Adobe Photoshop Tools and Keyboard Shortcuts

The following chart offers a quick reference of Photoshop tools, as well as the keyboard shortcut for each tool. Not all nested tools can be accessed with a shortcut. In the marquee tools, for example, the shortcut toggles between the rectangular and elliptical variations only.

Also, most nested tools have the same shortcut as the default tool. Photoshop groups related tools into nested sets, so the same shortcut is assigned to the nested variations. By default, you have to press Shift plus the shortcut key to access the nested variations; for example, press Shift-M to toggle between the Rectangular and Elliptical Marquee tools. You can change this behavior in the General pane of the Preferences dialog box by unchecking the Use Shift Key for Tool Switch option.

Finally, if you press and hold a tool's keyboard shortcut, you can temporarily call the appropriate tool (called **spring-loaded keys**); after releasing the shortcut key, you return to the tool you were using previously. For example, you might use this technique to switch temporarily from the Brush tool to the Eraser tool while painting.

- Move tool (V)
- Rectangular Marquee tool (M)
  - *Elliptical Marquee tool* (M)
  - *Single Row Marquee tool*
  - *Single Column Marquee tool*
- Lasso tool (L)
  - *Polygonal Lasso tool* (L)
  - *Magnetic Lasso tool* (L)
- Quick Selection tool (W)
  - *Magic Wand tool* (W)
- Crop tool (C)
  - *Slice tool* (C)
  - *Slice Select tool* (C)
- Eyedropper tool (I)
  - *Color Sampler tool* (I)
  - *Ruler tool* (I)
  - *Notes tool* (I)
  - *Count tool* (I)
- Spot Healing Brush tool (J)
  - *Healing Brush tool* (J)
  - *Patch tool* (J)
  - *Red Eye tool* (J)
- Brush tool (B)
  - *Pencil tool* (B)
  - *Color Replacement tool* (B)
- Clone Stamp tool (S)
  - *Pattern Stamp tool* (S)
- History Brush tool (Y)
  - *Art History Brush tool* (Y)
- Eraser tool (E)
  - *Background Eraser tool* (E)
  - *Magic Eraser tool* (E)
- Gradient tool (G)
  - *Paint Bucket tool* (G)
- Blur tool
  - *Sharpen tool*
  - *Smudge tool*
- Dodge tool (O)
  - *Burn tool* (O)
  - *Sponge tool* (O)
- Pen tool (P)
  - *Freeform Pen tool* (P)
  - *Add Anchor Point tool*
  - *Delete Anchor Point tool*
  - *Convert Point tool*
- Horizontal Type tool (T)
  - *Vertical Type tool* (T)
  - *Horizontal Type Mask tool* (T)
  - *Vertical Type Mask tool* (T)
- Path Selection tool (A)
  - *Direct Selection tool* (A)
- Rectangle tool (U)
  - *Rounded Rectangle tool* (U)
  - *Ellipse tool* (U)
  - *Polygon tool* (U)
  - *Line tool* (U)
  - *Custom Shape tool* (U)
- 3D Rotate tool (K)
  - *3D Roll tool* (K)
  - *3D Pan tool* (K)
  - *3D Slide tool* (K)
  - *3D Scale tool* (K)
- 3D Orbit tool (N)
  - *3D Roll View tool* (N)
  - *3D Pan View tool* (N)
  - *3D Walk View tool* (N)
  - *3D Zoom View tool* (N)
- Hand tool (H)
  - *Rotate View tool* (R)
- Zoom tool (Z)

Stage 2 Coloring and Painting Artwork

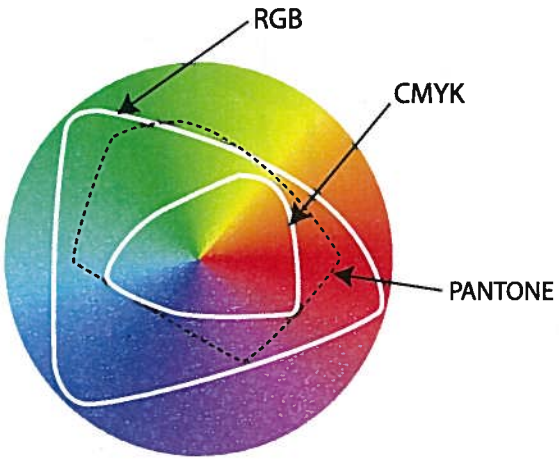
The CMYK color model, also called "process color," recreates the range of printable colors by overlapping layers of cyan, magenta, yellow, and black inks in varying percentages from 0–100.

Using theoretically pure pigments, a mixture of equal parts of cyan, magenta, and yellow would produce black. Real pigments, however, are not pure; the actual result of mixing these three colors usually appears as a muddy brown. The fourth color, black (K), is added to the three subtractive primaries to extend the range of printable colors and allow much purer blacks to be printed than is possible with only the three primaries. Black is abbreviated as "K" because it is the "key" color to which others are aligned on the printing press. Using K for black also avoids confusion with blue in the RGB color model.

In the following image, the left block is printed with 100% black ink. The right block is a combination of 100% cyan, 100% magenta, and 100% yellow inks.

In process-color printing, the four process colors — cyan, magenta, yellow, and black (CMYK) — are imaged (also referred to as separated) onto individual printing plates. Each color separation is printed on a separate unit of a printing press. When printed on top of each other in varying percentages, the semi-transparent inks produce the range of colors in the CMYK gamut. Special (spot) colors are printed using specifically formulated inks as additional color separations.

Different color models have different ranges or **gamuts** of possible colors. A normal human visual system is capable of distinguishing approximately 16.7 million different colors; color reproduction systems, however, are far more limited. The RGB model has the largest gamut of the output models. The CMYK gamut is much more limited; many of the brightest and most saturated colors that can be reproduced using light (in the RGB model) cannot be reproduced using CMYK inks.

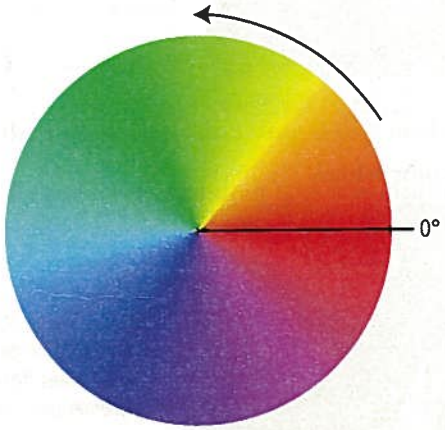


Understanding Color Terms

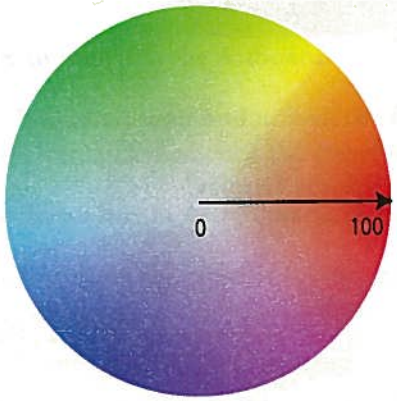
Many vague and technical-sounding terms are mentioned when discussing color. Is hue the same as color? The same as value? As tone? What's the difference between lightness and brightness? What is chroma? And where does saturation fit in?

This problem has resulted in several attempts to normalize color communication. A number of systems have been developed to define color according to specific criteria, including Hue, Saturation, and Brightness (HSB); Hue, Saturation, and Lightness (HSL); Hue, Saturation, and Value (HSV); and Lightness, Chroma, and Hue (LCH). Each of these models or systems plots color on a three-dimensional diagram, based on the elements of human color perception — hue, colorfulness, and brightness.

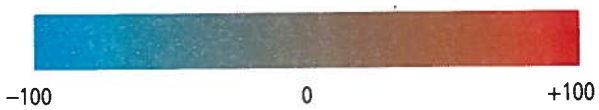
Hue is what most people think of as color — red, green, purple, and so on. Hue is defined according to a color's position on a color wheel, beginning from red (0°) and traveling counterclockwise around the wheel.



Saturation (also called "intensity") refers to the color's difference from neutral gray. Highly saturated colors are more vivid than those with low saturation. Saturation is plotted from the center of the color wheel. Color at the center is neutral gray and has a saturation value of 0; color at the edge of the wheel is the most intense value of the corresponding hue and has a saturation value of 100.



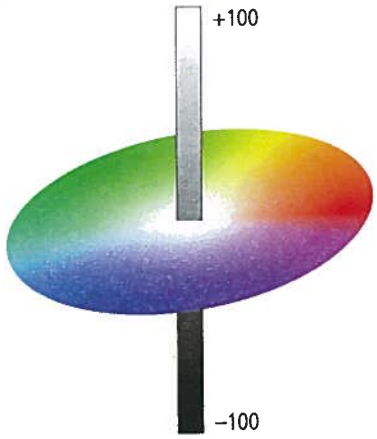
If you bisect the color wheel with a straight line, the line creates a saturation axis for two complementary colors. A color is dulled by the introduction of its complement. Red, for example, is neutralized by the addition of cyan (blue and green). Near the center of the axis, the result is neutral gray.



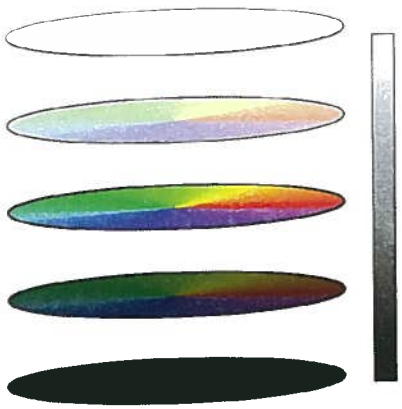
Chroma is similar to saturation, but chroma factors in a reference white. In any viewing situation, colors appear less vivid as the light source dims. The process of chromatic adaptation, however, allows the human visual system to adjust to changes in light and still differentiate colors according to the relative saturation.

Brightness is the amount of light reflected off an object. As an element of color reproduction, brightness is typically judged by comparing the color to the lightest nearby object (such as an unprinted area of white paper).

