

Using and Understanding Photoshop 7 Curves

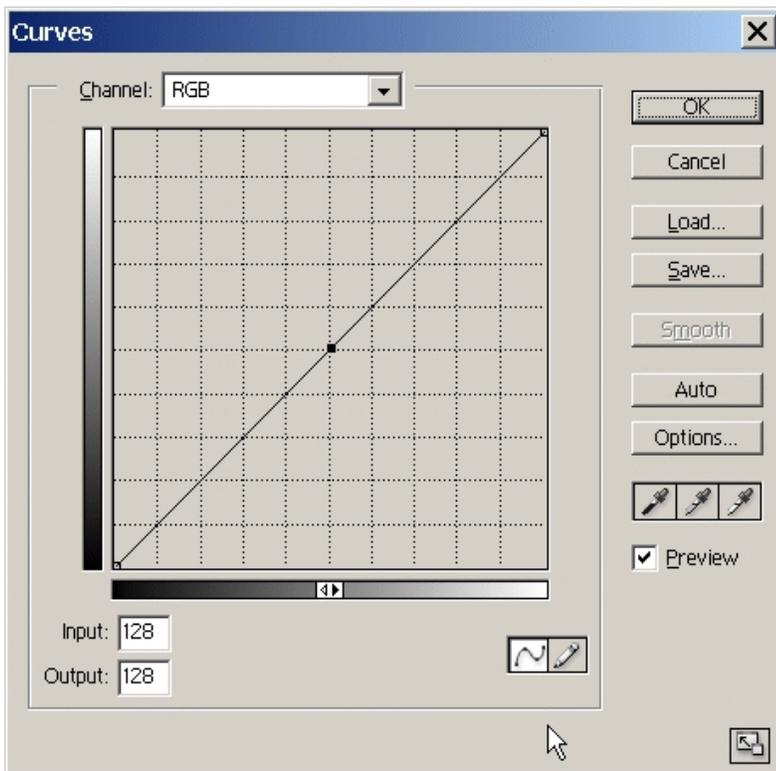
This document is a “condensed” compilation of material from several sources to help users to understand and use the various elements in the curves window. This is not a tutorial on color correction procedures. But, like chess, before you can learn to play the game, you must first learn how the pieces move. You can then concentrate on how to play the game. This document is designed to help you “learn how the pieces move” in the curves window.

GENERAL

Like the Levels dialog box, the Curves dialog box lets you adjust the entire tonal range of an image. But instead of making adjustments using only three variables (highlights, shadows, midtones), with Curves you can adjust any point along a 0-255 scale while keeping up to 15 other values constant. You can also use Curves to make precise adjustments to individual color channels in an image.

Note: For RGB images, Curves displays intensity values from 0 to 255, with shadows (0) on the left. For CMYK images, Curves displays percentages from 0 to 100, with highlights (0) on the left. To reverse the display of shadows and highlights at any time, click the double arrow below the curve. The RGB choice is probably the most widely used by most Photoshop users.

The RGB curve controls the overall brightness, whereas the individual curves control only the brightness of the individual Red, Green, or Blue colors.



TO INVOKE CURVES

Use either Ctrl+M or
Images>Adjustments>Curves

ABOUT THE GRID

The horizontal axis of the graph represents the original intensity values of the pixels (Input levels); the vertical axis represents the new color values (Output levels). In the default diagonal line, all pixels have identical Input and Output values.

To make the Curves grid finer/coarser, Alt-clicking inside the Curves window will toggle between 4X4 and 10X10.

To toggle between a smaller/larger Curves window, click the small icon in the lower right corner of the curves window.

You can add up to 14 control points to the curve, locking those values. To remove a control point, drag it off the graph, select it and press Delete, or Ctrl-click it. You cannot delete the endpoints of the curve. It is also generally a good idea to keep the “preview” box checked, so the impact of actions is immediately visible in the image onscreen.

