two intensities of RED at the same time. By contrast, the KPT color picker uses special cross-cuts of the 3-D color space including a selection of 400 hues and 40 intensity variations of EACH at a moments drag and release action.

Each one of these small innovations was added during the design phase and the end result strayed as far away from standard practice as imaginable. And yet...I have no regrets in doing so and hope you are not put off purely by its unfamiliarity.

The fact that you are even reading this is an encouraging sign, because whatever subtleties may be missed by some who never read a manual (a rather silly concept of macho-ism) you really WILL get more out of the software by giving the following pages a chance.

About this Explorers Guide

This is a working, read and play document, rather than an engaging late night light browsing.

Wishing you many hours of discovery and surprises. I remain with greetings from the entire growing KPT team here at HSC.

Toodles,
Kai

Letter from the President

Imaging Aficionados:

We are pleased to be able to bring to you the preeminent plug-in creativity tools, Kai's Power Tools for Windows. This Explorers Guide (manual) is our humble attempt to put our minds (and arms) around the power of KPT. Many of you who have used KPT on the Macintosh can appreciate the challenge to document the vastness of the environment that KPT provides. This was the intent in the development of the product to provide true creativity tools that allow you to go where no one else has ever been before. We trust that we ably provide you with the starting points (and some special tips) on how to produce the amazing imaging that only KPT can generate.

As a company, HSC Software is committed to providing you with advanced, new tools for the creation and production of imaging and creative arts. We encourage you to join our rapidly growing electronic community of imaging and graphic professionals on American On-Line (AOL), CompuServe and Internet. The on-line, electronic chats championed by Kai are a great way to meet others who are pushing the envelope.

Join us at one of the many events we sponsor at MacWorld, Seybold, Digital World, Comdex, etc., and you'll find an ever growing group of people who know each other well before they ever physically meet. Their name tags don't carry the typical "Mary Jones" or "John Smith" but on-line monochres like "KPT Susan," "Virtuality," "DigitSmudg," "Sushman," "PixelAnglo" etc. If you haven't explored the on-line arena, we strongly suggest doing so. We fully support you with on-line technical support, uploading samples images, publishing power tips and tricks, periodically posting free software utilities and, in general, working to build a mutually beneficial relationship.

We welcome your feedback and suggestions as they help us pave the way for ideas for future generations of our products. We promise to continue testing the boundaries of user interface design, creative and production tools. Please visit us at the trade shows we attend, send samples of your creativity and most of all, have fun using Kai's Power Tools. KPT was meant to deliver something that very few products deliver, that being a sense of discovery within the creative process.

John Wilczak
AOL Cool Tools
President

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Kai logo and Kai's Power Tools lettering treatment designed by Roger Dean.

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