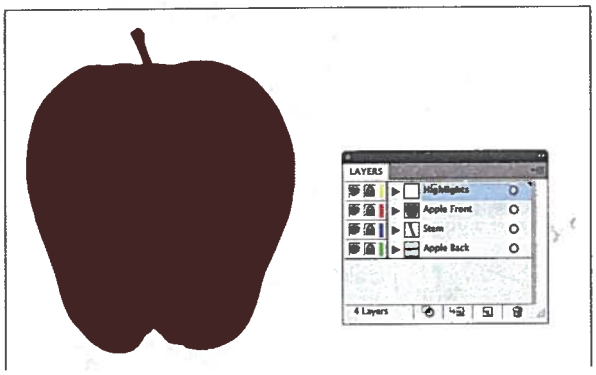
Lightness is the amount of white or black added to the pure color. Lightness (also called "luminance" or "value") is the relative brightness based purely on the black-white value of a color. A lightness value of 0 means there is no addition of white or black. Lightness of +100 is pure white; lightness of –100 is pure black.



All hues are affected equally by changes in lightness.



13. **Select everything on the Artboard and drag all objects to the top-left corner of the Artboard. Lock all layers.**

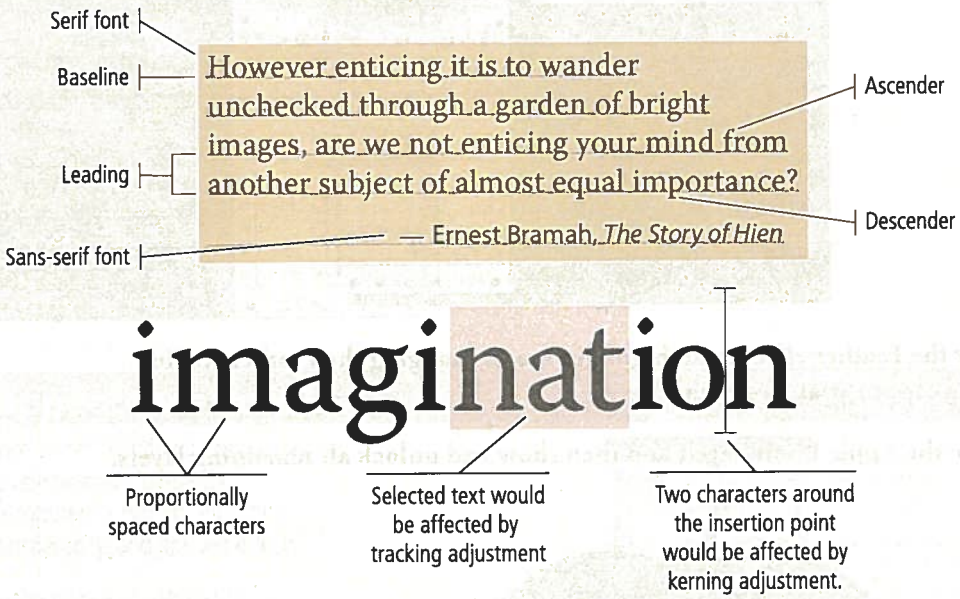


14. **Save the file and continue to the next stage of the project.**

Type Terminology

ILLUSTRATOR FOUNDATIONS

Before you jump into the exercises in this stage of the project, you should understand the terms that are commonly used when people talk about type. Keep the following terms in mind as you work through the following exercises.



Type is typically divided into two basic categories: serif and sans serif. **Serif type** has small flourishes on the ends of the letterforms; **sans-serif** has no such decorations (**sans** is French for "without"). There are other categories of special or decorative fonts, including script, symbol, dingbat, decorative, and image fonts.

The actual shape of letters is determined by the specific **font** you use; each character in a font is referred to as a **character** or **glyph**. Fonts can be monospaced or proportionally spaced. In a monospace font, each character takes up the same amount of space on a line; in other words, a lowercase i and m occupy the same horizontal space. In a proportionally spaced font, different characters occupy different amounts of horizontal space as necessary.

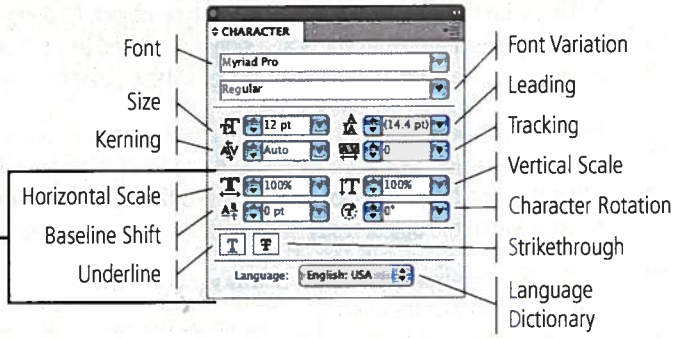
The **x-height** of type is the height of the lowercase letter x. Elements that extend below the baseline are called **descenders** (as in g, j, and p); elements that extend above the x-height are called **ascenders** (as in b, d, and k).

The size of type is usually measured in **points** (there are approximately 72 points in an inch). When you define a type size, you determine the distance from the bottom of the descenders to the top of the ascenders (plus a small extra space above the ascenders called the **body clearance**).

When you set type in a digital application, it rests on a non-printing line called the **baseline**. If a type element has more than one line in a single paragraph, the distance from one baseline to the next is called **leading** (pronounced "ledding"). Most applications set the default leading as 120% of the type size.

The Character Panel in Depth

The Character panel, accessed either from the Control panel hot text or as an independent panel by choosing Window>Type>Character, includes all the options you can use to change the appearance of selected text characters.



- **Leading** is the distance from one baseline to the next. Adobe applications treat leading as a character attribute, even though leading controls the space between lines of an individual paragraph. (Space between paragraphs is controlled using the Space Before option in the Paragraph panel.) To change leading for an entire paragraph, you must first select the entire paragraph. This approach means you can change the leading for a single line of a paragraph by selecting any character(s) in that line; however, changing the leading for any character in a line applies the same change to the entire line that contains those characters.
- **Kerning** increases or decreases the space between pairs of letters. Kerning is used in cases where particular letters in specific fonts need to be manually spread apart or brought together to eliminate a too-tight or too-spread-out appearance. Manual kerning is usually necessary in headlines or other large type elements. (Many commercial fonts have built-in kerning pairs, so you won't need to apply much hands-on intervention with kerning. Adobe applications default to the kerning values stored in the **font metrics**.)
- **Tracking**, also known as "range kerning," refers to the overall tightness or looseness across a range of characters. Tracking and kerning are applied in thousandths of an **em** (or the amount of space occupied by an uppercase "M," which is usually the widest character in a typeface).
- **Vertical Scale** and **Horizontal Scale** artificially stretch or contract the selected characters. This scaling is a quick way of achieving condensed or expanded type if those variations of a font don't exist. (Type that has been artificially condensed or expanded too much looks bad because the scaling destroys the type's metrics; if possible, use a condensed or expanded version a font before resorting to horizontal or vertical scaling.)
- **Baseline Shift** moves the selected type above or below the baseline by a specific number of points. Positive numbers move the characters up; negative values move the characters down.
- **Character Rotation** rotates only selected letters, rather than rotating the entire type object.
- **Underline** places a line below the selected characters.
- **Strikethrough** places a line through the middle of selected characters.
- In addition to these options, several artificial type styles (**All Caps**, **Small Caps**, **Superscript**, and **Subscript**) can be applied using the panel Options menu.

14. **Click OK to create the new file.**

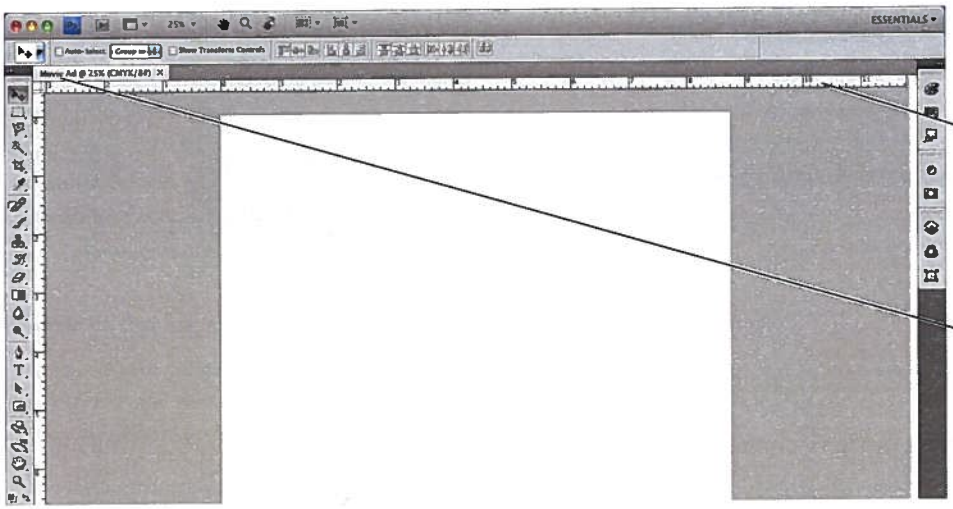
15. **If you don't see rulers on the top and left edges, choose View>Rulers to toggle rulers on.**

As we explained in the Interface chapter, the panels you see depend on what was done the last time you (or someone else) used the Photoshop application. Because workspace arrangement is such a personal preference, we tell you what panels you need to use but we don't tell you where to put them.

In our screen shots we typically float panels over the relevant area of the document; this allows us to focus on the most important part of the file at any time. As you complete the projects in this book, feel free to dock the panels, grouped or ungrouped, iconized or expanded, however you prefer.

Note:

Remember: Panels can always be accessed in the Window menu.



Rulers display the selected unit values.

As we mentioned earlier, the document tab shows the file name you already defined. This makes it much easier to work with multiple files, rather than a long list of Untitled1, Untitled2, etc.

16. **Choose File>Save As.**

Understanding Color Modes

PHOTOSHOP FOUNDATIONS

The **color mode** (or color space) defines the structure of the colors in your file.

Bitmap color reproduces all pixels in the image as either black or white; there are no shades of gray.

Grayscale color reproduces all tones in the file as shades of gray. This type of image has only one channel (you learn about color channels later in this book).

RGB creates color by combining different intensities of red, green, and blue light (collectively referred to as the "additive primaries"). Computer monitors and television sets display color in RGB, which has a **gamut** or range of more than 16.7 million different colors. An RGB file has three color channels, one for each of the additive primaries.