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THE POINT AND PENCIL TOOLS

There are two adjacent icons near the bottom of the curves window, the pencil tool, and the point tool. The default selection is the point tool. This can be used to set points on the curve via clicking. The pencil tool is a freehand way to set any desired curve. It works just like a pencil in an image window. The “Smooth” button is greyed out when the point tool is selected. But, for the pencil, it becomes active. Clicking on it when the pencil tool has been used will smooth out only the portion of the curve that was drawn using the pencil.

SELECTING THE CHANNEL TO WORK ON

Use the dropdown channel window to select the R, G, B, or RGB channel you want to work on.

To edit other combinations of color channels at the same time, Shift-click the desired channels in the Channels palette before choosing Curves. The Channel menu then displays the abbreviations for the target channels--for example, CM for cyan and magenta. When editing more than one channel at the same time, using the arrow keys (or any protocol to change input vs output) will simultaneously change all the selected channels.

SETTINGS POINTS ON THE CURVE BY USING THE IMAGE ITSELF

To determine the lightest and darkest areas in the image, click-drag over the image. The intensity values of the area under the pointer, with the corresponding location on the curve, are displayed in the Curves dialog box.

To locate the corresponding curve point in an image, click and drag in the image, and watch the moving point on the curve as you do so. To set that image point as a point on the curve, Ctrl+click that point.

Shift+Ctrl-click in the image to set a point on the curve for the selected color in each color component channel simultaneously, but not in the composite RGB channel.

Shift-click points on the curve to select multiple points. Selected points appear filled with black. When multiple points are selected, any of the methods below of changing the value of a point will affect all selected points simultaneously.

Ctrl+D will deselect all points (not remove them, only deselect them).

MOVING BETWEEN AND SELECTING POINTS ON A CURVE

The “active” point is solid black. To move to a different point, just click on it. Or, from the keyboard, Ctrl+Tab will advance forward, one point at a time. Shift+Ctrl+Tab will advance backwards.

CHANGING THE VALUE OF A POINT

When a point is set on the curve, and is selected, there are two small boxes labeled “input” and “output” at the lower left in the Curves window. Before adjustments are made, input and output will be the same.

To change things, you can drag the given point. Dragging horizontally changes the input value, and vertically changes the corresponding output for that input value. Or, values can be keyed into the two fields provided.

When working in these two boxes, one can also use the **89** arrow keys to change 1 unit for each click. Using the Shift key will change the value by 10 units for each click. Remember, even though the input value is changed by moving horizontally on the grid, one still uses the vertical arrow keys to change its value.

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MANIPULATING THE CURVES

There are many ways to use Curves to improve images. These include -

1. Drag the curve until the image looks the way you want it.
2. Click a point on the curve, and enter Input and Output values for the point.
3. Select the pencil at the bottom of the dialog box, and drag to draw a new curve. You can hold down Shift to constrain the curve to a straight line, and click to define endpoints. When you're finished, click Smooth if you want to smooth the curve.
4. Click Auto to adjust the image using the settings specified in the Auto Correction Options dialog box.

REMOVING POINTS ON A CURVE

There are 3 ways to do this.

1. Click on the point, and drag it out of the window.
2. Click on the point to select it, and then hit the delete key.
3. Ctrl+click on the point.

THE EYEDROPPER TOOLS

There are 3 eyedropper icons in the lower right of the Curves window. The one on the left appears to have black in it, the one on the right white in it, and the one in the middle has grey in it. The default settings for each eyedropper are: R=G=B=0 for the black eyedropper, R=G=B=128 for the grey eyedropper, and R=G=B=255 for the white eyedropper.

They can be used to set the black, medium grey, and white points in an image. If an image was on screen that had areas that should be a deep black, a pure white, and a middle grey area, clicking each eyedropper on its respective pixel(s) will set those points to the values for the droppers noted above.

