



Corporate Flow



Illustration



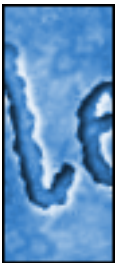
Image Editing



Automation



Web



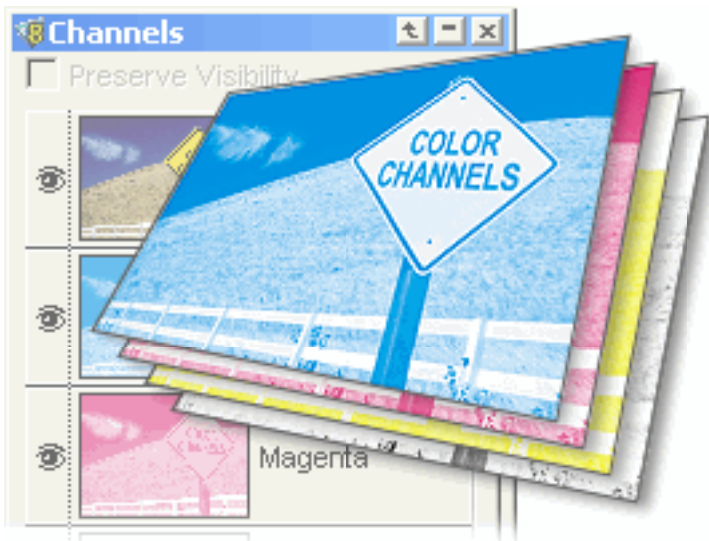
Text Effects

Canvas Tips and Techniques



Creative Department

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Understanding Color Channels

Learn how to fine-tune your images and illustrations using RGB and CMYK color channels.

What are color channels?

Color channels are layers of primary color in a digital image, such as a digital photograph or rendered illustration, that make up a full-color image. Canvas allows you to store up to 24 channels of digital information that compose an image. Channels also offer high levels of precision and functionality that layers alone can't provide, therefore making channels an excellent tool for fine-tuning images. They are particularly useful when working with CMYK images destined for print.

Who uses channels?

Channels have always played a significant role in professional image-editing from Web graphics and image-selection to color separation and high-end print jobs. Print designers, in particular, work with channels all the time since the color separation required for all printing is represented by the CMYK color channels.

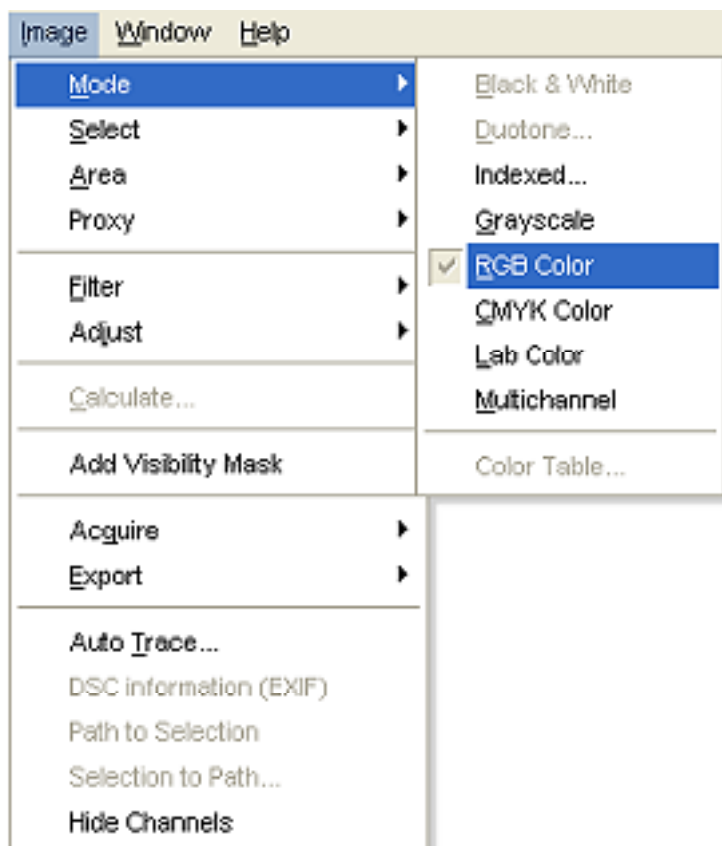
Color channels are only found in RGB, CMYK, and Lab color modes in Canvas. In this overview, we will examine the two most popular image modes, RGB and CMYK.

Before we start, let's look at the different image modes available in Canvas. To view the image modes, choose Images > Modes with your image selected (see example). The selected image's mode will be represented by a checkmark next to the mode type.

To convert your image to another mode, just click on a different mode type; e.g., to convert a RGB image to a CMYK image, we first select the image and then choose Image > Mode > CMYK.



Tip: Remember vector and text objects do not have image modes or channels.



Color Channels (Continued)

RGB Channels

RGB color mode is used most often when working with high-quality full-color images such as those from scanners or digitized photographs. An image that is in RGB mode is optimized for display on a computer monitor.

