

# Photoshop



## Mastering the Photoshop Painting Tools

I'm often surprised to find that Photoshop users can't describe the difference between the three painting tools that they use on a daily basis. But then again, many of them are self-taught and are often battling deadlines that keep them from spending quality learning time with the Tool palette. So in this installment of Instant Expert, we're going to really get to know Photoshop's painting tools. And as you might expect, there's more than meets the eye.

Let's figure out the difference between the three Photoshop painting tools so you'll know how to pick the right tool for the job. Once you know how they work, you can give them some oomph by combining them with other Photoshop features.

### The Pencil

The Pencil tool is hidden under the Line tool in Photoshop 5.0 and later versions. Just click and hold on the Line tool, and you'll see it appear on a pop-up palette. The Pencil is quite simple, always delivering a hard-edged line in the color of your current foreground.

Pencil strokes always look jagged because the edges do not blend with the surrounding image. If you want to maintain a crisp look, you have to be careful. If you scale your image



Left: hard-edged pencil stroke  
Right: semi-hard-edged paintbrush stroke

using default settings, the edge will be smoothed out with semi-transparent pixels. To avoid that, be sure to use the Nearest Neighbor setting in the Image Size dialog box (this is how I created the edges shown in the magnifying glasses below).



Results of 400% scaling of a hard-edged pencil stroke using Image>Image Size command. Left: scaled using default setting (Bicubic) Right: scaled using Nearest Neighbor

I use the Pencil tool when cleaning up edges of vertical or horizontal lines because semi-transparent pixels are of no help in that area. This works well for text

destined for the Web, where every pixel counts. Also, cleaning up that kind of line is a breeze when you hold the shift key because it will constrain your movement to vertical or horizontal.

I also use the Pencil when I'm converting an image to Bitmap

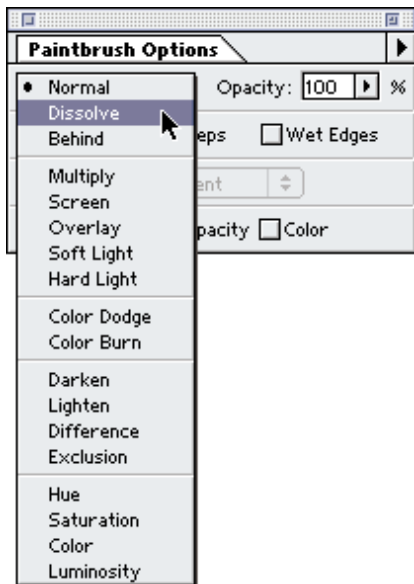
## HELP HELP

Left: un-retouched text  
Right: vertical lines cleaned up

mode, which forces your image to pure black and pure white. Because Bitmap mode doesn't support many Photoshop features (filters, adjustments, minor rotations, etc.), it is usually preferable to work in Grayscale mode until you are completely finished manipulating your image, and then convert to reduce the file size. I'd avoid soft-edged paint strokes with the Paintbrush or Airbrush tools because they will look noisy after converting to Bitmap with default settings.

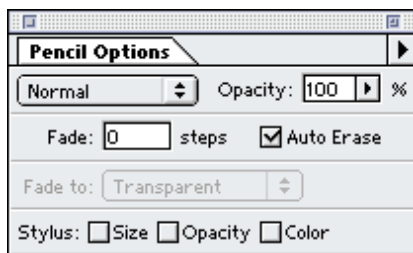
If you really want that noisy-edged look, use the Paintbrush tool, but double-click on it to open the options palette and set the Blending Mode pop-up menu to Dissolve (upper left pop-up menu in the Options palette). That way you can see the noisy edge as you

are painting (it will also simulate various opacity settings using noise). Great way to annoy co-workers: Just slip in and change that setting while they're at lunch.



Left: Blending Mode set to Normal  
Right: Blending Mode set to Dissolve

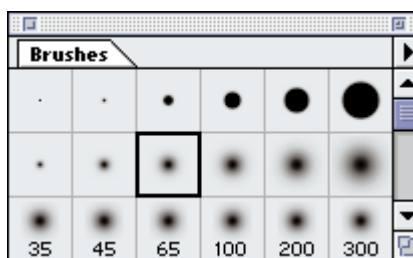
When editing an image that is pure black and white, you might get tired of changing the foreground color back and forth from black to white. You can do it quickly by hitting the X key to exchange the foreground and background colors. But there is also another method. The Auto Erase checkbox in the Eraser Options palette will instruct Photoshop to paint with the foreground color, as long as the color you click on is a different from the foreground color; otherwise it will paint with the background color.



