

PHOTOSHOP ! WORKSHOP



This workshop covers Photoshop CS4 – CC2014 essentials for photographers including: monitor calibration, Photoshop configuration, RAW workflow, colour correction, image repair, creating panoramas and more.

Make your pictures look as good as you remember them!

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Last Updated May 27, 2015

Suitable for beginner to Intermediate level photographers and computer users. The workshop includes a CD with tutorial images and step by step video clips for self learning. These tutorials take approximately 6-12 hours to complete in class with an instructor.

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These notes come with a DVD and within the folder called Demo_movie_clips are Quicktime movies that will show you each tutorial described in the text. You will need Quicktime 7+ player installed on your computer. The player is available free from Apple

(www.apple.com/quicktime/download/). Where you see the Quicktime movie logo in the text there is an associated movie clip (Quicktime is copyright of Apple Computers).

1.0 Introduction and objectives

Digital photography has exploded in the past decade as consumers and many professional photographers switched from shooting film to digital. Digital technology is now capable of achieving results superior to images produced on small format film. These notes cover several versions of Photoshop – from CS4 to CC2014. Some steps may be a little different in different versions and some features have disappeared (e.g. Extract filter replaced with the Quick Selection tool). For those new to Photoshop most of these tutorials will work on different versions of Photoshop – if something doesn't work let me know and I will help you get it to work or show you an alternative method.

Advantages of digital cameras include:

- 1) No cost to shoot as many frames as you like.
- 2) Immediate preview of the image on the camera LCD monitor.
- 3) Wider dynamic range resulting in better shadow detail and better tonal range.
- 4) Lower noise and grain at high ISO speeds and ability to change ISO speed anytime.
- 5) Ability to change the camera ISO setting on the fly as light changes.
- 6) Ability to shoot thousands of images on a single memory card with no 36-frame limit.
- 7) Ability to change white balance and exposure after taking your picture using software.
- 8) Ability to sell and distribute your images using the Internet.
- 9) Digital files have greater stability than film and are insensitive to airport X-rays.
- 10) Ability to shoot colour, Black and white, infrared and apply filters in camera
- 11) Ability to expand dynamic range by combining several photos (HDR imaging)

Disadvantages of shooting digital include:

- 1) Larger number of camera features to learn about resulting in greater complexity.
- 2) Camera manuals can exceed hundreds of pages.
- 3) Digital cameras depreciate quickly as newer and better models appear.
- 4) Digital cameras require battery power.
- 5) Images often require some tweaking in an image editing program to optimize.

Although digital cameras tend to be more complex than their film counterparts, the ability to view an image immediately after shooting and the zero cost of digital images means photographers can learn and improve faster than those shooting on film. I believe those photographers determined to stay with film do so either because they don't wish to spend the money to upgrade, don't use or want to use a computer and/or do not fully realize the benefits of digital photography. I have used film for over 30 years and there is no doubt in my mind that digital technology is superior to film in most circumstances. Long exposure photography at night may be easier with film, but using stacking software digital images can produce superior images of the night sky.

What is the best file format to shoot images with on your Camera?

When starting out most new photographers will shoot JPG files, they don't require special software to view them and they are small in size so they can be sent by email and easily printed. These images can be processed in an image editing program, but are not as flexible as the bigger RAW files. It's easier to colour correct and fix RAW files. RAW files require special software to preview and open them, but you will learn why most professionals shoot in this mode. If you are a new shooter you can set your camera to shoot both RAW and JPG files, it takes up more space, but you will have more options in the future for processing images. I generally shoot in RAW mode 99% of the time for higher quality and flexibility.

No matter what type of images you shoot, in this workshop you will learn how to calibrate your monitor, set up Adobe Photoshop so it uses colour profiles to achieve consistent results, and you will learn the steps (workflow) required to create colour corrected images. In addition you will

learn how to convert your colour images to black and white, sepia, make a black and white image leaving behind some colour, extract an image, blend images into a panorama, and fix a variety of defects such as red eye, dust spots, crooked horizons and more. In short, you will be introduced to the power of Adobe Photoshop and what it can do to make your images better and have some fun doing it. Mastering Photoshop like a musical instrument will take years, but if you are serious photographer the effort will be worthwhile.