Viewing RGB Channels

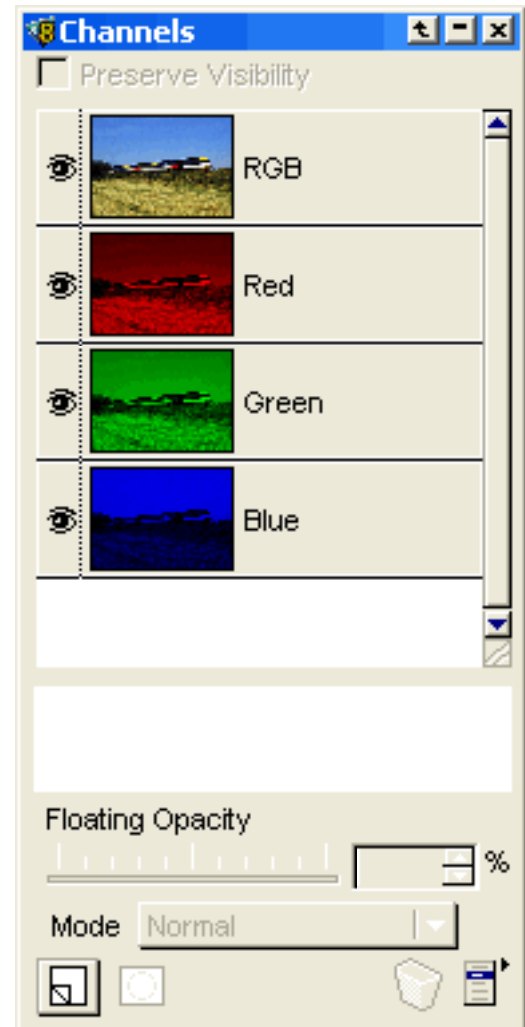
If you were to open the Channels palette (Image > Show Channels) with a typical RGB image, you will see four layers, each with their own thumbnail labeled RGB (composite channel), Red, Green, and Blue (see the example on the right).

In RGB color mode, each pixel has a red, green, and blue component. Each component, known as a color channel, has 256 intensity levels. So, when we view images on a computer monitor, we are actually seeing varying combinations of red, green, and blue that when observed together make up millions of colors. RGB images work on this principle.

The concept, which is sometimes hard to grasp, is that mixing 100% of red, green, and blue result in white, quite the opposite of what you would expect, if you mixed these colors on paper. Therefore, red, green, and blue are known as additive colors.



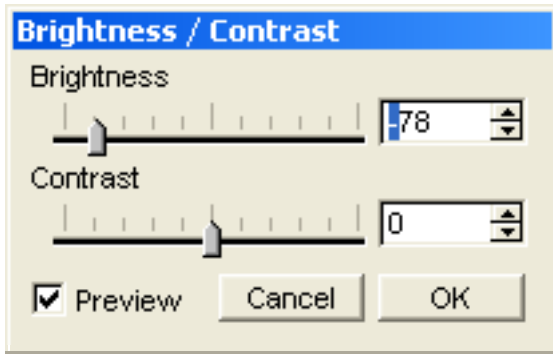
Train Image



View of the Train Image's RGB Channels

Color Channels (Continued)

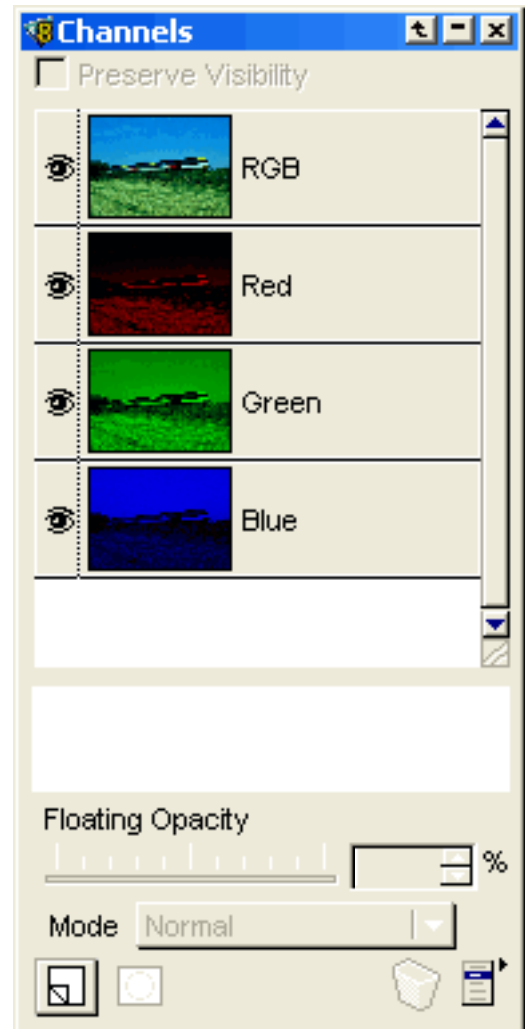
This concept could be visualized in the example on the right. We have taken the train image; opened the Channels palette; selected the Red channel; and lowered its brightness using the Brightness/Contrast dialog box (Image > Adjust > Brightness/Contrast).



The result, as you could see when compared to the original image, is a reduction of red color in the train image.



Train Image with the Red channels darkened



A view of the Color channels with the Red Channel darkened

Color Channels (Continued)

Adding Effects to Color Channels


Channels could also be used to create special effects in images. You could easily add any of the available image filters (Image > Filters) to any channel to create an abstract special effect.