The RGB values for each eyedropper can be set by the user to whatever is desired, including colors, et al by double-clicking on an eyedropper, and entering the RGB values wanted in the color window. I personally changed the values for black to be 35 for RGB. I left white and middle grey as they were. Then, I saved that new combo as the default settings for all future Curves activities. This can be saved by clicking the "Options" button in the main Curves window, and checking the "save as defaults" box.

The three eyedroppers can all have their RGB values changed to anything the user wants. If one had an image that an area that was supposed to be a pure and fully saturated RED in it, any of the eyedroppers could be set to R=255, and G & B equal to zero. Then, clicking with that eyedropper in the RED image area would change it to be that value. This capability is really a very powerful tool to have available.

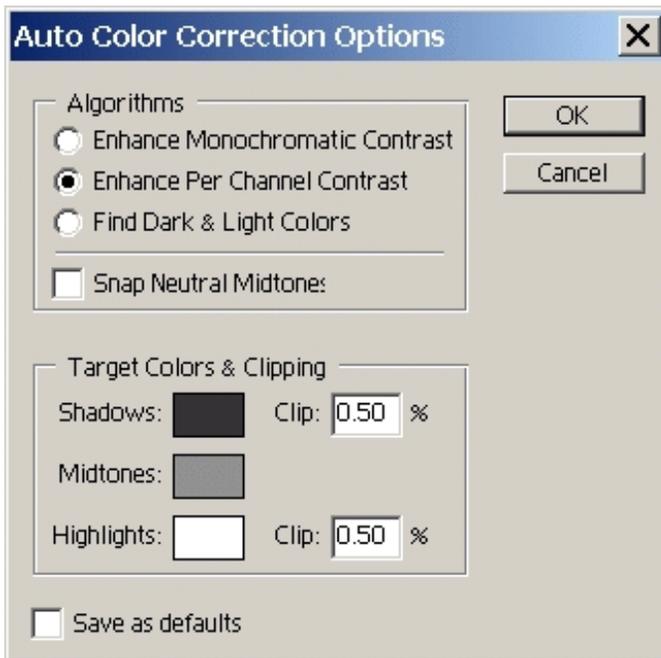
Remember, if you want to confine that change to a specific portion of the overall image, make sure that area has been isolated from the image via a selection, a separate layer, or whatever method you like to use.

LOAD AND SAVE BUTTONS

These do exactly what they imply. You can save all the things you set up in the window, and give it a descriptive name. You can set your own folder to use for the saving, and happily, Photoshop will remember that location the next time you click on the "load" button. A list of all the saved configurations will come up.

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OPTIONS BUTTON WINDOW



The options window is shown here. The “target colors are those that have been set for the three eyedroppers. The “clipping” values for the highlights and shadows will increase the number of pixels mapped to black and white (or whatever color you have them set for), as the values in the boxes are raised.

The first 3 algorithms are really the same as invoking “Auto Contrast”, “Auto Levels”, and “Auto Color”.

The “Snap Neutral Midtones” will apply Auto Color's “Auto Gamma Correction

The “Save as defaults” was discussed earlier - it saves the settings in the Curves window for future use.

GRADIENT MAPS

Gradient maps can be applied as a curve map. These maps are available via Image>Adjustments>Gradient Map. One can do strange things playing with this. I personally haven't found any good use for them yet, but they will produce some weird and unusual results.

CONCLUSION

This document covers most of the information relative to using Curves in Photoshop 7. I'm sure that there are things that I've omitted, but c'est la vie. I haven't really checked to see what's different in Photoshop 6, but it's probable that not too much has changed since then. I generated this material as part of my personal ongoing Photoshop self-education. While I've used Curves for quite awhile, I never really got into them in any depth. The reading of source materials, and documenting of this condensed “outline” has been a good lesson in my ongoing quest to understand and use all that I can in Photoshop.

And, as I said earlier, once this is mastered, as in chess, you've learned to move the pieces. Next comes the process of applying all of this to become a player. That will take much longer than learning to move the pieces.

For any comments, good, bad, or otherwise, you can contact me at ronhirsch@adelphia.net