

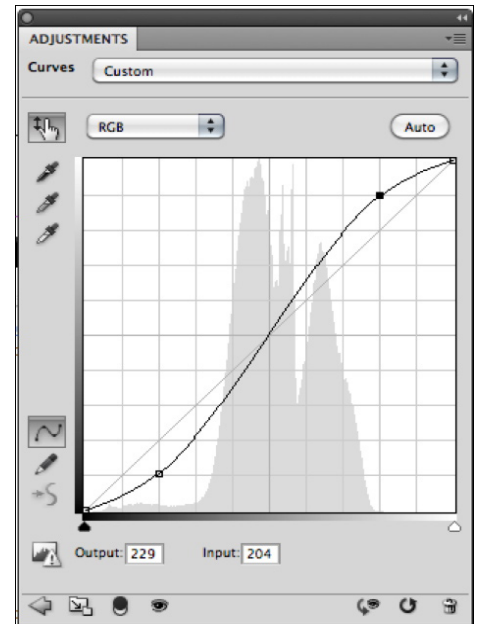
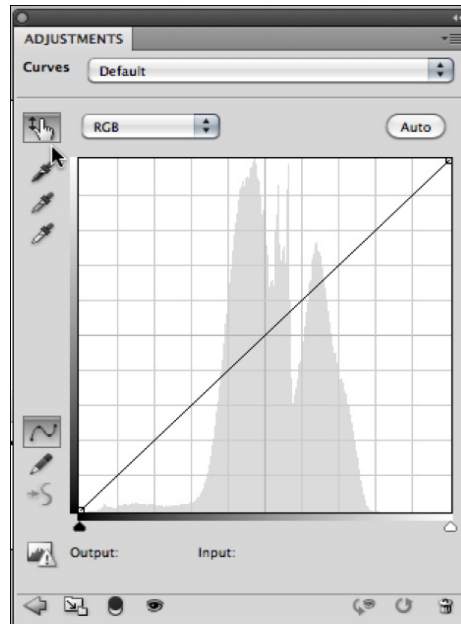
# Understanding Curves

A how to article on basic image adjustments

The curves adjustment layer in Adobe Photoshop can at first glance be a bit intimidating. Correctly used, however, it can make the difference in a good image becoming a great one. Incorrectly used, it can destroy a photograph faster than just about anything else. This article is intended to give a brief overview of the many adjustments that can be accomplished by using this very versatile and powerful tool. While the most common adjustment that curves is used for is contrast adjustments, it can also be used to set black point and white point, neutralize a color cast, as well as make other color and saturation adjustments. Curves is my tool of choice for all basic color and tonal corrections.

Comparing curves to other options, such as levels or brightness and contrast, curves is much more powerful due to the fact that it can isolate and shift a specific tonal range instead of having only one adjustment slider. This gives the photographer total control over the final image output.

First lets break down the curves adjustment panel. When we first add a curves adjustment layer, the default curves adjustment panel opens. The curve begins as a diagonal line. The gradients along the bottom and left side represent the input and output values, input along the bottom and output on the side. As we add points along the line and move them, you will notice the input and output numbers change. The input value is where we started and the output value where we want that tone to be. If we want the tone to become lighter, we raise it, darker and we drop it. As we do this, no-



*The image on the left shows the default curves adjustment panel, the one on the right, after an adjustment that increases mid tone contrast has been made. Notice the mid tone area of the curve has become steeper and the shoulder and toe of the curve more gentle. When increasing the contrast in one area, there will always be an area that is decreased. This possibly negative effect can be countered by hiding the adjustment with a layer mask.*

tice how the curve changes. Where the curve is steeper, the contrast has increased, where it is gentler, the contrast is decreased. You will also notice that in the curves adjustment panel there is a histogram, much like in the levels adjustment panel. There are even the same triangular sliders under the histogram that can be used to set black point and white point, just as in the levels panel. Along the left side of the panel are three eyedroppers which can also be used to set black and white point. Double clicking on any of the eyedroppers allows you to set default colors for these eyedroppers to represent. This can be useful if you know what the darkest tone that your printer can render, then you can preset this and easily adjust your image black point. Likewise, you can

do this for the white point as well. The mid tone eyedropper will allow you to neutralize the color by clicking on an area that you know should be neutral in your image. The button that resembles a hand, just above the eyedroppers allows for on image adjustments to be made. Using this tool, you can click on a tone in the image that you want to shift, and while holding the mouse button down, drag up or down to adjust the tone. This makes for very easy tonal adjustments to be made.

Before jumping into specific curves adjustment techniques, keep in mind these tips. I have found it much easier to use multiple curves adjustment layers making small adjustments than trying to make all adjustments in one layer. At least initially, only add one or two control

points to a curve. More than that and it is really easy to destroy an image quickly! Also, I will use one curves layers to set white point and black point and separate layers for tonal adjustments. Color adjustments are on separate layers still.