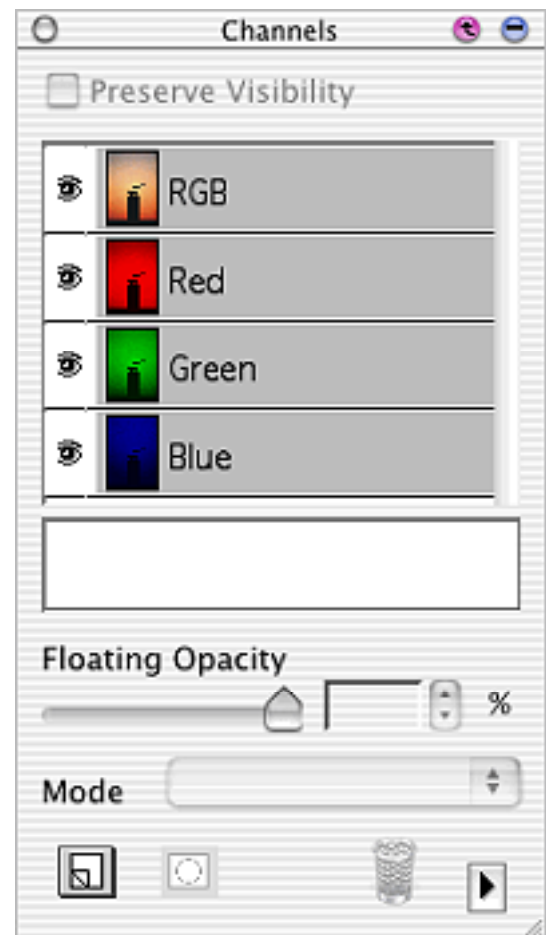
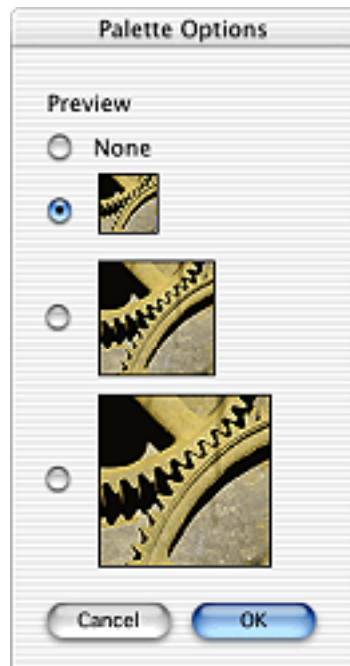
In this example, we are going to take an image of an airplane flying past a control tower with the orange hue of the late afternoon sun filling the sky and add a blur effect to one of its channels.



First, we are going to place the image in paint edit mode by double-clicking on it. With the image in paint edit mode, we can view the RGB channels by opening the Channels palette (Image > Show Channels).

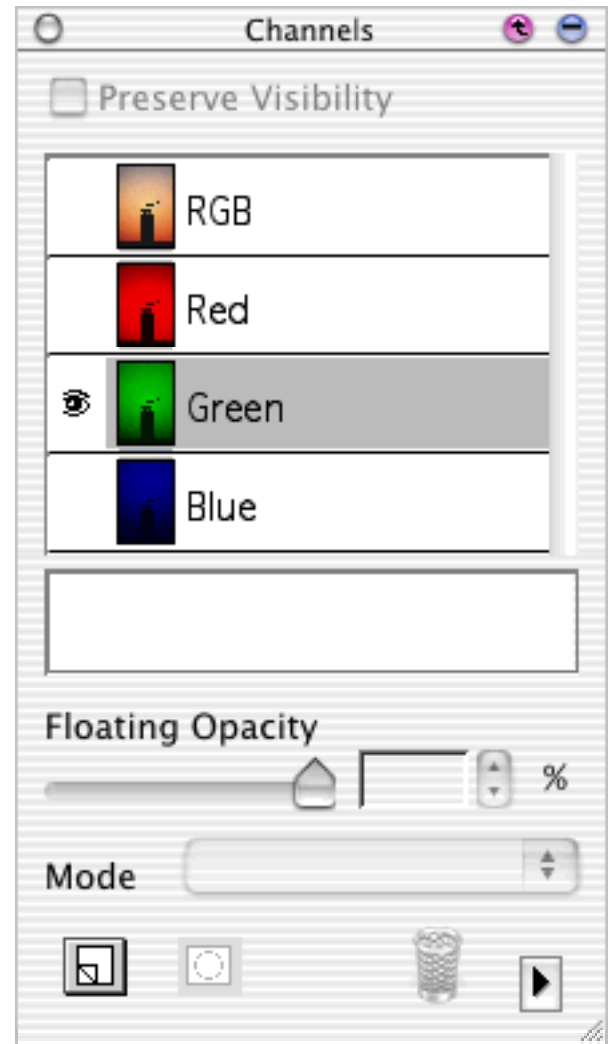
When opened, you will see four channels: RGB (composite channel), Red, Green, and Blue.

 **Tip:** You can change the size of the preview images in the Channels palette by opening the palette menu and choosing Palette Options. When the Palette Options dialog box appears, choose a preview size.