CMYK ("process") color is based on the absorption and reflection of light. Four process inks — cyan, magenta, yellow, and black (collectively referred to as the "subtractive primaries") — are used in varying combinations and percentages to produce the range of printable colors in most commercial printing. A CMYK file has four color channels, one for each of the four subtractive primaries. Theoretically, a mixture of equal parts of cyan, magenta, and yellow would produce black. Pigments, however, are not pure, so the result of mixing these colors is a muddy brown (called **hue error**). To obtain vibrant colors (and so elements such as type can be printed cleanly), black ink is added to the three primaries. Black is represented by the letter "K" for "key color."

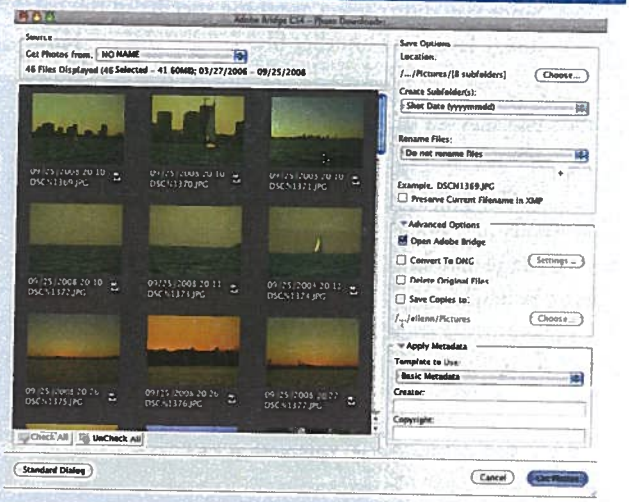
LAB color is device independent; the colors it describes don't depend upon the characteristics of a particular printer, monitor, or scanner. In theory, LAB bridges the gap between the various color models and devices; it is used as the background when converting images from one color space to another.

The problem with using RGB for print jobs is that the RGB colors eventually need to be converted to CMYK separations for a commercial printing press. Photoshop includes sophisticated tools that allow you to control this conversion, which you'll learn about in Project 6. Since you're creating this file for print, it's a better idea to create it in the color mode that will ultimately be used — CMYK — so you won't have to convert and correct colors later.

Adobe Bridge: Four Useful Tools for Graphics Professionals

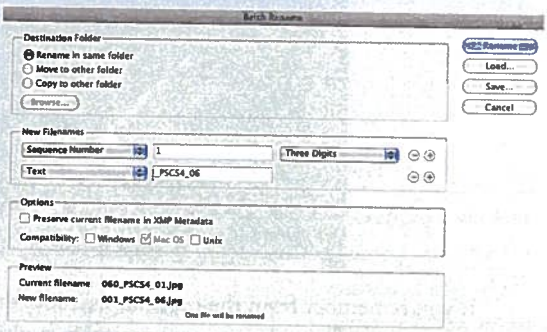
Capturing Images from a Camera

The Get Photos from Camera button in Bridge ( ) opens the Photo Downloader dialog box, where you can pull images from your digital camera, name them logically (according to your instructions), and store them somewhere on your hard drive or network.



Batch Renaming

If you choose Tools>Batch Rename in Bridge, you can change the names of multiple files in a single action. For example, we frequently use this command to add the appropriate codes to screen captures ("_PSCS4_04" for images in Project 4 of our Photoshop CS4 book). Rather than manually type this into every file name, we use the Batch Rename function to add the information for us. You have full control over what's used for the new file names, including dates, locations, custom text, and more.



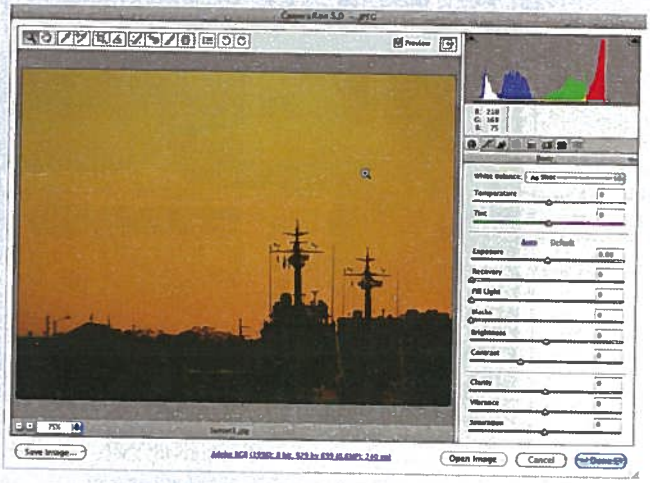
Accessing the Metadata Placard

Bridge's **Metadata Placard** shows technical photographic data, including virtual film speed, shutter settings, and a host of other information relative to images brought in from higher-end digital cameras. You can toggle it on or off in the Metadata panel Options menu.

Managing Camera RAW-Formatted Files

Most professional photographers rely on cameras that are a combination of digital and traditional SLR (single-lens reflex) technology. The file format of these high-end cameras contains far more data than Photoshop was originally designed to handle. To resolve this problem, manufacturers developed the RAW format, which stores more data — particularly in color ranges, hue, lighting, density, and other specifications.

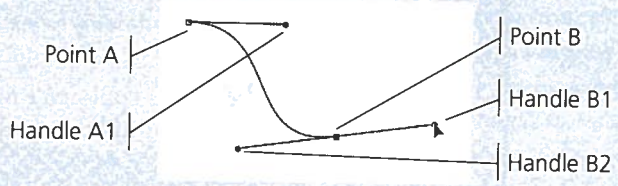
Both Bridge and Photoshop CS4 include the necessary tools to open and work with RAW images, making fine and detailed adjustments without losing any of the extra information stored in the RAW format. Click the Open in Camera Raw button in Bridge ( ) to access these options.



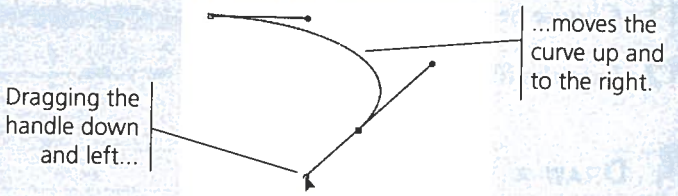
Anchor Point and Handle Review

As you learned in Project 2, an **anchor point** marks the end of a line **segment**, and the point **handles** determine the shape of that segment. The Pen tool (and its variants) in Photoshop function in essentially the same manner as the same tools in Illustrator. (The Photoshop Help files refer to handles as direction lines, and distinguishes different types of points with different names. Our aim here is to explain the overall concept of vector paths, so we use the generic industry-standard terms. For more information on Adobe's terminology, refer to the Photoshop CS4 Help files.)

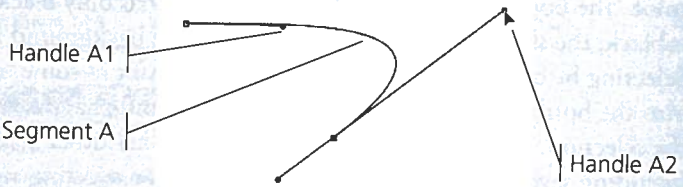
Each segment has two anchor points and two associated handles. We first clicked to create Point A and dragged (without releasing the mouse button) to create Handle A1. We then clicked and dragged to create Point B and Handle B1; Handle B2 is automatically created as a reflection of B1 (Point B is a **symmetrical point**).



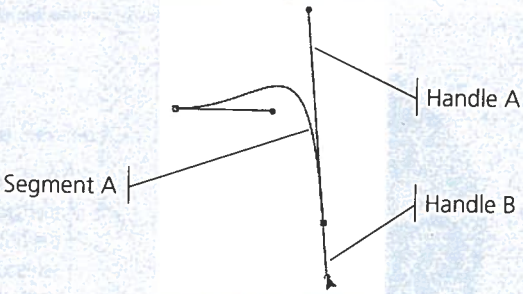
This image shows the result of dragging Handle B1 to the left instead of to the right. Notice the difference in the curve here, as compared to the curve above. By dragging the handle, the segment arcs away from the direction of the handle.



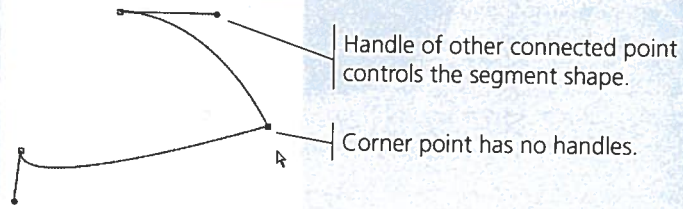
It's important to understand that a segment is connected to two handles. In this example, Handle A1 and Handle A2 determine the shape of Segment A. Dragging either handle to the right pulls out the arc of the connected segment.



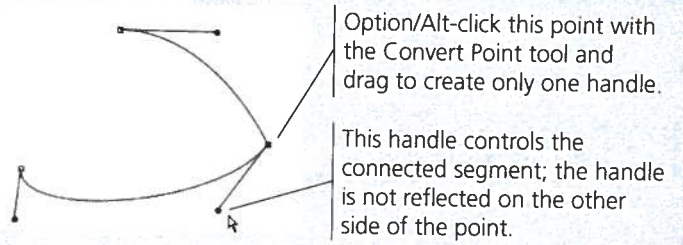
Clicking and dragging a point creates a symmetrical point; both handles start out at equal length, directly opposite one another. Dragging one handle of a symmetrical point also changes the opposing handle of that point. (In the example here, dragging Handle B also moves Handle A, which affects the shape of Segment A.)



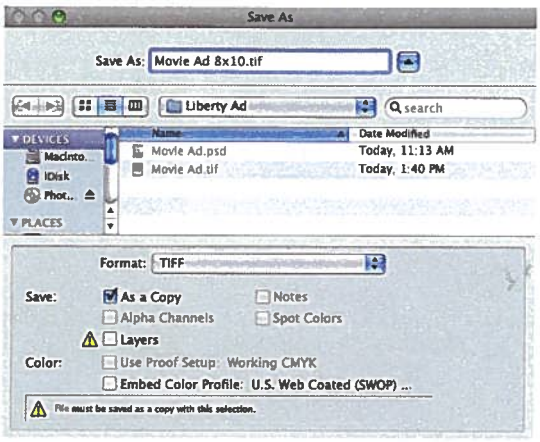
You can create corner points by simply clicking with the Pen tool instead of clicking and dragging. Corner points do not have their own handles; the connected segments are controlled by the handles of the other associated points.



