Smoothness of Masks vs. Selections

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In this lesson, we're going to look into a technical issue that can affect the quality of your selections. Any time you have a selection, the edge of that selection will only contain a limited amount of information.

If you avoid using selections and instead use channels and masks, then the edges, or transitions, can be of much higher quality.

We'll demonstrate this by making the same adjustment to a mask and to a selection. When you work with a mask, any areas that are white are fully selected and any areas that are black are not selected.

Any time you make a selection based on the brightness of the image, you are technically creating a luminosity mask. If you look at the Channels Panel (which is usually grouped with the Layers Panel), you will see that there are three color channels: red, green and blue. You can create a luminosity mask by duplicating the contents of one of these channels.

If an image only consists of shades of gray, all three of the color channels will look identical. This is because all shades of gray are made up of a balanced amount of red, green and blue. This is the case in the example image, where we have a gray gradient.
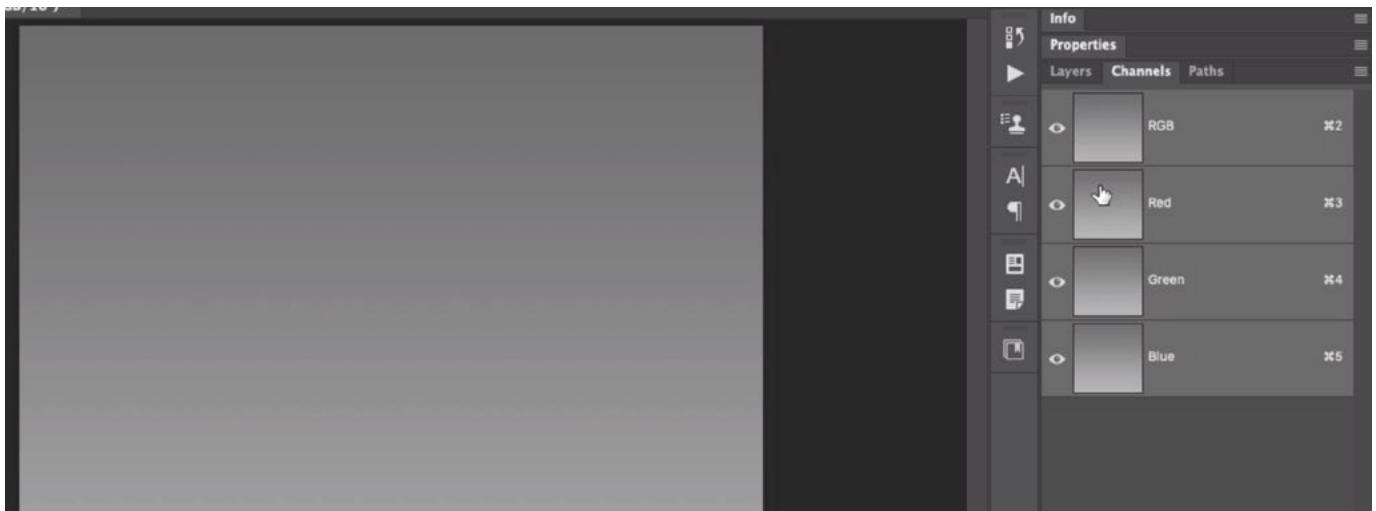

This image consists of only a gray gradient. The Channels Panel is open and you can see that the red, green and blue channels all look the same.