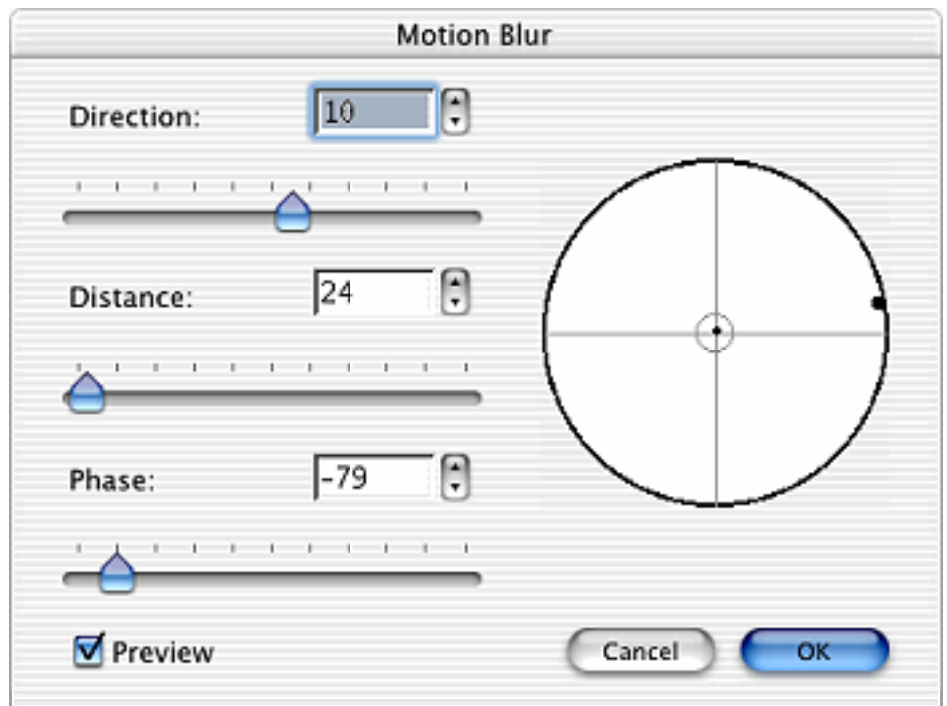


Color Channels (Continued)

Next, we are going to click on the Green channel to select it. You will notice the actual image will now appear to be green (see the example below).



With the Green channel still selected, we are going to choose Images > Filter > Blur > Motion Blur to apply a blur effect to that channel. When the Motion Blur dialog box appears, we enter our setting and press OK. Make sure you have the Preview checkbox selected.



Color Channels (Continued)

The Green channel will now display the motion blur we just added.



Note: Using this method, the filter will only be applied to the color channel that is selected. To apply a filter to the entire image, select the RGB composite channel.



Click on the composite channel (RGB) to view an image in full color with the newly added motion blur effect.

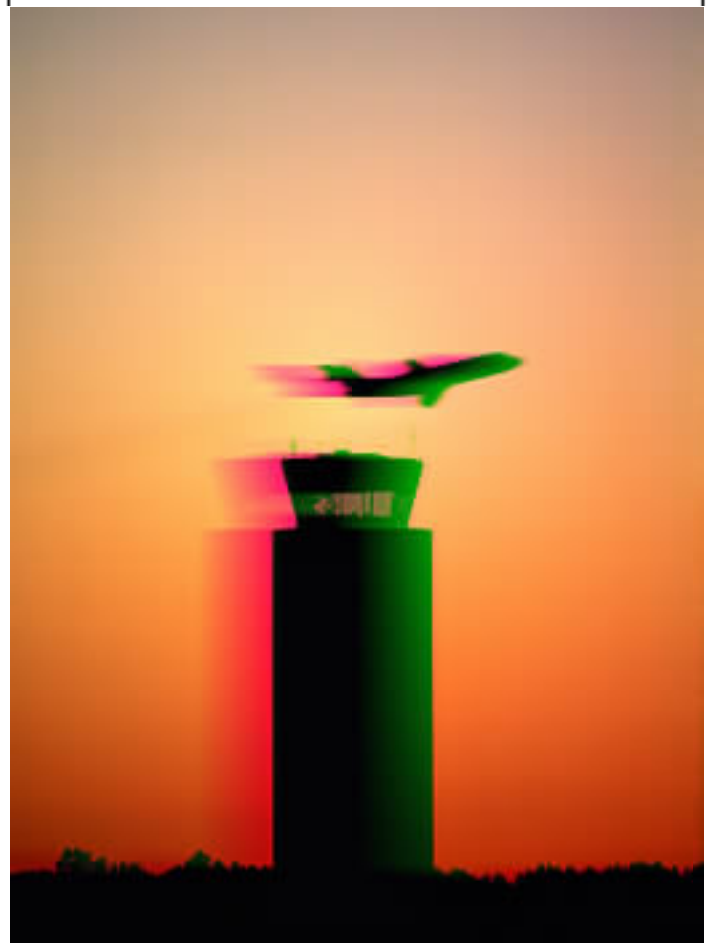
Note that selecting the RGB channel will make all channels visible.

These same techniques could be used to fine-tune images. Example, in some cases you may find that a particular color channel is fuzzy. Adding a Sharpen Filter (Image > Filter > Sharpen) to the fuzzy channel in many cases will fix this problem and improve the overall quality of the image.

In addition to image filters, you could use any of the Canvas painting tools on a channel. Just remember that any



channel or portion of a channel that you darken will appear less intense. Also, any area that you lighten will appear more intense. Using this logic, it is correct to assume that using the Burn tool on a portion



Color Channels (Continued)

of the Green channel will make the green in that area less intense. By the same token, painting an area of the Green channel with a white Paintbrush tool will make the green in that area more intense.



Tip: RGB color looks good on screen and when printed on desktop color printers; thus, RGB images are great for Web projects and simple print jobs. However, these images will not separate properly when made into film, and the resulting full print job (commercial four color separation print job) may not look the way you expect it to look.

CMYK Channels

In this next section, we are going to look at CMYK color channels.

CMYK color mode is based on four color inks: cyan, magenta, yellow, and black. Commonly used in commercial printing, this mode may also be used when printing on some desktop printers.