2.0 Components of a Digital Darkroom

The components that make up a digital darkroom include:

- 1) A computer, monitor, printer, scanner, and a digital camera.
- 2) Image editing software e.g. Photoshop, Elements, GIMP, Picasa etc.
- 3) Electricity – its tough to set up a digital darkroom in the wilderness.
- 4) Internet access for tutorials, downloading software, and to share your images.

2.1 Computer minimum requirements to run Photoshop CS4 are:

1 Ghz processor

CS4 - 2 GB of RAM min, CC- 2014 – 4GB, I would recommend at least 8 GB RAM today

1GB of available hard drive space for installation;

1024x768 display with 16-bit video card (24 bit is better permits more colours to be viewed)

An external hard drive to back up your images - 2 hard drives if the images are valuable.

These are minimum requirements, given the low cost of RAM I would recommend 8-16 GB of RAM or more if you can afford it, and a video card that has at least 256 MB of RAM so you can set it to display 24 bit colour (16.7 million colours).

Buy the best quality monitor you can afford. Older cathode ray (CRT) television style monitors are difficult to find so you will most likely be looking at purchasing an LCD (liquid crystal display) flat panel monitor. High gloss screens look great inside but not outside if possible opt for the matte screen option. If possible view some pictures on the monitor before purchasing it – also read reviews on the web. After the purchase of your camera, your monitor is one of the most important items as you will be making decisions about your pictures based on what you see on it. If you plan to do a lot editing in front of your monitor buy the biggest monitor you can afford. Other monitor factors to consider are the brightness, scanning frequency and optimum viewing angle.

Mac versus PC. For many folks it will come down to a personal decision or financial one. The best advice I have heard is to buy whatever your friends have as no matter what computer you use you will need help from time to time. Photoshop is available for both systems. The instructions in this workshop are for PC, if you use a Mac substitute the **Ctrl** key for **Cmd** and **Alt** key for **Opt** key and you should have no problem following these tutorials.

2.2 Image Editing Software What you purchase and use will depend on how much control you wish to have over the image editing process, how much time you are willing to invest learning the software and what you can afford to pay. Photoshop is the best image editing program on the planet today, it is used widely in photography, graphic design, and in the movie industry. There are also a wide range of learning resources, including courses, books and videos to help you learn Photoshop. If you take your photography seriously, then Photoshop can help you make your images the best they can be. It will take years to master this program, but the good news is that in this one day workshop you will learn the most important features required by photographers to make good images look great and apply some interesting tricks.

A selection of image editing programs include:

- 1) Adobe Photoshop – powerful, and steep learning curve now only available on cloud
- 2) Adobe Photoshop Elements – adequate for most amateurs needs go beginning package.
- 3) GIMP – free and available for Mac, PC and Unix computers – few learning resources.
- 4) Nikon Capture software –adequate for some users.

- 5) Adobe Lightroom – gaining popularity, but limited features compared to Photoshop.
- 6) Picasa - free and available for both Mac and PC, limited image editing features.

Adobe Elements offers many features found in the full version of Photoshop, and offers more extensive help menus and is easy to learn – for some photographers this may be all they ever need. Most of the techniques learned in this workshop can be applied to Elements though the location of the menus will be different. Another excellent image editing program is GIMP and it is totally free. GIMP stands for General image manipulation program and has been under development since 1995 and although it is not as feature rich as Photoshop it supports RAW files and is the best free image editing program available. Adobe Lightroom offers some basic editing capabilities and there is less to learn, but its capabilities are limited – the good news is it comes free with Photoshop CC – CLOUD subscription. Renting software has advantages and disadvantages, the initial cost is low, but so long as you use the program you must make payments to Adobe.

Picasa is a free program available from Google that serves as a simple image editing program and a powerful image database. It is available for PC and Mac. Picasa will find the images on your hard drive and display them including your RAW files, movies and other graphic files. It can also be used to create screensavers, collages, and even movies. It is a must have program for any photographer and it's free. I use its image database capability frequently to locate images on my hard drive, then right click on the image and select edit in Photoshop and I use to edit and present slide shows.