You can convert a symmetrical point into a corner point by clicking the point with the Convert Point tool [ ] (nested under the Pen tool). You can also add a handle to only one side of an anchor point by Option/Alt-clicking a point with the Convert Point tool and dragging.



8. **In the Save As field, replace the word "copy" with 8x10 to distinguish it from the larger version.**



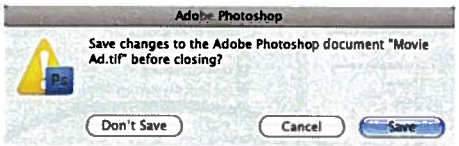
9. **Click Save. In the resulting TIFF Options dialog box, make sure the None compression option is selected and the Byte Order is set to IBM PC.**

10. **Click OK to save the second version of the file.**

11. **When the save is complete, choose File>Close. Click Don't Save when asked.**

When you finished the previous exercise, you saved the ad as an 8.5 × 11″ layered TIFF; that TIFF file remained open at the end of the exercise (not the original PSD file). In this exercise, you used the options in the Save As dialog box to save another copy of the TIFF file, this one with layers flattened and a small file size.

The open file is still the original Movie Ad.tif file, which you saved for the 8.5 × 11″ trim requirement. You've made changes, though (you cropped the image), so Photoshop asks if you want to save your changes before closing. If you click Save, you will overwrite the 8.5 × 11″ version with the cropped version.



Common File Formats

PHOTOSHOP FOUNDATIONS

Photoshop, with the extension PSD, is the native format.

Photoshop EPS can maintain vector and raster information in the same file, and can maintain spot color channels.

JPEG is a lossy compressed file format that does not support transparency.

Large Document Format, using the extension PSB, is used for images larger than 2 GB (the limit for PSD files); this format supports all Photoshop features including transparency and layers.

Photoshop PDF can contain all required font and image information in a single file, which can be compressed to reduce file size.

Photoshop 2.0 saves a flattened file that can be opened in Photoshop 2.0; all layer information is discarded.

Photoshop Raw supports CMYK, RGB, and grayscale images with alpha channels, and multichannel and LAB images without alpha channels; this format does not support layers.

Scitex CT is used for high-end image processing on proprietary Scitex computers. (Although rarely used today, this format is still used occasionally, so we include it here.)

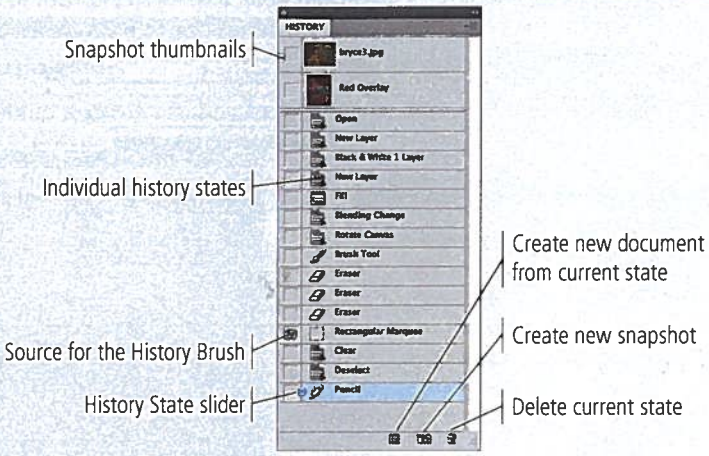
TIFF is a raster-based image format that supports layers, alpha channels, and file compression.

Photoshop DCS 1.0 creates a separate file for each color channel in a CMYK image, plus a fifth composite file that can be used for placement.

Photoshop DCS 2.0 is a later variation of DCS 1.0; version 2 supports spot color channels, and can be saved as multiple files (one for each channel) or as a single file.

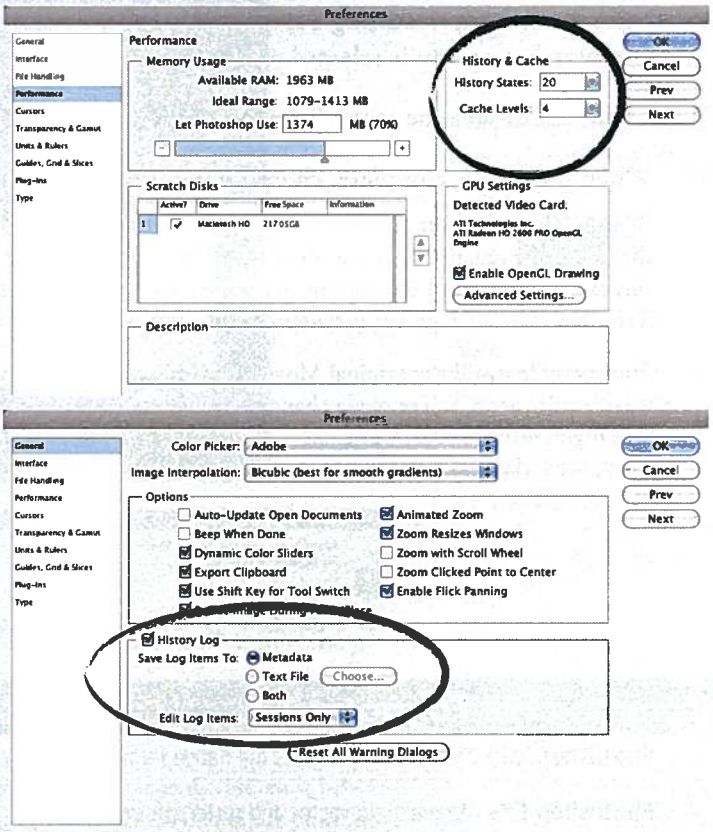
Navigating the Photoshop History

The Undo command (Edit>Undo or Command/Control-Z) only steps back to the last one action you completed; after you use the Undo command, it toggles to Redo. You can also use the Step Backward command (Edit>Step Backward or Command-Option-Z/Control-Alt-Z) to move back in the history one step at a time, or use the History panel (Window>History) to navigate back to earlier stages of your work.



Every action you take is recorded as a state in the History panel. You can click any state to return to that particular point in the document progression. You can also delete specific states or create a new document from a particular state using the buttons at the bottom of the panel.

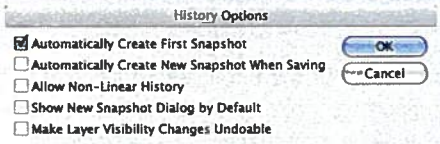
By default, the History panel stores the last 20 states; older states are automatically deleted. You can change that setting in the Performance pane of the Preferences dialog box. Keep in mind, however, that storing a larger number of states will increase the memory that is required to work with a specific file.



Keep the following in mind when using the History panel:

- The default snapshot shows the image state when it was first opened.
- The oldest state is at the top of the list; the most recent state appears at the bottom.
- The History State slider identifies the active state.
- You can save any particular state as a snapshot to prevent it from being deleted when that state is no longer within the number of states that can be stored.
- The history is only stored as long as the file is open; when you close a file, the history (including snapshots) is not saved.

- When you select a specific state, the states below it are dimmed so you can see which changes will be discarded if you go back to a particular history state.
- Selecting a state and then changing the image eliminates all states that come after it.
- Deleting a state deletes that state and those that came after it. If you choose Allow Non-Linear History in the History Options dialog box (accessed in the History panel options menu), deleting a state deletes only that state.



If you need to keep a record of a file's history even after you close the file, you can activate the History Log option in the General pane of the Preferences dialog box. When this option is checked, you can save the history log as metadata, in a text file, or both. You can also determine the level of detail that will be recorded in the history log.

- Sessions Only records each time you launch or quit and each time you open and close individual files.
- Concise adds the text that appears in the History panel to the Sessions information.
- Detailed gives you a complete history of all changes made to files.

More On Resolution and Resampling

Every raster image has a defined, specific resolution that is established when the image is created. If you scan an image to be 3″ high by 5″ wide at 150 ppi, that image has 450 pixels in each vertical column and 750 pixels in each horizontal row. Simply resizing the image stretches or compresses those pixels into a different physical space, but does not add or remove pixel information. If you resize the 3 × 5″ image to 6 × 10″ (200% of the original), the 450 pixels in each column are forced to extend across 6″ instead of 3, causing a marked loss of quality.

The **effective resolution** of an image is the resolution calculated after any scaling is taken into account. This number is equally — and sometimes more — important than the original image resolution. The effective resolution can be calculated with a fairly simple equation:

Original resolution / (% magnification / 100) = Effective resolution

If a 300-ppi image is magnified 150%, the effective resolution is:

300 ppi / 1.5 = 200 ppi

In other words, the more you enlarge a raster image, the lower its effective resolution becomes. In general, you can make an image 10% or 15% larger without significant adverse effects; the more you enlarge an image, however, the worse the results. Even Photoshop, which offers very sophisticated formulas (called "algorithms") for sizing images, cannot guarantee perfect results.

Downsizing

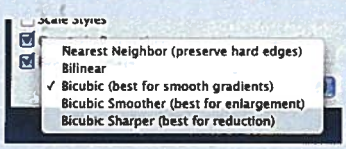
You can take advantage of effective resolution if you want to print a low-resolution image that is a large enough physical size. Consumer-level digital cameras work on this principle.

The camera captures all images at a set resolution (usually 72 ppi). The different quality settings (high, medium, and low, or some similar variations) do not change the capturing resolution. Instead, they affect the physical size of the resulting image; "high" quality settings produce very large pictures, while "low" settings produce small pictures.

When you first open a "high" quality picture in Photoshop, you might have a picture that is 28″ wide at 72 ppi. If you resize the image to 25%, or 7″ wide, you will increase the effective resolution to 288 ppi — enough for most printing applications.

Resampling

In general, you should always scan your images to the size you will use in your final job. If you absolutely must resize a digital image, you can use resampling to achieve better results than simply changing the image size. Photoshop CS4 offers five types of resampling algorithms to generate extra pixel data (when increasing the image size) or to determine which pixels to discard (when reducing the image size).