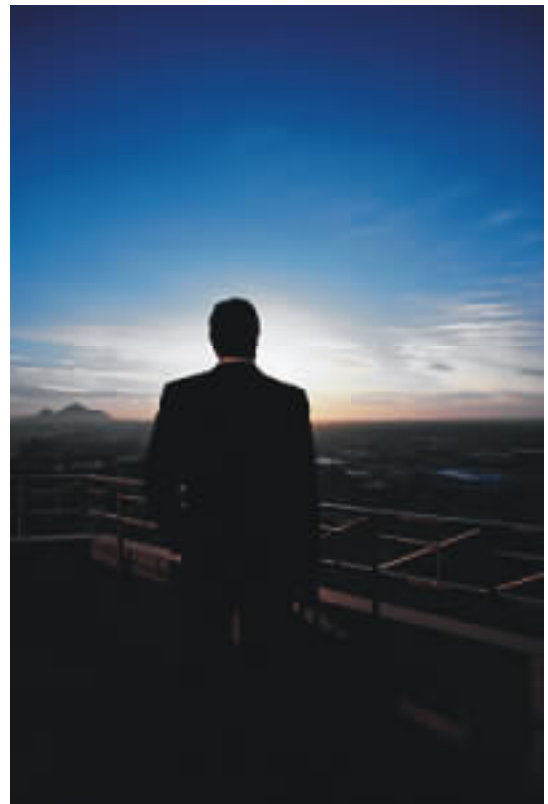
In a CMYK color image, each of the pixels has a cyan, magenta, yellow, and black component. Each of these color channels has 100 intensity levels. The combination of the intensity values in each channel creates each pixel's color. Since monitors are RGB devices, they can't display CMYK images exactly as they will appear when printed.

Working with CMYK channels is the opposite of working with RGB in that the colors are subtractive, meaning that when the CMYK colors are mixed together they result in black, or rather a very dark brown. For printing, black is added to control the tonality of shades instead of relying on mixing cyan, magenta, and yellow together. White, in subtractive colors is created by an absence of color.

Let's take a look at some of the differences in the channels using a photograph of a businessman overlooking a city.



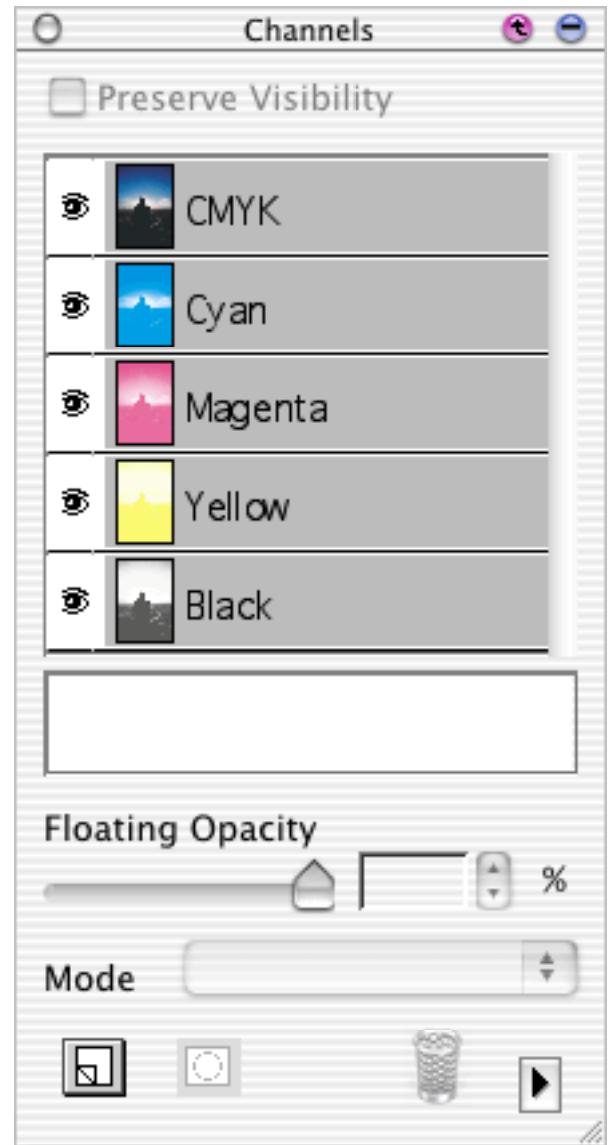
Tip: Most images can be converted to CMYK color by just selecting the image and choosing Image > Mode > CMYK Color.



Viewing CMYK Channels

First, we double-click on the image to enter paint edit mode. With the image still in paint edit mode, we will open the Channels palette (Image > Show Channels) to view the channels.

The channels in CMYK mode look similar to the ones in RGB with a few differences. The first thing you will notice is that you have 4 color channels compared to 3 in RGB mode. The other thing is that since the colors are subtractive, strengthening a color channel makes that particular channel stronger, which is the opposite of RGB. This effect is evident by looking at the Channels palette on the right. Notice that the dark areas of the photograph are made up of solid colors of each channel.