2.3 Printers.

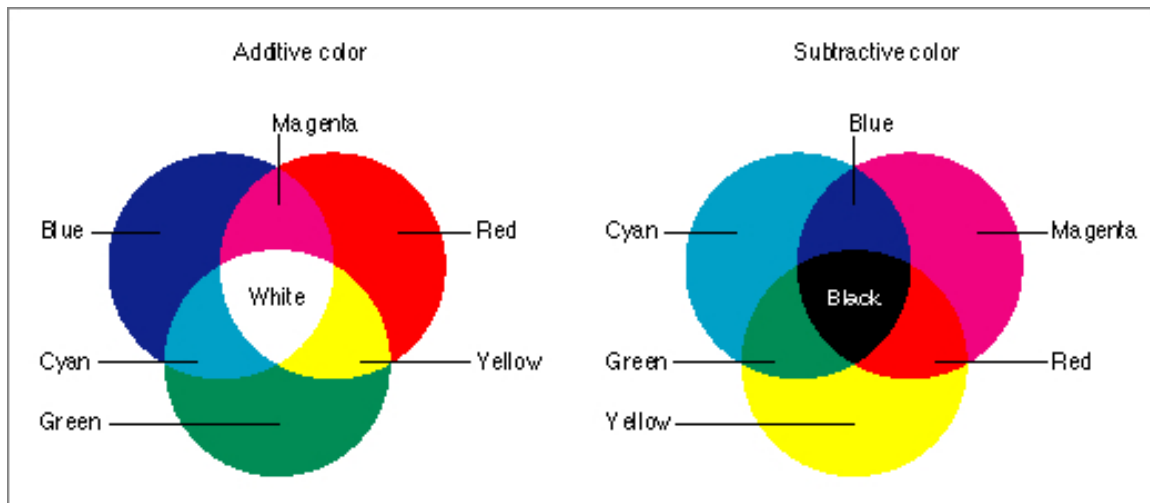
Choosing a colour printer is a bit like choosing a camera, everyone has their favorites. I find the Epson colour printers to offer the best quality and value. Epson also offers the widest range of paper types. Epson was the first to produce a printer with archive quality inks lasting more than 50 years, an important feature if you wish to sell your prints as art. Canon, Kodak and others also make excellent printers. My advice is to go to a shop that sells printers and that can show you sample prints from each printer. Note if you plan on printing black and white – look for printers that offer separate ink cartridges and ones that have black and gray – the more black tones your printer has the better your black and white pictures will look though the most recent recent Epson printers do a fantastic job of BW (e.g. Epson Stylus Photo 2880 and does up to 13 x 19 inch prints). Only downside of inkjet printers is that ink and certain papers can be expensive so I still sometimes take my photos to be commercially printed (London Drugs seems to be economical and does a fine job).

2.4 Scanners

If you own negatives, slides or prints and you want to digitize them you will need a scanner. Flat bed scanners can be purchased for about \$100-600. Some flatbed scanners also scan negatives and slides (e.g. Epson V600, only \$249 and comes with Photoshop Elements 12). If you own thousands of slides then investing in a slide scanner is a good idea. If you only shoot with a digital camera then I would recommend investing in an all purpose scanner that scans prints, slides and negatives. Things to look for in a quality scanner are bit depth (24 bits colour or greater), dynamic range 3.6 to 4.2 is the best available. In slide scanners look for dust removal features and multi-scanning capabilities. Multi-scanning is particularly useful for slides with large dark areas which tend to have a lot of digital noise. Multi-scanning is a feature that scans the slide several times and averages the data resulting in lower digital noise. If you have a lot of slides or negatives to scan also look for a scanner that can scan a large file quickly (90 seconds or less) or you will be sitting in front of your scanner for days! I would recommend looking at the Nikon or Canon slide scanners.

