

CHANNELS

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Of all the Photoshop jargon thrown about, one term that confuses people more often than not is **Channels**. Just what are they? Where do they come from? How can I use them? This handout will try to answer the above questions.

One important fact about Channels, no matter what their use, is that a single channel in Photoshop can only store 8 “bits” of information, or 256 distinct levels of value. This single fact is vitally important to a full understanding of channels in general.

Photoshop uses Channels in two ways:

- *Storing color and value information*
- *Storing selections*

CHANNELS AS COLOR AND VALUE STORAGE AREAS

A black and white (or “greyscale”) image, when opened in Photoshop has only one channel, *black*. That channel contains all the value (tone) information for the original image, broken down into the 256 individual levels of grey from black (level “0”) to white (level “255”). In other words, the greyscale image can only be described by a total of 256 values, no matter how many discrete tones were available in the film or paper-based original.

When a color photograph is opened in Photoshop, a separate Channel for each color in that file is created. RGB files have 3 Channels, (one for Red, one for Blue and one for Green). Since each of these channels can only have 256 levels of information, each one describes the appropriate *value* for each color in the image. We are able to describe an image in “24-Bit” or “Millions of Colors” by multiplying together the potential color information in each channel ($256 \times 256 \times 256 = 16,777,216$). When an image is converted to CMYK mode, the file will have 4 Channels (one each for Cyan, Magenta, Yellow and Black).

Photoshop allows us to look at and modify the channels of an image through the Channels palette. Using this palette, each Channel can be viewed and/or acted upon separately or in combination.

The Channels palette seen at right has all the Channels visible at once. The eye icon next to each thumbnail image indicates that we are seeing all 4 Channels (one each for R, G & B plus a composite Channel that shows us all 3 together). The highlighted (grey, in this illustration) background of each Channel indicates that all the Channels are active; if any changes were made to the file, each Channel would be affected.





The Channels palette visible at left shows that all Channels are visible in our Photoshop document (the eye next to all four Channels), but only the Green Channel is active (the grey highlight on the Green Channel). This means that any changes made to the file would only affect the Green Channel, leaving the other Channels untouched. Having only one (or two, if you choose) Channels active at a time can make for some interesting effects in painting and when using filters.

Think also of being able to compensate for improper color balance by only modifying one Channel of an image. When you think of it, that's really what is happening any time you use *any* method of adjusting color balance on an image; you are telling Photoshop to make an adjustment to one or more of the RGB (or CMYK) Channels.

Additionally, sometimes it is easier to make a selection in an image in only one Channel, then use that selection on the whole image. Think here of a picture of a neutral object against a red background. In which Channel would the contrast between the object and the background be the greatest? The Magic Wand or the Color Range selection tool might be more effective in this situation than if they were trying to select colors from all three Channels at once.

This Channels palette (at right) shows the Green Channel as being both the only visible and the only active Channel, as the eye icon and the highlight are only on that Channel. A Preferences setting in Photoshop allows you to see these individual color channels either in their "own" color or as greyscale. In almost every instance, it is easier and more useful to look at them as greyscale. This preference is set by going to File> Preferences> Display and Cursors... and unchecking the box labeled "Color Channels in Color."



Note, too, the "Command Key" shortcuts that allow selection of individual channels through the keyboard. So, for example, you can select the Green channel with the Channels palette, or you can type "⌘-2" to accomplish the same task.

Another way to access individual Channels is through the Levels and Curves commands. In each of those dialog boxes, there is a pull-down menu that allows adjustment of the values of each channel separately. This can be a very powerful color correction method, as it allows "one-step" control over both image values and image color balance.

USING CHANNELS TO STORE SELECTIONS

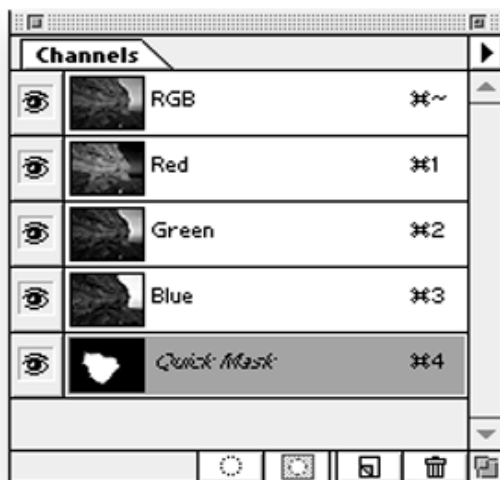
In your work with Photoshop, you've probably saved selections so you can go back and use the same selection again. When you have done that, you have saved Channels.

In Photoshop-Speak, these are known as **Alpha Channels**. They hold selection information in them. These selections are not stored as "Marching Ants," but rather as Masks of 8-Bit (Greyscale) information that can be changed back into "Marching Ants" selections at any time. A file can have many such Alpha Channels, though their presence does add to the size of the file.

These Masks (or Channels; two words with the same meaning in this case) accomplish the same thing that selections do; protecting some areas of an image while allowing other areas to be changed. Once a "marching ant" selection is made, it can be saved as a Channel in one of two ways: either by going to the Select menu and choosing "Save Selection..." or by clicking the second icon from the left in the Channels palette, which does the same thing as the menu command.