Viewing an Image's CMYK Settings

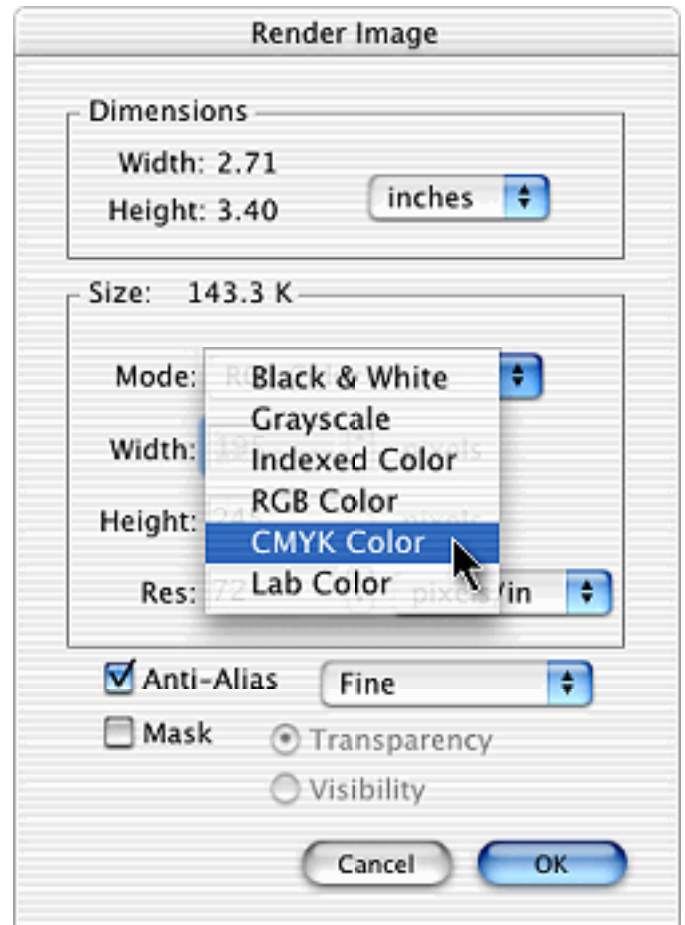
In this section we are going to look at an image's CMYK color settings by using Canvas' Color Dropper tool. We are going to use a rendered illustration for this example, because it gives us a little more control over the colors.

Using the Canvas Clipart CD, we found an illustration of a cowboy and his son sitting on a wooden fence.

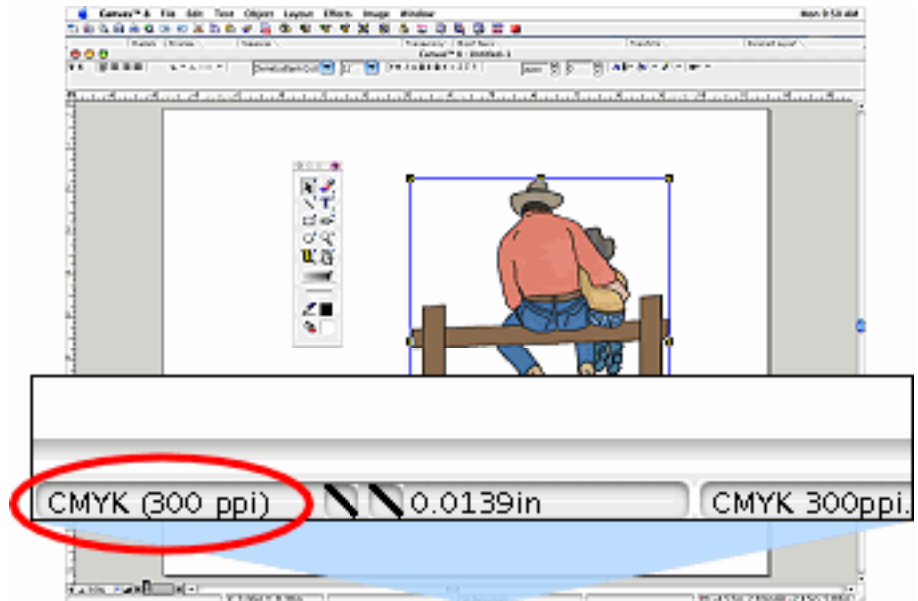


Color Channels (Continued)

Next, we select the illustration and choose Image > Area > Render. When the Render Image dialog box appears, choose CMYK as the color mode and click OK.



Notice that you could always view an image's mode and resolution by selecting it and looking at the bottom of the Canvas work area.




Color Channels (Continued)

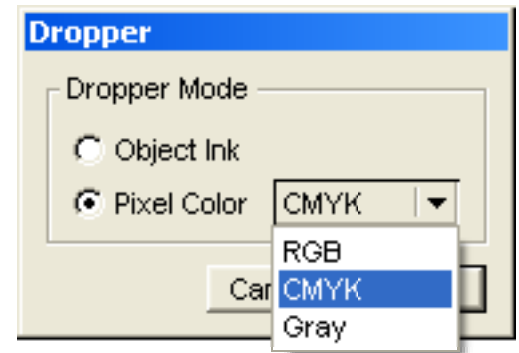
Next, select the Color Dropper tool from the Toolbox and double-click on it to bring up the Dropper dialog box.



When the Dropper dialog box appears, select Pixel Color and choose CMYK as the color system in the menu. This option will enable the Color Dropper to convert any color you click to the selected color system. Press OK when you have made your selection.

To view the color values of a vector object, choose Object Ink as the Dropper mode.

 **Tip:** For the best performance, choose the color system that matches the colors that you are sampling; e.g., if you sample colors in a complex RGB image with CMYK selected, slight delays can occur since Canvas must convert the image's RGB values to CMYK values.



To get the CMYK color values, simply click on the image using the Color Dropper tool.



Color Channels (Continued)

Then, drag the Inks palette from the palette and open the Ink Managers by clicking on the Ink Manager button on the bottom of the palette.