- **Nearest Neighbor** is a low-quality but quick resampling method. Nearest neighbor interpolates new pixel information based on only one of the squares in the grid, usually resulting in an image with a blocky appearance.
- **Bilinear** is a medium-quality resampling method. Bilinear resampling averages adjacent pixels to create new information.
- **Bicubic** creates the most accurate pixel information for continuous-tone images; it also takes the longest to process and produces a softer image. To understand how this option works, think of a square bisected both horizontally and vertically — bicubic resampling averages the value of all four of those squares (pixels) to interpolate the new information.
- **Bicubic Smoother** is useful for enlarging images with smoother results than basic bicubic resampling.
- **Bicubic Sharper** is useful for reducing the size of an image and maintaining sharp detail.

Discarding Pixels

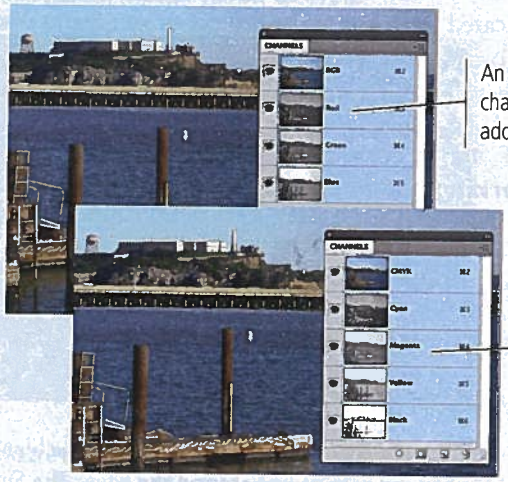
Higher resolution means larger file sizes, which translates to longer processing time for printing or longer download time over the Internet. When you scale an image to a smaller size, simply resizing can produce files with far greater effective resolution than you need. Resampling allows you to reduce the physical size of an image without increasing the resolution, resulting in a smaller file size.

The caveat here is that once you discard (delete) pixels, they are gone. If you later try to re-enlarge the smaller image, you will not achieve the same quality as the original (before it was reduced). You should always save reduced images as copies instead of overwriting the original.

Understanding Channels

You need a bit of background about channels to understand what's happening in the Quick Mask you're using.

Every image has one channel for each component color. An RGB image has three channels: Red, Green, and Blue; a CMYK image has four channels: Cyan, Magenta, Yellow, and Black. Each channel contains the information for the amount of that component color in any given pixel.



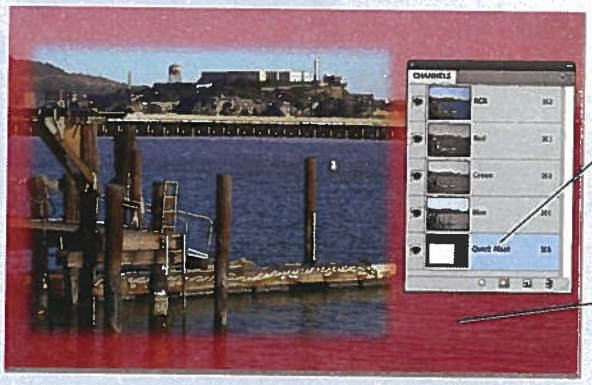
An RGB image has three channels, one for each additive primary.

A CMYK image has four channels, one for each subtractive primary plus one for black.

In RGB images, the three additive primaries can have a value of 0 (none of that color) to 255 (full intensity of that color). Combining a value of 255 for each primary results in white; a value of 0 for each primary results in black.

In CMYK images, the three subtractive primaries plus black are combined in percentages from 0 (none of that color) to 100 (full intensity of that color) to create the range of printable colors. Channels in a CMYK image represent the printing plates or separations required to output the job.

When you work in Quick Mask mode, an extra Alpha channel is created to temporarily store the selection area. An Alpha channel functions similar to a regular channel, in that it has the same range of possible values as a regular color channel (0–255 in an RGB image, 0–100 in a CMYK image). However, the Alpha value determines the degree of transparency in a color. In other words, a 50% value in the Alpha channel means that area of the image will be 50% transparent (semi-opaque).

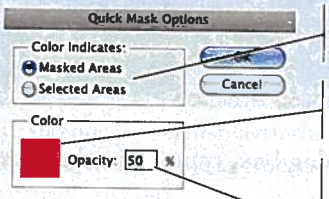


The Quick Mask channel stores the degree of transparency based on the current selection.

The semi-transparent red overlay shows areas being masked (i.e., the areas outside the current selection).

Alpha channels allow you to design with degrees of transparency. You can blend one image into another, blend one layer into another, or blend an entire image into a background in a page-layout application (both Adobe InDesign and QuarkXPress support embedded Alpha channels).

You can change the appearance of masks by double-clicking the Quick Mask button in the Tools panel, or double-clicking the Quick Mask thumbnail in the Channels panel.



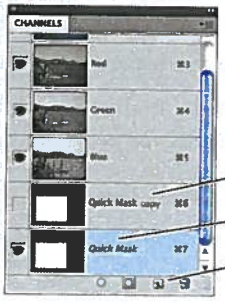
Change the mask to overlay the masked area instead of the selected area.

Click here to change the color of the mask in the image window.

Use this option to make the mask more or less transparent. This setting only affects the appearance of the mask in Photoshop; it doesn't change the transparency values in the actual Alpha channel.

Quick Masks are useful when you need to work with a temporary selection or if you are still defining the exact selection area. As long as you stay in Quick Mask mode, the temporary Alpha channel remains in the Channels panel (listed in italics as "Quick Mask"). If you return to Standard mode, the Quick Mask disappears from the window and the panel.

Once you've created a complex selection, you can save it as a permanent Alpha channel by dragging the Quick Mask channel onto the New Channel button at the bottom of the Channels panel. Doing so adds a channel named "Quick Mask copy" (not in italics), which will be a permanent part of the file even if you exit Quick Mask mode.



Permanent Alpha channel

Temporary Quick Mask channel

New Channel button

The Stylize Filters

In addition to the options in the Filter Gallery, other artistic filters can also be found in the various Filter submenus. The Stylize filters (Filter>Stylize) generate artistic effects, typically referred to as *painted* or *impressionist*.

Keep the following points in mind when you use filters:

- Filters can be applied to the entire selected layer or to an active selection.
- Some filters work only on RGB images; if you are in a different color mode, some or all filter options — including the Filter Gallery — will be unavailable.
- All filters can be applied to 8-bit images; available filter options are limited for 16-bit and 32-bit images.
- If you don't have enough available RAM to process a filter effect, you might get an error message.

Original Image

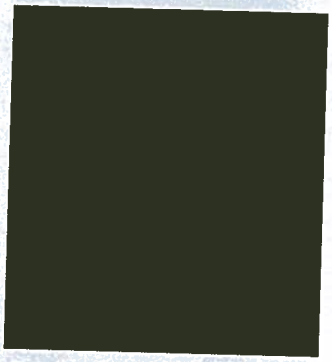
Diffuse shuffles pixels to soften focus.

Emboss makes an image look like it was pushed out from (embossed) or into (debossed) the surface.

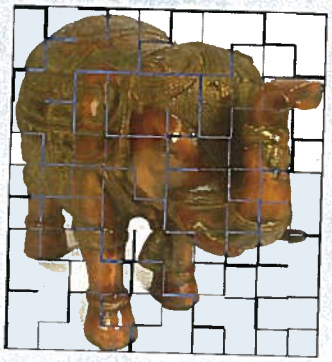
Extrude creates a 3D texture of raised blocks or pyramids, using a defined or random depth for the resulting grid.

Find Edges identifies areas with significant transitions and emphasizes the edges with dark lines.

Glowing Edges identifies color edges and adds a neon-like glow.



Solarize blends a negative and a positive image version of the image.



Tiles splits an image into a grid, and then offsets the resulting tiles with your choice of "grout" or gap fill.

Trace Contour finds the transitions of major brightness areas and thinly outlines them for each color channel.

Wind adds tiny horizontal lines in the image to create a windblown effect.

The Distortion Filters

Filters can be used for a variety of purposes, from purely aesthetic to technically functional. You can apply filters to specific selections, individual layers, or even individual channels depending on what you need to accomplish. If you combine filters with Smart Objects, you can also apply nondestructive filters and then change the settings or turn off the filter to experiment with different results.

The Distortion filters let you squeeze, stretch, bend, twist, and otherwise distort an image or selection. Some of these filters are controlled in the Filter Gallery, while others have their own dialog boxes.


Original Image


Diffuse Glow adds a haze of the current background color to lighter regions of the image.


Displace distorts an image based on a displacement map (the tone values of which determine the distortion).


Glass simulates the effect of looking through different types of glass.


Ocean Ripple simulates an underwater effect by adding randomly spaced ripples.


Pinch creates the effect of squeezing the edges of the image toward the center.


Polar Coordinates creates the effect of wrapping the image into a cylinder.


Ripple distorts the image. You can only define the amount and size of the effect.


Shear distorts the image as if it were being reflected on an angled mirror.


Spherize simulates the effect of wrapping an image around a three-dimensional sphere.

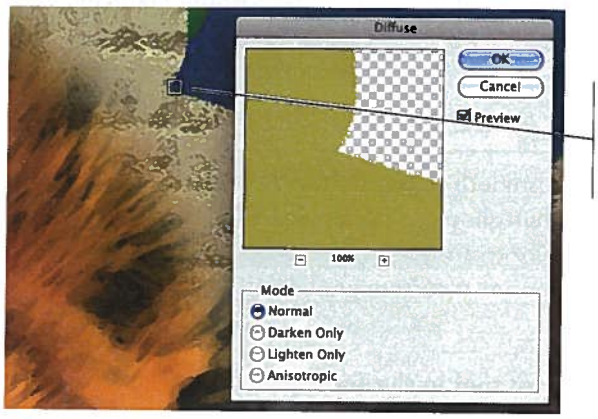

Twirl simulates the effect of placing the image into a whirlpool.


Waves creates a rippled effect with control over wavelength, amplitude, and wave type.


ZigZag distorts pixels diagonally, out from the center, or around the center.

7. **Move the mouse cursor over an edge in the document window. Click to change the preview area of the dialog box.**

When you see the edges, you can see the effect of the diffusion. (If the layer had more than just flat color, you'd see the effect right away.) The diffused pixels allow the shape edges to blend into the background instead of ending at an abrupt, sharp edge.