Pencil Options palette

### Paintbrush and Airbrush

When you switch to the other painting tools, the Brushes palette will change to indicate that you are no longer limited to hard-edged brushes. It might look like you can



Brushes palette for Paintbrush or Airbrush tools.

still use a hard-edged brush, but these brushes always have a soft edge (look at the first figure in this article to see what I mean). With the default brushes, you have the choice of using only a semi-hard-edged brush or a really soft one, but you can always double-click on a default brush to change the hardness setting.

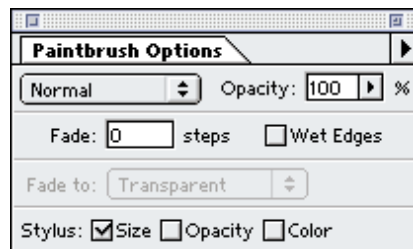


Hardness settings, left to right: 100, 80, 60, 40, 20, 0



Right: Paintbrush with soft and hard brush  
Left: Airbrush with soft and hard brush

If you choose a soft-edged brush, you might not notice a difference between the Paintbrush and Airbrush tools. But if you lower the opacity, you'll see a world of difference. You can paint back and forth to your heart's content with the Paintbrush without getting icky paint build-up.



Paintbrush Options palette

However, painting with the Airbrush is much like using a can of real spray paint. You have to be careful not to glob too much paint on one area. Ok, you won't actually see it dripping, but if you stop moving the mouse (but keep the mouse button down), the paint will accumulate until it becomes fully opaque. That doesn't happen when you move the brush slowly.



Left: Airbrush; Right: Paintbrush

If you switch to a hard-edged brush and keep the opacity down, you will notice another difference between the Paintbrush and the Airbrush. The airbrushed paint daubs overlap each other, but the Paintbrush daubs do not.



Left: Airbrush; Right: Paintbrush

That means that the Spacing setting of the brush is more critical with the Airbrush tool. With the Paintbrush tool, the spacing will determine the smoothness of the edge of each brush stroke, whereas with the Airbrush, the spacing controls both the edge and how often the paint daubs overlap each other. (For more on the Spacing setting, see "Photoshop Instant Expert," *PEI* November 1999.) That's why the Airbrush has a pressure setting instead of an opacity setting—they really are different.



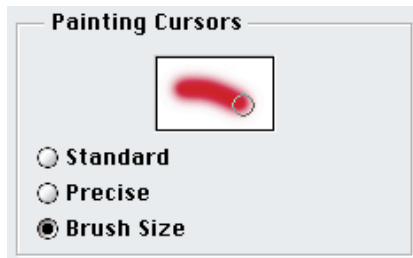
Airbrush with Pressure=30% and Spacing settings=1%, 25%, 50%, and 75%.

I find myself using the Paintbrush tool whenever I need a semi-hard-edged line, and I switch between the Paintbrush and Airbrush for soft-edged lines. That way I can lower the opacity of the tool, use a hard-edged brush, and not have to worry about overlapping daubs.

If you often need to change the opacity setting of a painting tool, you can use the number keys. Try it. Just press the 1 key and notice that you get 10%; or type "23" quickly, and you get 23%. To get back to 100%, just type "0."

Make sure the Painting Cursors preference is set to Brush Size (File>Preferences>Displays and Cursors), so that the cursor reflects the brush size you have chosen. This is the default setting in Photoshop 5.5, but not in older versions.

Back to the differences between the Paintbrush and Airbrush tools. The Paintbrush Options palette has



Choose File>Preferences>Displays and Cursors and set the Painting Cursors setting to Brush Size.

the Wet Edges feature, which will give your soft-edged brushes a new look. The center of your brush will become 59% opaque and the edge will show the full intensity of the paint. It's fun to create a cheap watercolor look with this feature.



Left: normal soft-edged brush Right: Paintbrush set to Wet Edges

### Options in Common

These tools have many features in common. Enter a number in the Fade field, and you will get a brand new look. If you start off painting with the background color, the brush will fade (slowly or quickly, depending on the Fade setting) to the foreground color. When the brush reaches the foreground color, it continues with that color until you release the mouse button. There are actually two choices when using fade: Fade to Background, or Fade to Transparent.