### Setting White and Black Point

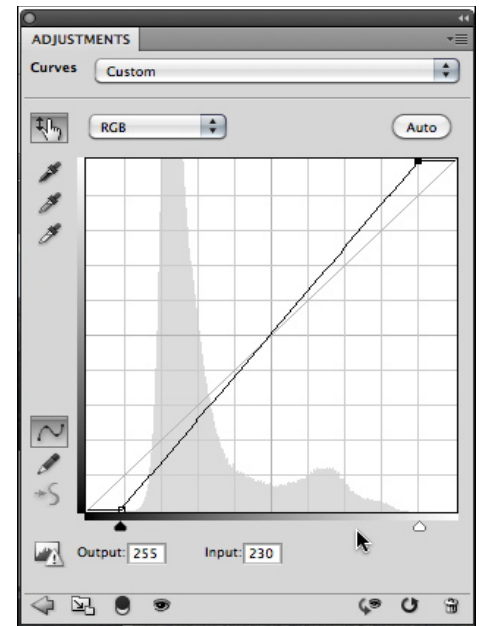
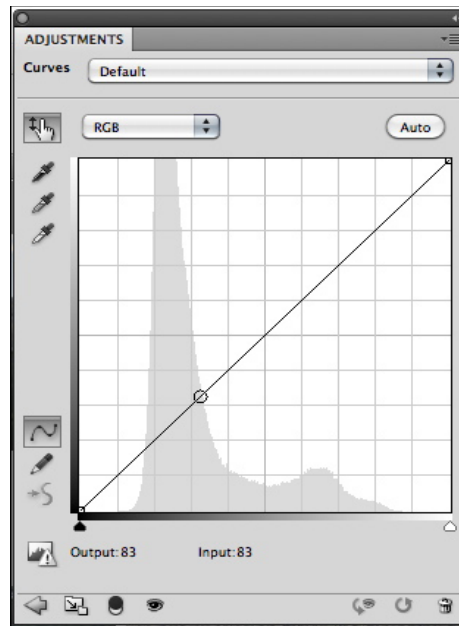
Setting white point and black point is done in much the same way as we have done in levels. Add a curves adjustment layer and while holding down the option key slide the black point slider to the right. The image will turn white and as you move the slider, you see where some black pixels start to show up. When they do, back up a bit until they disappear and release the slider. Do the same for white point. The only difference with white point is that the image will turn black and when you see white pixels show up, back up a bit and release the slider.

### Tonal Adjustments

Setting tonal, or contrast adjustments with curves is a very simple concept but takes much practice to master.

When making global adjustments, those adjustments that affect the entire image, go easy. I have found that a small amount of curves goes a long way to improving image quality. Local adjustments, or those adjustments affecting just a small area of the image can be more drastic, as you will be controlling them through the use of a layer mask.

The on image adjustment tool has made building curves a breeze. The first step you need to take before using this tool, however, is to set your color picker to sample a 5x5 area instead of the default point sample. To do this, select the eyedropper tool and in the options bar set the sample size to 5x5 average. This will give much more accurate results. Next, select the on image adjust-



*On the left is the default curves panel, and on the right the same panel after setting black point and white point. Avoid shadow and highlight clipping by not moving the sliders too into the histogram.*

ment tool by clicking on the button in the adjustments panel that looks like a hand. Move the eyedropper over an area that needs adjusted and click and drag up to lighten or down to darken. It really is that simple. When making local adjustments, you can then use the layer mask to hide the adjustment from areas of the image that you do not want to be affected. Using this technique you can completely control the contrast of each individual part of the image. I have photographs where I have made 20 or more different curves adjustment layers to get the exact effect that I saw in my mind when I photographed the scene.

If you determine after making an adjustment, that it needs a little refinement, just select the control point on the curve that needs moved and then use the up and down arrow keys to nudge the point to where it needs to be. It is much better to use the arrow keys than just dragging, as it is easy to move the input value when dragging. Nudging with arrow keys will avoid this pitfall.

### Color Correction

Removing a color cast is quite easy with curves. Going back to how we set white point and black point, we will do the same thing, except for one thing. Before, we applied the adjustment while the RGB channel was selected. This time we will set white and black point on each individual color channel. Select Red in the color channel drop down menu above the histogram and set black and white point as before. Repeat this step for the green and blue channels. Most of the time this method will remove any undesired color cast. Make sure that you do not clip this histogram in any of the channels, as this will create contrast beyond repair. It is better to be a bit flat as we can correct this, but if shadow or highlight clipping has occurred, there is nothing we can do. Pixels have been thrown away and we cannot recover them.

After mastering these techniques, we will explore some more advanced curves color adjustment techniques.