When the Diffuse dialog box is open, clicking in the image changes the visible area in preview window.

Note:

***Normal** diffusion scatters pixels randomly.*

***Darken Only** replaces light pixels with dark ones.*

***Lighten Only** replaces dark pixels with light ones.*

***Anisotropic** scatters pixels where there is the least difference in color.*

8. **Leave the mode set to Normal and click OK.**

9. **Save the file and continue to the next stage of the project.**

Lens Correction

PHOTOSHOP FOUNDATIONS

The **Lens Correction** filter (Filter>Distort>Lens Correction) is designed to remove inherent distortion from an image. You can also rotate an image or fix perspective problems caused by a tilted camera.

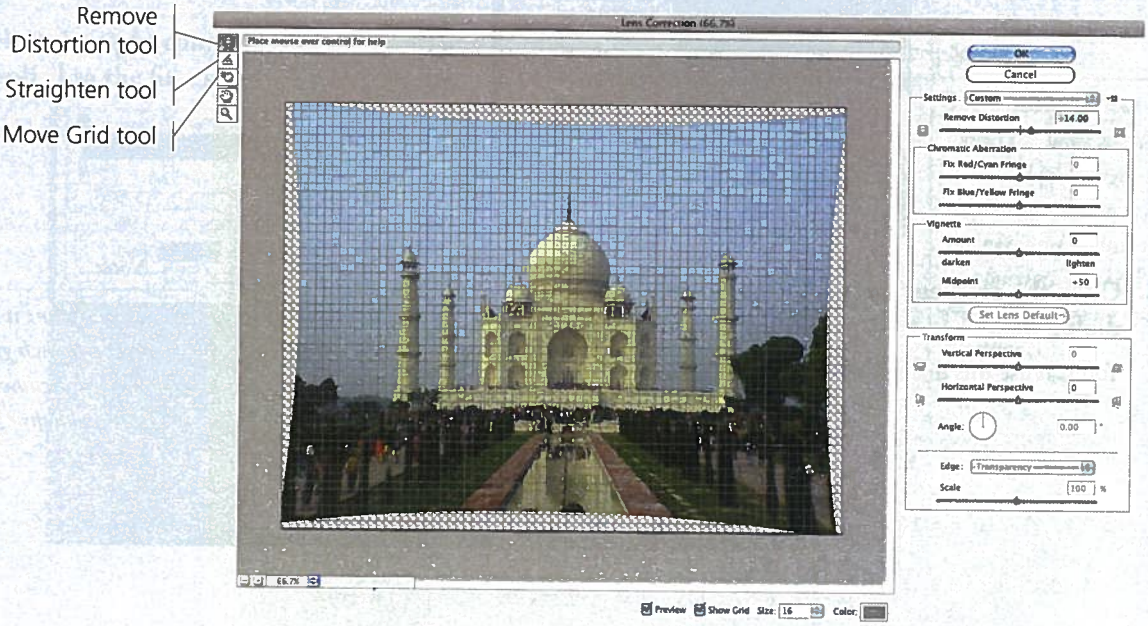
Remove Distortion corrects lens barrel or pincushion distortion. The slider straightens horizontal and vertical lines that bend either away from or toward the center of the image. (You can also use the Remove Distortion tool to make this type of correction.)

The **Chromatic Aberration** options clean up flaws such as color fringes or streaks around edges, as well as light-related problems caused by the lighting of the lens.

The **Vignettes** options correct dark edges caused by lens faults or shading when the photograph was taken.

The **Transform** options correct out-of-perspective images caused by camera tilt. The Vertical slider controls vertical lines and the Horizontal slider controls horizontal lines. The Angle option rotates the image to a specific degree.

The **Edge** options determine what will fill the empty areas that result when you remove distortion.



Distinguishing Photoshop Blending Modes

When working with blending modes, think of the top layer as the "blend" layer and the next lowest layer as the "base".

- **Normal** is the default mode (no blending applied).
- **Dissolve** results in a random scattering of pixels of both the blend and base colors.
- **Darken** returns the darker of the blend or base color. Base pixels that are lighter than the blend color are replaced; base pixels that are darker than the blend color remain unchanged.
- **Multiply** multiplies (hence the name) the base color by the blend color, resulting in a darker color. Multiplying any color with black produces black; multiplying any color with white leaves the color unchanged (think of math — any number times 0 equals 0).
- **Color Burn** darkens the base color by increasing the contrast. Blend colors darker than 50% significantly darken the base color by increasing saturation and reducing brightness; blending with white has no effect.
- **Linear Burn** darkens the base color similar to Color Burn; using Linear Burn, the brightness is reduced about twice as much for blend colors in the mid-tone range.
- **Darker Color** compares the channel values of the blend and base colors, resulting in the lower value.
- **Lighten** returns whichever is the lighter color (base or blend). Base pixels that are darker than the blend color are replaced; base pixels that are lighter than the blend color remain unchanged.
- **Screen** is basically the inverse of Multiply, always returning a lighter color. Screening with black has no effect; screening with white produces white.
- **Color Dodge** brightens the base color. Blend colors lighter than 50% significantly increase brightness; blending with black has no effect.
- **Linear Dodge (Add)** is similar to Color Dodge, but creates smoother transitions from areas of high brightness to areas of low brightness.
- **Lighter Color** compares channel values of the blend and base colors, resulting in the higher value.
- **Overlay** multiplies or screens the blend color to preserve the original lightness or darkness of the base.
- **Soft Light** darkens or lightens base colors depending on the blend color. Blend colors lighter than 50% lighten the base color (as if dodged); blend colors darker than 50% darken the base color (as if burned).
- **Hard Light** combines the Multiply and Screen modes. Blend colors darker than 50% are multiplied, and blend colors lighter than 50% are screened.
- **Vivid Light** combines the Color Dodge and Color Burn modes. Blend colors lighter than 50% lighten the base by decreasing contrast; blend colors darker than 50% darken the base by increasing contrast.
- **Linear Light** combines the Linear Dodge and Linear Burn modes. If the blend color is lighter than 50%, the result is lightened by increasing the base brightness. If the blend color is darker than 50%, the result is darkened by decreasing the base brightness.
- **Pin Light** preserves the brightest and darkest areas of the blend color; blend colors in the mid-tone range have little (if any) effect.
- **Hard Mix** pushes all pixels in the resulting blend to either all or nothing. The base and blend values of each pixel in each channel are added together (e.g., R 45 [blend] + R 230 [base] = R 275). Pixels with totals over 255 are shown at 255; pixels with a total lower than 255 are dropped to 0.
- **Difference** inverts base color values according to the brightness value in the blend layer. Lower brightness values in the blend layer have less of an effect on the result; blending with black has no effect.
- **Exclusion** is very similar to Difference, except that mid-tone values in the base color are completely desaturated.
- **Hue** results in a color with the luminance and saturation of the base color and the hue of the blend color.
- **Saturation** results in a color with the luminance and hue of the base color and the saturation of the blend color.
- **Color** results in a color with the luminance of the base color and the hue and saturation of the blend color.
- **Luminosity** results in a color with the hue and saturation of the base color and the luminance of the blend color (basically the opposite of the Color mode).

When using a painting tool (Brush, Paint Bucket, Pencil, etc.), you have two additional blending mode options:

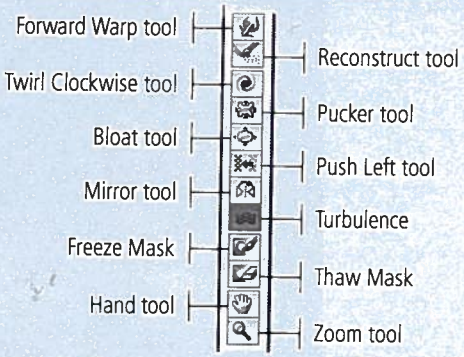
- **Behind** paints only on the transparent part of a layer.
- **Clear** paints each pixel and makes it transparent.

Liquify Filter Tools

Several tools in the Liquify dialog box distort the brush area when you drag. The distortion is concentrated at the center of the brush area, and the effect intensifies as you hold down the mouse button or repeatedly drag over an area. Some of the tools (Twirl, Pucker, Bloat, and Turbulence) have airbrush-like effects, applying more distortion when you hold down the mouse button for a longer period of time.

Use the following as a guide when you want to create unique effects with the Liquify filter:

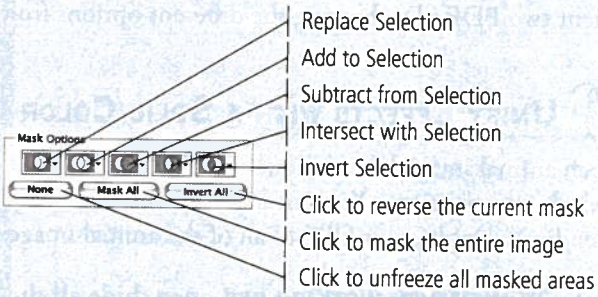
- The **Forward Warp tool** pushes pixels in the direction you drag.
- The **Reconstruct tool** restores distorted pixels to their original state.
- The **Twirl Clockwise tool** rotates pixels clockwise as you hold down the mouse button or drag. Press Option/Alt to twirl pixels counterclockwise when you hold down the mouse button or drag.
- The **Pucker tool** moves pixels toward the center of the brush, creating a zoomed-out effect if you simply hold down the mouse button without dragging.
- The **Bloat tool** moves pixels away from the center of the brush, creating a zoomed-in effect if you simply hold down the mouse button without dragging.



- The **Push Left tool** moves pixels left when you drag up, and moves pixels right when you drag down. You can also drag clockwise around an object to increase its size, or drag counterclockwise to decrease its size. Press Option/Alt to reverse the direction of the distortion.
- The **Mirror tool** copies pixels to the brush area. Drag to mirror the area perpendicular to the direction of the stroke. Press Option/Alt to mirror the area in the direction opposite to that of the stroke.
- The **Turbulence tool** scrambles pixels.
- The **Freeze Mask tool** protects areas where you paint from being liquified.
- The **Thaw Mask tool** removes the protection created by the Freeze Mask tool.
- The **Hand** and **Zoom tools** have the same function here as in the main Photoshop interface.