Left: Fade to Transparent Right: Fade to Background

The Fade number is not measured in pixels, picas, or inches, but in

paint daubs. Let's take a quick refresher in using Photoshop brushes. Double-click on the active brush in the Brushes palette, change Spacing to 110, and paint on your image.



The Spacing setting determines how far your brush moves before placing the next paint daub on the image.

Now experiment with the Fade setting, trying 5, then 12, then 25, and count how many daubs it takes until the color fades to your foreground color.



Fade settings from top to bottom: 5, 12, 25

The default brush spacing setting is 25%, which means the daubs are spaced 25 percent of the width of your brush. This can create big problems when painting with large, hard-edged brushes because there will be lumps on the edges. You'd usually lower the spacing to 1% in that case, but 25% seems to be fine for soft-edged brushes.



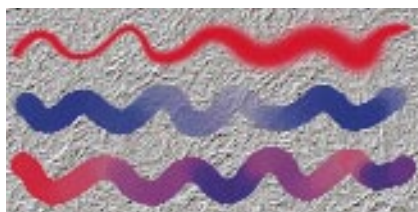
Left: default Spacing (25%) Right: Spacing 1%

You'll need to experiment with Spacing and Fade settings to get what you want. For a less flat-

looking image, I use Fade only when my foreground and background colors are very similar (like red and orange).

I don't use the Fade setting often, but then again, I use a pressure-sensitive Wacom graphics tablet. I can turn on the Stylus checkboxes and go creative. Just turning on the Color checkbox gives you immense control. You can use light pressure to get the background color, and as you press harder and harder, the color will become closer to the foreground color. That gives you much more creative control than the simple Fade setting.

While we're on the topic of graphics tablets: You can turn on the Opacity checkbox so that light pressure will give you low opacity and higher pressure will give you what you have specified in the Options palette. The Size checkbox will allow you to control brush size by varying pressure on the pen. Light pressure will produce a very small brush, and hard pressure will give you the brush size you have chosen in the Brushes palette. There are similar options in most of Photoshop's retouching tools.



Top: Size checkbox turned on  
Middle: Opacity checkbox turned on  
Bottom: Color checkbox turned on

Don't fret if you don't have a graphics tablet. You can option/alt-click on an image when using any of the painting tools to temporarily access the Eyedropper tool. This allows you to click on the image and change the color you are painting with, or you can always click in the Swatches palette for a quick color change.

## Nifty Features

Now let's move beyond the "normal" options and throw in some fun ones. Try this: Create a new layer, paint on it, and then switch the foreground color. Set the Blending mode of your Paintbrush tool (pop-up menu in the upper left of the Options palette) to Behind and paint again. This limits your painting to the empty parts of the active layer, as if you were painting on an underlying layer.



Left: paint stroke set to Normal mode  
Right: second paint stroke using Behind mode

Get the opposite effect by turning on the Preserve Transparency checkbox at the top of the Layers palette. But don't turn on both options at once or you won't be able to paint anywhere in your image.



Left: green paint stroke,  
Right: same paint stroke using Preserve Transparency

Sometimes you want to add paint to an image, but you don't want it to completely replace the image. Instead, you might want it to look like a magic marker. To accomplish this, set the Blending mode of your painting tool to Multiply.



Left: Paintbrush tool set to Normal  
Right: Paintbrush tool set to Multiply

Let's see what else we can come up with. Well, you can change the Blending Mode menu to Hue to change the color of objects in the image. Just try that when painting over an image of a car. You can only change the color of things that already contain color.



Left: Paintbrush tool set to Normal  
Right: Paintbrush tool set to Hue

To add color to a grayscale image, first change the mode to RGB, then paint with the Blending mode set to Color or Color Burn. You can also lower the opacity to apply it with less intensity.



Left: Paintbrush tool set to Normal  
Right: Paintbrush tool set to Color

If you want to turn part of an image into grayscale, leaving the rest in color, then paint with black and set the Blending Mode to Saturation.