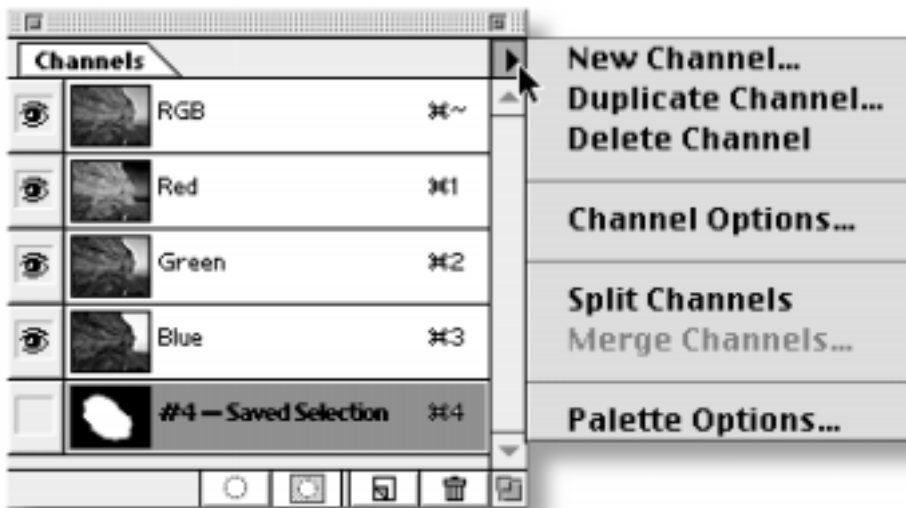
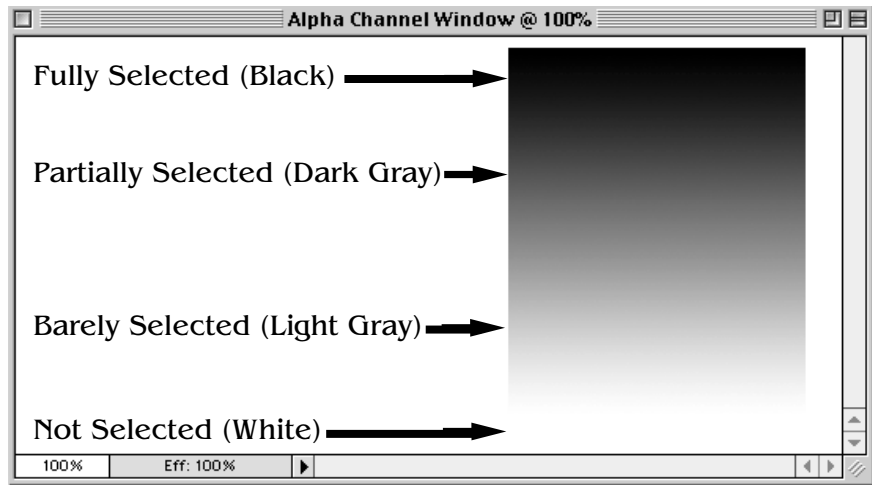
A Mask (or any Channel, for that matter) can be turned back into a selection either by using the Select menu's command "Load Selection...", by dragging it to the Selection icon at the bottom left of the Channels palette, or by ⌘-clicking on the Channel in the Channels palette. Any Channel can be duplicated by dragging it to the Copy icon (second from the right; looks like a little page with a turned down corner) at the bottom of the Channels palette, and can be deleted by dragging it to the Trash Can icon at the bottom right of the palette.

Further, Channels can be dragged between files. For example, you could select a starfish from one picture, save the selection as an Alpha Channel Mask, then drag that Channel from the Channels palette to a second picture of the sky, giving a perfect star-shaped selection to work with in your sky picture.



You know by now that the QuickMask mode allows you to edit a selection using the painting tools. What you are doing, of course, is changing the contents of your Alpha Channel Mask. In essence, QuickMask is simply making the Alpha Channel easily accessible to you so you can edit it. In fact, if you leave the Channels palette open when you enter QuickMask mode, you will note that a new, temporary channel called *QuickMask* is created. This will disappear when you return to Marching Ant selection mode, but it serves as a reminder that a QuickMask and a Marching Ant Selection and a saved Alpha Channel are essentially the same thing, but in different forms.

One of the options that is frequently overlooked here is the fact that if you edit your QuickMask or your Alpha Channel Mask (remember they are the same thing) with either grey paint or a low opacity, you are making a partial selection. This is like using the "Feather..." command under the Select menu, but is in fact more powerful because it allows you to very carefully decide where your selection should be opaque (allowing no changes to happen to the image) and where it should be partially opaque (allowing the image to be partially affected.) Gray "paint" makes the image partially selected, and black or white "paint" makes the image fully selected or fully masked.



The Gradient Tool can also be a big helper with this technique because it can produce a continuous gradient of translucent to opaque paint, allowing subtle transitions to occur in your Masks. Additionally, you can use varying opacities of paint (using the Paintbrush Options palette) to vary the density of your Masks.

The illustration below shows the pop-up menu for the Channels palette. With it, Channels can be defined, named, duplicated and deleted. Many of these options can be accomplished within the palette itself.

To learn more about Channels and how they work, complete the Exercise entitled: *Embossing With Channels*.

HAPPY CHANNELLING!

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