Using Masks

By freezing areas of the Liquify Filter preview, you protect those areas from distortion with a mask that looks and behaves like Quick Mask mode in the main Photoshop interface. You can use the Mask options to freeze areas based on existing selections, transparent areas, or layer masks in the original image. Each button has a pop-up menu, where you can choose one of those options (if they are available):



- **Replace Selection** creates a new mask from the selection, transparency, or mask.
- **Add to Selection** adds the selection, transparency, or mask to the currently thawed area.
- **Subtract from Selection** adds the selection, transparency, or mask to the currently frozen area.
- **Intersect with Selection** creates a mask with any areas that are frozen in the preview and in the selection, transparency, or mask from the original image.
- **Invert Selection** inverts the mask in the preview image within the boundaries of the selection, transparency, or mask from the original image.

The Blur Filters

The Filter>Blur menu includes a number of choices for applying corrective or artistic blurs to an image or selection.

Average finds the average color of an image or selection, and then fills the image or selection with the color to create a smooth appearance.

Blur and **Blur More** smooth transitions by averaging the pixels next to the hard edges of defined lines and shaded areas. When you apply these filters, you have no additional control: Blur is roughly equivalent to a 0.3-pixel radius blur, and Blur More uses approximately a 0.7-pixel radius.

Box Blur averages the color value of neighboring pixels. You can adjust the size of the area used to calculate the average value; a larger radius value results in more blurring.

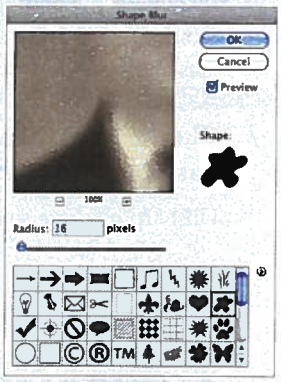
Gaussian Blur blurs the selection by a specific amount.

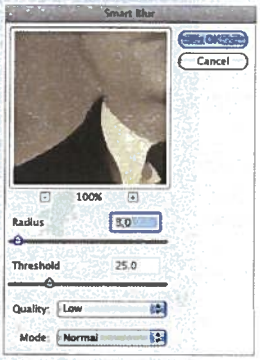
Motion Blur includes an option for changing the blur angle, as well as a Distance value for the number of pixels to blur.

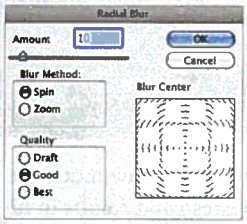
Radial Blur either spins the pixel around the center point of the image, or zooms the pixel around a center point based on the Amount setting. The farther the pixel is from the adjustable center point, the more the pixel is blurred. You can drag the Blur Center window to move the center point of the blur.

Shape Blur uses a specific shape (**kernel**) to create the blur. You can load different shape libraries by clicking the triangle and choosing from the list. Radius determines the size of the kernel; the larger the kernel, the greater the blur.

Smart Blur allows you to blur tones closely related in value without affecting the edge quality of an image. You can set a radius for blurring, just as you can with the Gaussian Blur filter. The Threshold setting allows you to determine how closely pixels must be related in tone before being blurred (from 0.01 to 100).



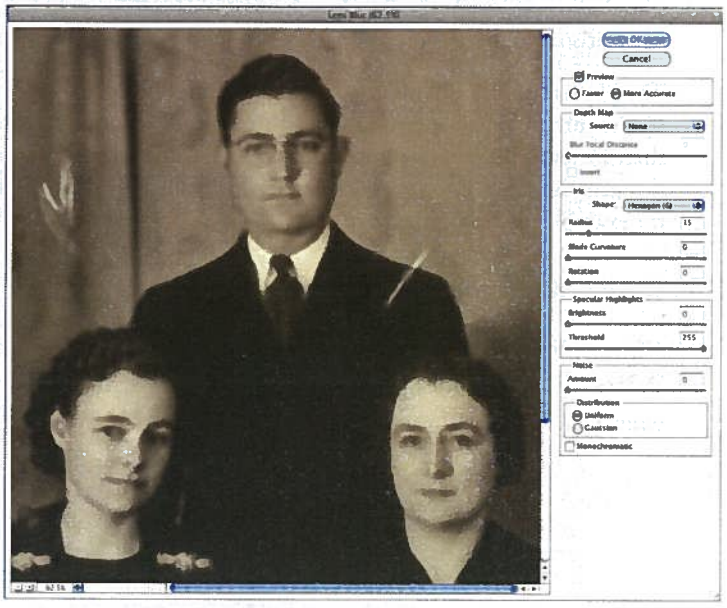




You can also specify a Quality level (High, Medium, or Low) or change the Mode setting. Using the Edge Only mode, edges are outlined in white, and the image is forced to black. Using the Overlay Edges mode, the color image is blurred, and the edges are outlined in white.

Surface Blur blurs an image while trying to preserve edges. The Radius option specifies the size of the blur in whole numbers. The Threshold option controls how much the tonal values of neighboring pixels must differ before being blurred. (You can only apply whole-number radius blurs.)

Lens Blur adds blur to an image to create the effect of a narrower depth of field so some objects in the image remain in focus, while others areas are blurred.



The Smart Sharpen Filter

The Smart Sharpen filter allows you to independently control the amount of sharpening that occurs in shadow and highlight areas. The Sharpen tab defines how much sharpening will be applied.

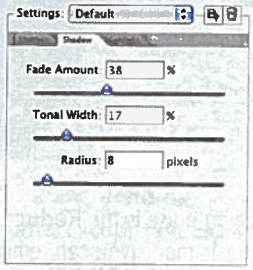
Amount and **Radius** have the same purpose as in the Unsharp Mask filter. A higher Amount increases contrast between edge pixels; a higher Radius value widens the effects applied to edges.

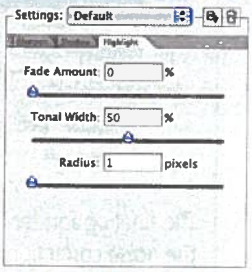
Remove defines the sharpening algorithm used to sharpen the image. Gaussian Blur is the method used by the Unsharp Mask filter. Lens Blur detects edges and detail in an image, and provides finer detail and fewer halos. Motion Blur tries to reduce the effects of blur due to movement.

Angle sets the direction of motion if you choose the Remove Motion Blur option.

The **More Accurate** check box processes the file more slowly for a more accurate blur removal.

Using the Shadow and Highlight tabs, you can adjust sharpening of dark and light areas. (If you don't see these tabs, make sure the Advanced radio button is selected.)





Fade Amount adjusts the amount of sharpening.

Tonal Width controls the range of tones in the shadows or highlights that are being modified. Smaller values restrict the adjustments to only darker regions for shadows and only lighter regions for highlights.

Radius defines the size of the area (in pixels) around each pixel used to determine whether a pixel is in the shadows or highlights.

The Noise Filters

Noise is defined as random pixels that stand out from the surrounding pixels, either hurting the overall appearance of the image (as in the case of visible grains in an old photograph) or helping to prevent printing problems (as in the case of a gradient that extends across a large area). Photoshop includes several filters (Filters>Noise) that can add or remove noise.

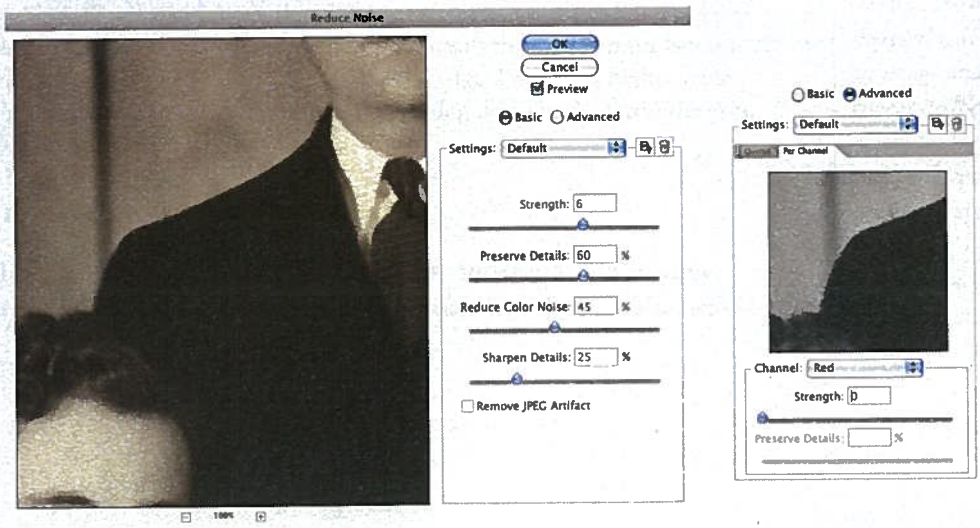
The **Add Noise filter** applies random pixels to the image. Uniform distributes color values of noise between 0 and the defined amount. Gaussian distributes color values of noise along a bell-shaped curve. Monochromatic adds random pixels without affecting the colors in the image.

The **Dust & Scratches filter** reduces noise by comparing the contrast of pixels within the defined radius; pixels outside the defined threshold are adjusted.

The **Median filter** reduces noise by blending the brightness of pixels within a selection. The filter compares the brightness of pixels within the defined radius, and replaces pixels that differ too much from surrounding pixels with the median brightness value of the compared pixels.

The final option for reducing noise is the **Reduce Noise** filter, which provides far greater control over different aspects of the noise correction. In Basic mode, you can remove luminance noise and color noise in the composite image. In Advanced mode, you can remove noise from individual color channels. (**Luminance noise**, also called grayscale noise, makes an image appear grainy; **color noise** usually appears as color artifacts in the image.)

- **Strength** controls the amount of luminance noise reduction.
- **Preserve Details** controls how carefully the filter compares the difference in luminance between adjacent pixels. Lower values remove more noise but result in less detail.
- **Reduce Color Noise** removes random color pixels from the image.
- **Sharpen Details** sharpens the image. Because the noise reduction process inherently blurs the image, this option applies the same kind of sharpening that is available in the Photoshop Sharpen filters.
- **Remove JPEG Artifacts** removes artifacts and halos caused by saving an image with a low JPEG quality setting (in other words, using a high lossy compression scheme).