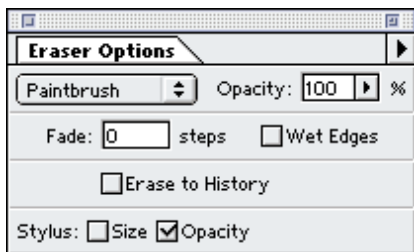


Left: Paintbrush tool set to Normal  
Right: Paintbrush tool set to Saturation

## Eraser Tool

In many ways, the Eraser tool is like the painting tools. It even has a pop-up menu that lets you tell Photoshop whether you want the Eraser to act like the Pencil (hard edges), Paintbrush (soft with non-overlapping strokes), Airbrush (soft

with overlapping strokes), or the old square block one you were forced to use in Photoshop 2.5 unique to the block Eraser is that it doesn't change size when you zoom in to your image. My preference is usually Paintbrush.



Eraser Options palette

The Eraser tool has two ways of working on your image, depending on what you are feeding it. If you are working on the background layer, that's special—you can't poke a hole in the background, so Photoshop just paints with the background color. But there is nothing to stop you from double-clicking on the background layer and converting it into a normal layer. Then the Eraser tool will actually erase.



Left: Paintbrush using 70% opacity  
Middle: Paintbrush using 100% opacity  
Right: Eraser using 30% opacity

The Eraser even has an opacity setting so you can leave a residue of elements from a layer.

To erase a large area, I usually make a selection and press the delete key instead of using the Eraser tool. How can you partially delete a large area? It's easy if you know about an unusual option.

Instead of pressing delete, try shift-delete. This will bring up the Fill dialog box (I know this keyboard shortcut isn't listed in the menu, but it works). Now set the Blending mode to Clear and lower the Opacity setting, which does the same thing as using the Eraser tool with a lower opacity setting.



Use the Clear Blending mode and lower the Opacity setting to partially erase an area.

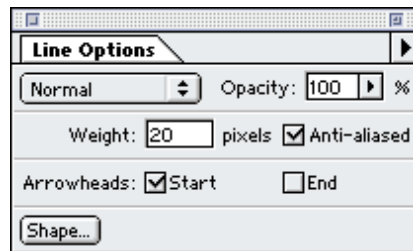
Now let's take a look at one more nifty option with the Eraser tool. It's what most people call the "magic eraser." You can get to it by either turning on the Erase to History checkbox, or holding down the option/alt key while using the Eraser tool. That should restore the appearance of your image to the way it was when you first opened it. Unless, that is, you've changed the settings in the History palette. I like to use this option in combination with the opacity setting to blend the original image with the current one.

OK, one more trick: Hold the shift key and click in multiple places (release the mouse button between clicks), and Photoshop will connect the dots with nice straight lines.

### The Line Tool

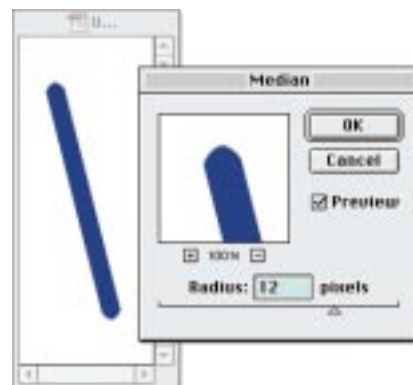
If you truly want to draw straight lines (instead of erasing with them), then switch to the Line tool—that's what it's designed for. You can specify the exact width of the line and just click and drag to see a preview, which is often more helpful than that last tip. You can

also hold the shift key while using the tool to constrain the line you are making to an increment of 45 degrees.



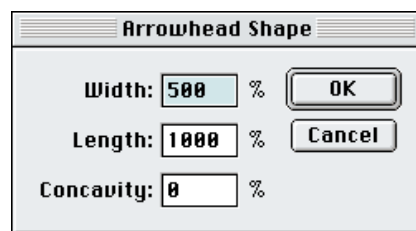
Eraser Options palette

If you really prefer the round-edged look you get with a painting tool to the flat edge you get with the Line tool, just choose Filter>Noise>Median and play with the slider to round the edges of the line you've made.



Use the Median filter to round the corners.

You can even add arrowheads (but no tail feathers) to your lines. Just turn on the Start or End checkboxes (or both). You can specify the shape of the arrowheads by changing the settings under the Shape button.



The Arrowhead Shape options dialog box.

The Width setting determines the width of the back of the arrow-



Width settings from left to right:  
250%, 500%, 1,000%



Length settings from left to right:  
250%, 500%, 1,000%

head compared to the width of the line itself (that's why it's a percentage).

The Length setting determines how long the arrowhead will be relative to the width of the line.