Let's first look at what happens when we make an adjustment to a mask. We'll duplicate one of these channels (green) and then we'll make a Levels adjustment to force the darkest part of the gradient to black and the lightest part of the gradient to white. The result is a smooth black-to-white gradient.
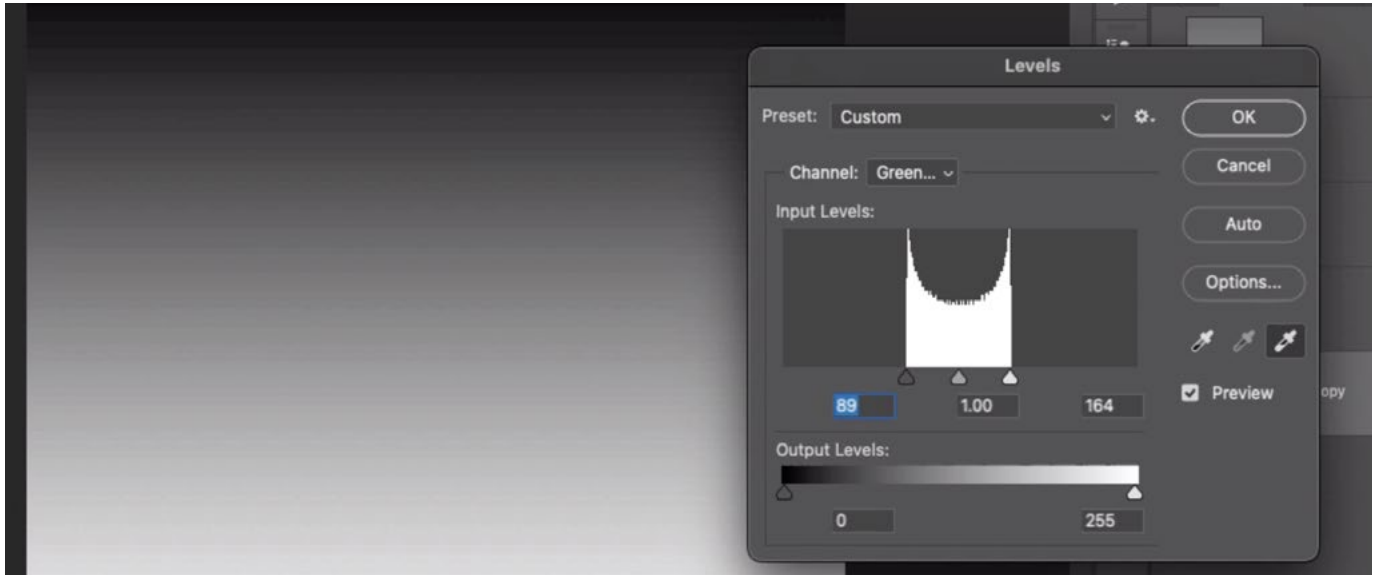
We duplicated one of the channels and we're using a Levels adjustment to force areas to black and white. In the Levels dialog, you can use the black eyedropper to force an area to black and the white eyedropper to force an area to white.

Next, we'll look at what happens when we make an adjustment to a selection. To create a selection of a channel, we'll hold down Command key (Ctrl on Win) and click on the channel thumbnail. The "marching ants" selection will appear on the image. Note that the marching ants only show up when an area is at least 50% gray or brighter. To create a new channel based on this selection, we'll click the rectangular icon at the bottom of the Channels Panel. (It looks like the Layer Mask icon.) The new channel will appear and it will be named "Alpha."
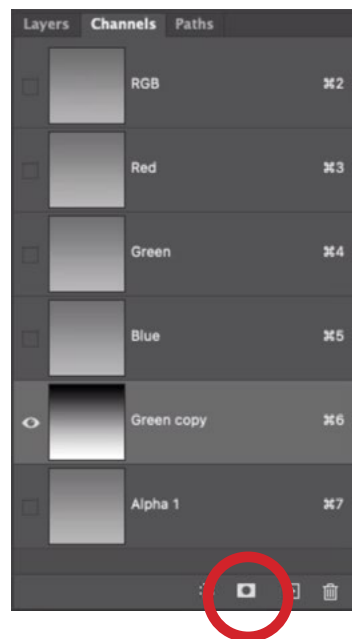
We selected the green channel and then made a new channel (Alpha 1) based on the selection by clicking the circled icon.

Now, we'll apply the same exact Levels adjustment to this new channel that was based on the selection. The result does NOT look smooth. It looks more jagged.

8-bit vs. 16-bit You will only see this difference in smoothness if your original image was in 16-bit mode. If you are working with raw files, you will be working in either 8-bit or 16-bit mode. This is a setting that can be specified in Lightroom or Camera Raw. In 8-bit mode, there are 256 brightness levels and no more. When an image is 16 bit, it has thousands upon thousands of brightness levels. If an image started in 16 bit mode and remained in 16-bit for the entire time that you were adjusting it, the results will be smoother. All of those brightness levels will allow you to make more extreme adjustments without degrading the quality of the image. Since 8-bit images have fewer brightness levels, the results of extreme adjustments (Levels, Curves, etc.) will not be as smooth. For this reason, I personally always open my images in 16-bit mode.

The same Levels Adjustment was applied to the channel that was based on the selection. You can see that the result is not smooth.

It's important to note that all JPEG files are 8-bit. Therefore, if you make selections based on the brightness of the jpeg picture and then adjust that selection using Levels or Curves, you will likely get that jagged result.