4. Click the Warning icon in the upper-right corner of the panel to reset the cache.

Every time you zoom in or out of an image, Photoshop stores the results of the display in a **cache** (a drive location that keeps track of what you're doing). The image you're looking at on the Histogram often doesn't match the results on the drive. The Warning icon shows there's a problem; clicking the icon resets the image and rereads the cache.

Note:

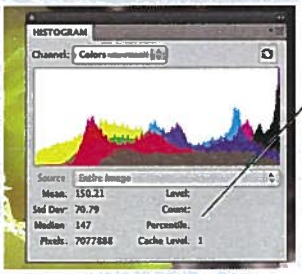
If you see the Warning icon in the Histogram panel, click the icon to match the disk cache with what's happening in the live image.

Clicking the Warning icon resets the cache.

Histogram Statistics

PHOTOSHOP FOUNDATIONS

The histogram shows the distribution of pixels — or more accurately the tonal values of those pixels — from the darkest to the lightest portions of an image, for the entire image or for individual color channels. The Histogram panel can help identify problems that need to be corrected, while also showing you the overall effect of a potential correction you might be considering.



Expanded view of the Histogram panel shows detailed statistics about pixels on all or individual channels.

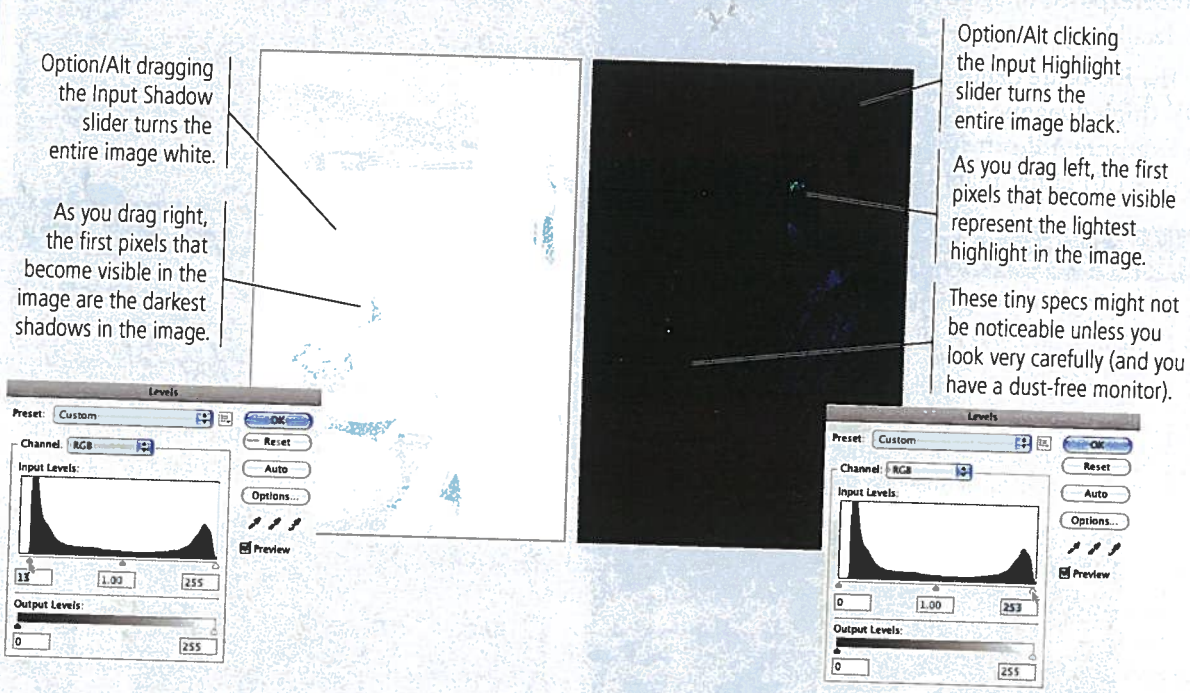
In Expanded view, you can see more information about how pixels are distributed in the image (from shadows on the left to midtones in the center to highlights on the right).

- The **Mean** value is an average point of the brightness values. A Mean of 128 usually identifies a well-balanced image. Images with a Mean of 170 to 255 are light; images with a Mean lower than 90 are very dark. (As you can see, the image you're working with in this exercise is relatively dark — a Mean of 87.50.)
- The **Standard Deviation** (Std Dev) value represents how widely the brightness values vary.
- The **Median** value shows the middle value in the range of color values.
- The **Pixels** value displays the total number of pixels used for the graphic displayed on the histogram.
- The **Level** statistic displays the intensity level of the pixels below the mouse cursor.
- **Count** is the same as pixels – but *only* for the area below the cursor (the Pixels value shows the total number for the histogram).
- Values displayed as a **Percentile** represent the percentage of pixels **below or to the left** of the cursor location. Zero represents the left edge of the image and 100% is the right edge.
- The **Cache Level** is determined by the Performance preferences (Preferences>Performance) and is related to the Cache Refresh icon (and Warning icon). The larger your cache, the more you can do before the image and the disk cache don't match. On the other hand, a larger cache requires more RAM for the application to run smoothly.

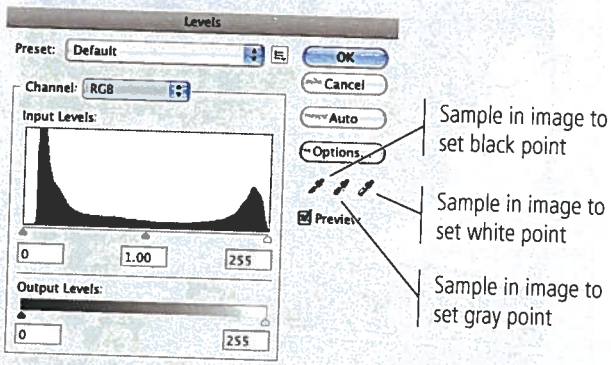
Identifying Shadows and Highlights

As you moved the Shadow and Highlight sliders in the previous exercise, you changed the **black point** and **white point** of the image — the points at which pixels become black or white. The goal is to find highlight and shadow points that maintain detail. Choosing a point that has no detail causes the area to turn totally white (highlight) or black (shadow) with no detail reproduced. In some images, it can be difficult to visually identify the black and white points in an image; in these cases you can use the Levels dialog box to help you find those areas.

If you press Option/Alt while dragging the Input Shadow or Input Highlight slider, the image turns entirely white or black (respectively). As you drag, the first pixels that become visible are the darkest shadow and the lightest highlight.

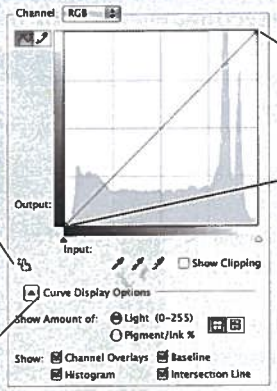


Once you have identified the highlight and shadow points in the image, select the White Point eyedropper and click the highlight, and then select the Black Point eyedropper and click the shadow to define those two areas of the image.



Curve Display Options

The Curve Display options allow you to control what is visible in the graph. (If you can't see the Curve Display options, click the button to the left of the heading.) The Show Amount Of radio buttons reverse the input and output tone scales. Light is the default setting for RGB images; Pigment/Ink % is the default setting for CMYK images.

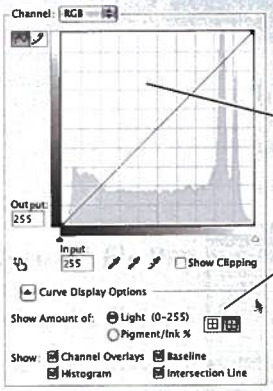


The On-Image adjustment tool lets you click and/or drag directly on an image to determine where the point should appear on the curve. You can add 14 points on a curve, and delete points by pressing Command/Control-delete.

Click this button to show or hide the Curve Display options.

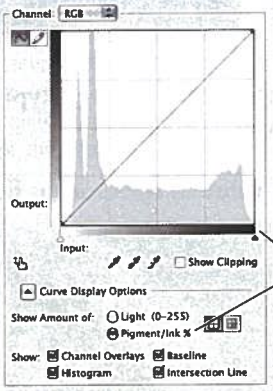
By default, the lightest point for an RGB image is in the top right.

The darkest point for an RGB image is in the bottom left.

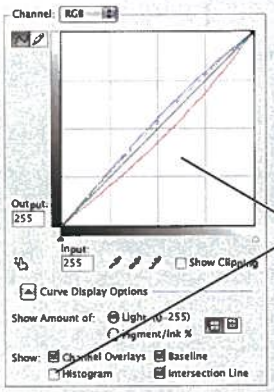


Gridlines in the graph can help you more precisely position curve points.

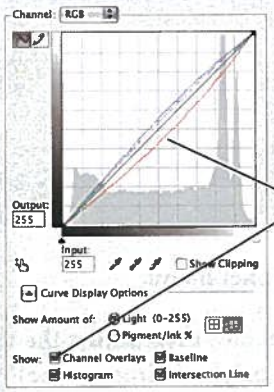
Use these buttons to show a four-by-four grid or a ten-by-ten grid.



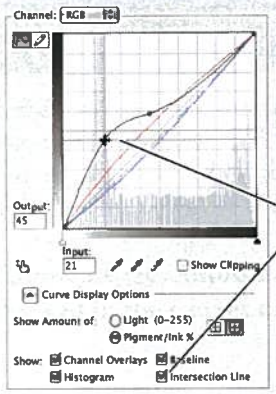
By choosing Show Amount of Pigment/Ink %, the tone scales are reversed. For this RGB image, the lightest point moves to the bottom left and darkest point moves to the top right.



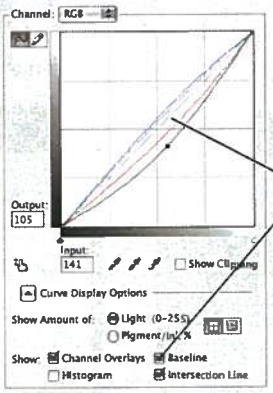
When the Histogram option is turned off, the graph does not show the representative histogram.



When the Channel Overlays option is checked, each channel is represented on the graph by a separate line.



When the Intersection Line option is active, crosshairs appear when you drag a point in the graph, which can help you more precisely adjust curve points.



When the Baseline option is active, the original curve is represented by a gray line.