And finally, the Concavity setting determines the angle of the lines that make up the back of the arrowhead. If you were to connect the lines that make up the back of the arrowhead, this setting would determine how far along the length of the arrowhead that intersection will appear. You can even set it to a negative number (up to -50) to yield a diamond shape. But if you don't drag far enough, you might



Concavity settings from top to bottom:  
50%, 0%, -50%

get an arrowhead without a line coming out of it, so be careful.

I use arrowheads a lot when creating maps in Photoshop, but I don't always like the sharp edges. You can round those sharp-edged corners by choosing Filter>Noise>Median.



Right: really short lines  
Left: longer lines

You can even open the Info palette to find out the length of the line you are making (D, for distance) or the angle of the line (A). The numbers next to the triangles indicate how far you have dragged horizontally (X) and vertically (Y). This information can



The Info palette will indicate the length (D) and angle (A) of the line being made.

be immensely useful when you add particular filters. Example: Remember the angle setting and then use that when applying the Motion Blur filter.



Measurements in the Info palette can be useful when applying filters.

If you want a multi-colored line (with or without arrowheads), just be sure the arrow is on its own layer, then turn on the

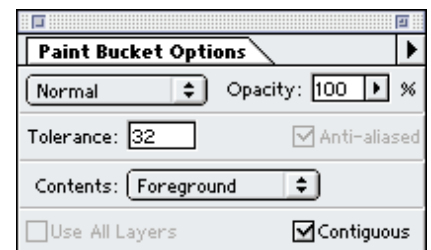


Left: original  
Right: Preserve Transparency used with the Gradient tool

Preserve Transparency checkbox at the top of the Layers palette and use the Gradient tool to add color.

### Paint Bucket Tool

Since we're talking about ways to add color to your images, we can't forget about the Paint Bucket tool, which is closely related to the Magic Wand tool. In fact, it does the exact same thing as clicking with the Magic Wand and then typing option/alt-delete to fill the selected area with the foreground color. I prefer to do it that way because then I can always modify the selection before filling it, and keep much more control.



Paintbucket Options palette

And just like the Magic Wand tool, the Paint Bucket has a tolerance setting that determines how wide a range of colors it should fill, based on the color you click on. A tolerance of 10 will fill areas that are 10 shades brighter or darker than the shade you click on. The Tolerance setting can range from 0 to 255 because you can have up to 256 shades of gray in any image.

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Tolerance settings from top to bottom:  
10, 30, 70, 150

Brighter/Darker	Tolerance
0%	0
10%	26
20%	51
30%	77
40%	102
50%	128
60%	153
70%	179
80%	204
90%	230
100%	255

You also have the choice of filling the area with the foreground color (the default setting) or with a pattern. (We'll discuss patterns in a future installment.)

If you are using default settings, then the Paint Bucket tool will be able to work on only the information on the active layer. If you would like for it to see all of the layers, turn on the Use All Layers checkbox. When that option is turned on, the tool will see all the layers, but it will be able to fill only the active layer.

With Photoshop 5.5, Adobe added the Contiguous option. With this option turned on, the Paint Bucket can fill only the areas that touch each other. Turn off Contiguous, and it will find any occurrence of the color you click throughout the document.

You can use the Paint Bucket tool to delete areas—really, you can. Just change the Blending mode of the Paint Bucket tool to Clear, and you have an eraser just like the new Magic Eraser that

comes with Photoshop 5.5.

There are two more special options I'd like to share. You can hold down the option/alt key when using the Paint Bucket Tool to temporarily access the Eyedropper tool, so you can quickly change the foreground color without having to switch tools. You can also press the caps lock key to change the cursor into a crosshair, allowing you to see exactly where you are clicking.

OK. I think I've filled your heads with enough info on the painting tools, all of which will become much more significant and interesting when we move on to Photoshop's more advanced features, like Layer Masks. While you're waiting for the next issue of *PEI* to arrive, check out all the free tips I provide on my Web site at [www.digitalmastery.com](http://www.digitalmastery.com). ◀

Ben Willmore is the author of the best-selling book *Official Adobe Photoshop 5 Studio Techniques* (Adobe Press) and the founder of Digital Mastery, a training and consulting group based in Boulder, Colorado. Find out if Ben is coming to your area with his seminar, "Master Photoshop in 3 Days," by visiting [www.digitalmastery.com](http://www.digitalmastery.com).

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