How to specify bit depth in Lightroom and Camera Raw If you are opening an image from Lightroom, the External Editing Preferences (Lightroom menu > Preferences), will allow you to choose whether the images should be opened in Photoshop using 8 or 16 bits of data. If you are working in Camera Raw, this setting can be found at the bottom of the interface. There is a line of text at the bottom of the Camera Raw window, and if you click on it, the image settings will appear. These will allow you to choose between 8 and 16 bit.
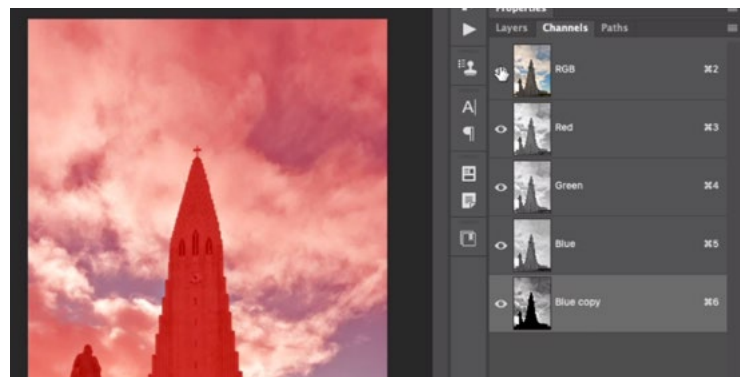
Selections work like 8-bit The state of a selection is limited to being 8 bits, which means that there are 256 brightness levels. That is why adjustments based on selections are not as smooth as adjustments based on masks.

This is important to remember any time you need to make a selection based on the brightness of the image AND you need to create a smooth, gradual transition between what is selected and what is not selected. It would not matter if you were making a selection of an object with crisp edges (text, for example).

This also applies to Quick Mask Mode, since it is still based on a selection. In Quick Mask Mode, the selection is viewed as a red overlay on the image, where selected areas look normal and unselected areas have a red overlay. You can also adjust the selection in Quick Mask Mode by painting with black (to deselect) and white (to select).

I like working with Quick Mask Mode because it allows me to better visualize the area I want to isolate. I also love having the ability to adjust the selection in this mode. So how can you get the convenience of Quick Mask Mode while working on a mask instead of a selection? Well, you can do that in the Channels Panel.

Create the selection of the area you'd like to isolate and then save that selection by clicking on the Select menu and then choosing Save. Then, open the Channels Panel. Any saved selections will appear here as channels. Click on the channel for the selection you just made in order to make it active. Then, click the eyeball icon for the top, RGB channel so that you're viewing the main image and the selected channel at the same time. Do-

The saved selection appears as a channel in the Channels Panel. With that selection active, we turned on the visibility of the RGB channel in order to get this red overlay view.

ing this will give you the same red overlay view that you see in Quick Mask Mode. You can make adjustments in this view just like you would in Quick Mask Mode. It's not a selection because it never started as "marching ants" and it therefore
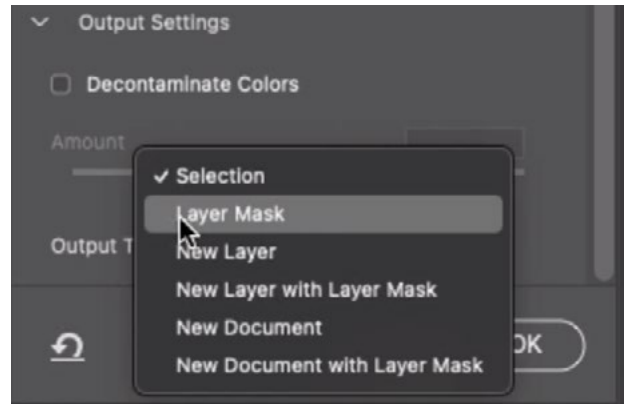
still uses 16 bits worth of data. Click back on the name of the RGB channel to exit that view and return to viewing the regular image.

There are some things where you can't avoid creating selections. Those are things you might want to avoid using in the instances where you need a smooth transition. One of these examples is the Color Range feature, which doesn't allow you to output the end result as a mask.
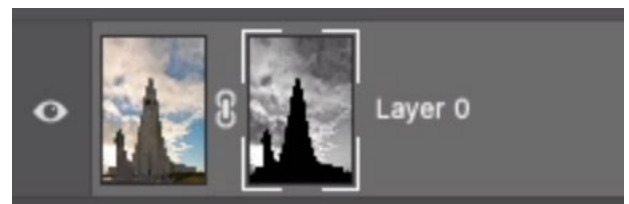
There are other features that DO allow you to output the result as a mask. One of these is the Select & Mask feature. When using this feature, there is an Output Settings category on the left side of the window. Here, you can use the Output To menu to choose whether you'd like the result to be a selection or a mask. The resulting mask will contain 16 bits of data as long as what you started with was never a selection.

The Output settings in the Select & Mask window allow you to output the results as a mask.

Convert contents of channel to layer mask

It's easy to load the contents of a channel into a selection (Command+click), but this would result in 8-bit quality. There is a way to convert the contents of a channel into a mask that can be applied to a mask attached to the active layer. With the layer mask active, click on the Image menu and choose Apply Image. This feature essentially allows you to copy something from one place and put it somewhere else. In the Apply Image dialog, use the Channel menu to choose which channel you'd like to apply to the layer mask. Make sure the Blending menu is set to Normal and then click OK. This will apply the contents of the channel to the active mask.

You can convert the contents of a channel into a layer mask by using the Apply Image command.