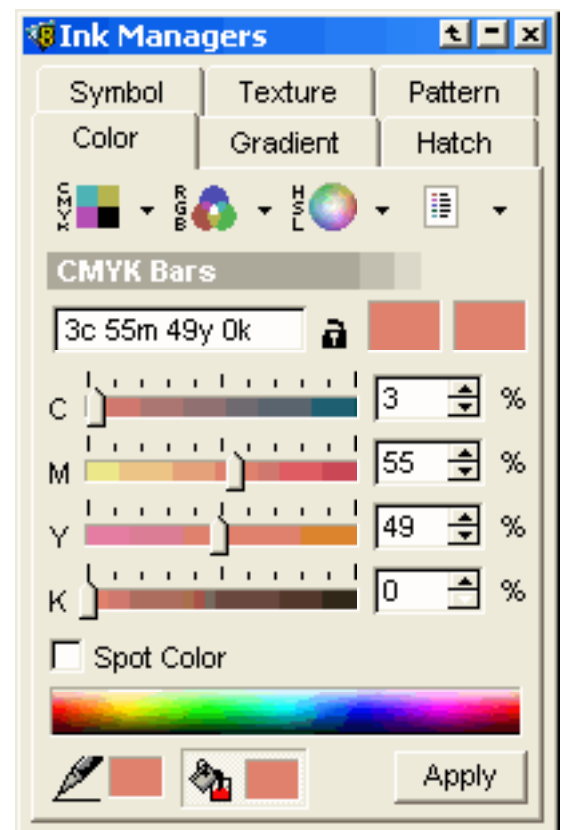
The Ink Managers will appear with the CMYK setting visible. For this particular color taken from the cowboy's shirt, the CMYK settings are:
Cyan 3%, Magenta 55%, Yellow 49%, and Black 0%.

The reason these settings are so important, especially in CMYK color, is that computer monitors display in RGB. So the color you view on screen may not appear the same when printed. This usually is not a big problem; however, if you are working on a project that requires exact colors, like a company logo, you should invest in CMYK color swatches. These swatches allow you to cross-reference a color by shade and CMYK value. This way, you could look up the color you need and see how it will appear when printed and obtain the CMYK values for that color. Cross-referencing CMYK values avoids surprises when the project is sent to print.



Note: Using CMYK swatches to select colors for your vector illustrations is also important if the project is destined for print.

The CMYK swatches referred to in this section are booklets that contain samples of CMYK colors as they appear when printed. By choosing a color from this booklet and using its CMYK value in Canvas, you are guaranteed to have the correct color when the job comes back from the printer.

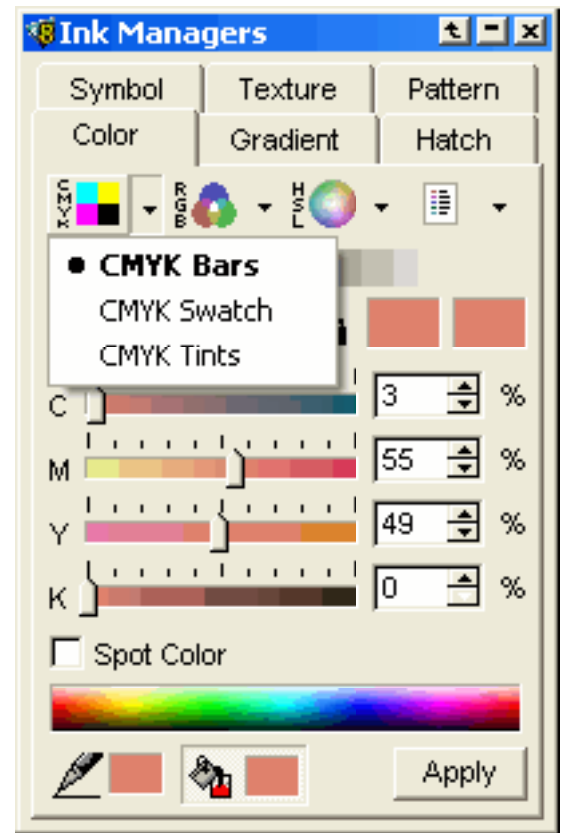


Ink Managers Palette

In this last section, we will go over some of the features of the Ink Managers. Keep in mind that these features are generally used for matching CMYK colors when drawing vector illustrations, but they could also be used to correct an existing image's color.

Let's now take a look at the Ink Managers palette and some of its options.

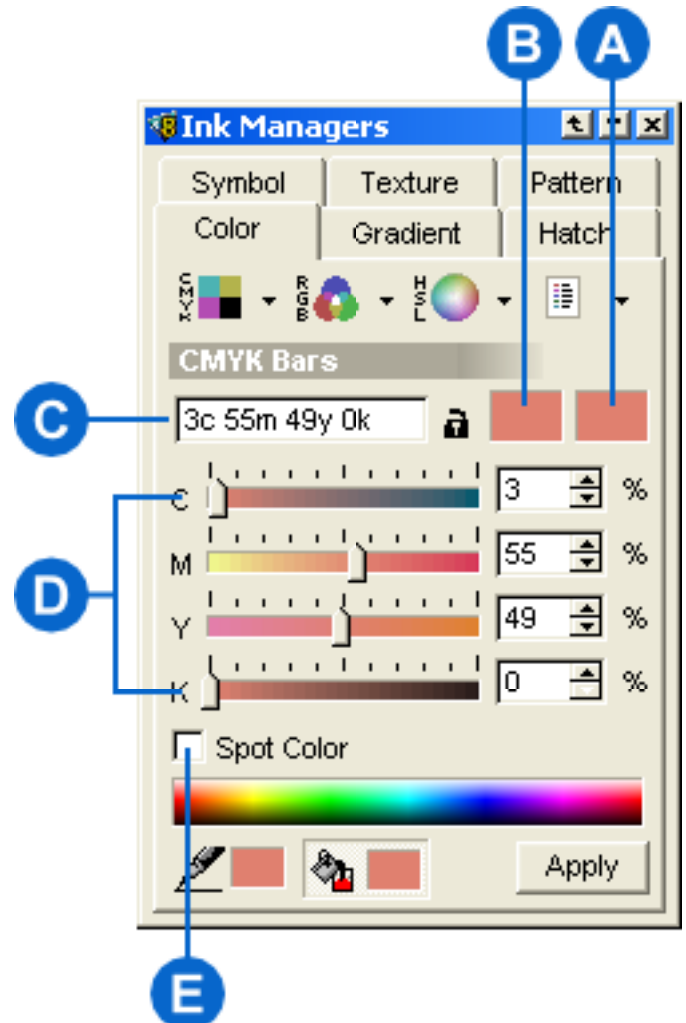
We will start by selecting CMYK Bars from the drop-down menu on the Color tab. We will also use this drop-down menu to select CMYK Swatches and CMYK Tints as we move along in this section.



The following is a brief description of the different options available in each control:

CMYK Bars

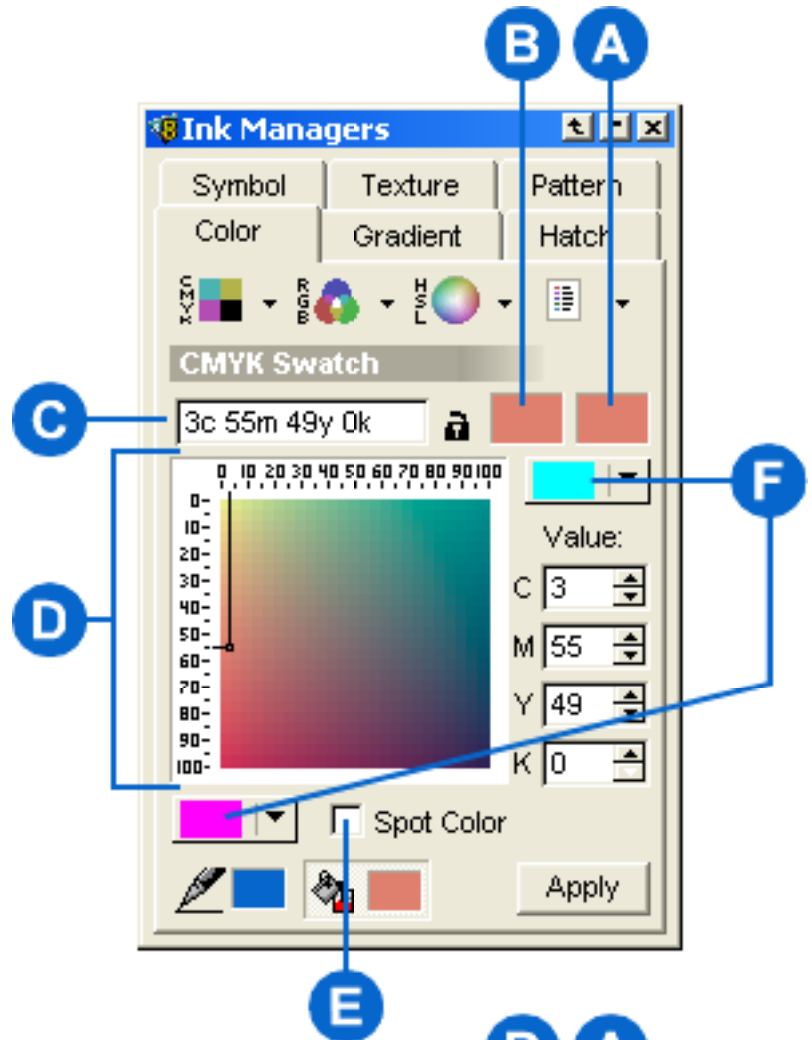
- A. Displays the current ink.
- B. Displays the last applied ink.
- C. Displays current color values. Also used to enter spot color names.
- D. Color Bars. Use the sliders or enter a value in the text boxes to specify a color.
- E. Spot Color. Type a name in the text box (E) and select to set a spot color. Spot colors print on a separate plates when you make color separations.



Color Channels (Continued)

CMYK Swatch

- A. Displays the current ink.
- B. Displays the last applied ink.
- C. Displays current color values. Also used to enter spot color names. Swatchbook.
- D. Shows colors made from 0-100% mixtures of two CMYK colors (F). To select a color, click on the swatchbook and the color value will appear in the text boxes.
- E. Spot Color. Type a name in the text box (C) and select to set a spot color. Spot colors print on a separate plates when you make color separations.
- F. Selects the two colors for the swatchbook. To add a third or fourth color, enter the percentages in the C M Y K text boxes.



CMYK Tints

- A. Displays the current ink.
- B. Displays the last applied ink.
- C. Displays current color values. Also used to enter spot color names.
- D. Tint value. Enter the percentage of tint to be applied by using the slider or entering the value in the text box.
- E. Spot Color. Type a name in the text box (C) and select to set a spot color. Spot colors print on a separate plates when you make color separations.
- F. Tint Color. Select the color to apply to the current color.