2.5 Colour Management

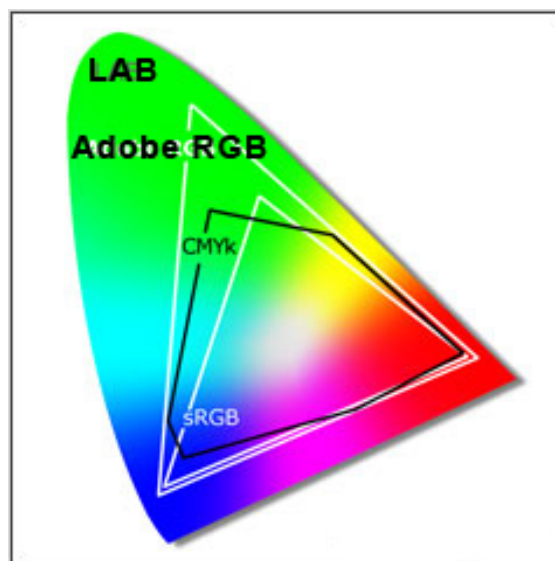
The main goal in printing your images is to achieve prints that come as close as possible to the images we see on our computer screen. In order to achieve this we need to calibrate the monitor and use a colour management system. Adobe Photoshop can be your colour management system. Keep in mind that images on paper can never be as brilliant or saturated as those we see on a monitor or a slide because transmitted light will always appear more brilliant than reflected light.



Additive colours Red, Green and Blue are used on computer monitors to produce the array of colours we see, subtractive colours are used when printing and are referred to as CYMK for Cyan, Yellow, Magenta and Black. The range of colours in RGB and CYMK modes are slightly different and colour on prints cannot appear as pure or saturated as those on a monitor or slide.

2.6 Colour Space

In order to work with colour and produce consistent results scientists have developed models to describe and quantify colour. A colour space is simply a model that describes the various colours that can be seen or produced by a particular device such as a camera, monitor or printer. The LAB colour space represents the largest range of colours that the average human eye can see and all other colour spaces are smaller and fit inside this one (see below).



The **Adobe RGB** colour space is smaller than LAB and both the **sRGB** and **CYMK** colour spaces are smaller yet. The smaller the space the fewer colours it contains. One of the main problems

with producing consistent colour when using digital devices is that each device has a unique range of colours it can produce called a **colour gamut**. As we move the image from one device to another the colour gamut usually gets smaller and some colours may not exist in the new device e.g. printer. By creating a colour profile that describes the range of colours a device can reproduce, converting images from one device to another using a colour management system (Adobe Photoshop) it's possible to get more consistent and predictable colour and that is really what colour management is all about.

The computer monitor is the most important component in the chain of your digital workflow. Therefore you only need to calibrate and profile your monitor in order to produce consistent and predictable results. Also it's important to set your camera colour space and Photoshop's to Adobe RGB.

3.0 Calibrating your Monitor

Monitors come in two basic types, cathode ray tube or CRT and liquid crystal display or LCD. Some experts claim that CRT monitors are better for critical colour correction work and they are easier to calibrate – this may be true, but the reality is that CRT monitors are becoming extinct. LCD screens that are lighter in weight, cheaper to manufacture and draw less power. LCD monitors have improved greatly in quality and features and many professionals are using them with good results. Do not buy the cheapest monitor you can find. Laptop monitors are generally more difficult to calibrate and some of them frankly can't be calibrated. I will show you in this workshop how to colour correct images whether or not your monitor has been calibrated, however in order for your monitor to accurately represent images that you print you will need to produce a monitor profile and configure Photoshop to use the profile.

3.1 Room Lighting

The placement of your monitor with respect to other room lights and the overall room lighting conditions are very important. Don't put your computer monitor near large windows, or directly underneath a bright light. If you do have your computer in front of a large window then make sure you have blinds or drapes that allow you to darken the room when you are doing colour correction and other image editing procedures. Generally speaking, rooms with low light levels are best for image editing. If the lighting where your computer is stationed changes drastically throughout the day then this may make it more difficult to achieve consistent results. The light source that you evaluate your prints is also important, Epson recommends using a tungsten light, other printer manufacturers may recommend using a daylight bulb (5500 to 6500 °K).

3.2 Colour Spectrophotometer and Software (Monitor Calibrator)

The best way to calibrate your monitor is to use a combination software and hardware device (spectrophotometer) sometimes referred to as a colour spyder. There are a number of products available in the \$100-\$300 range that do a good job. Colour spyders are available at most professional camera stores and camera departments. I use the color Spyder 3 pro. Basically you install the software on the CD included, plug in your spyder to the USB and follow the instructions. The process takes about 5-10 minutes and when you are done you save the colour profile created onto your computer. The final step is to configure Photoshop to use the monitor profile you created (described on page 8). With LCD monitors I recalibrate about every 6-12 months. The software also can be installed on several computers so you only need one kit to calibrate all the computers you may own.

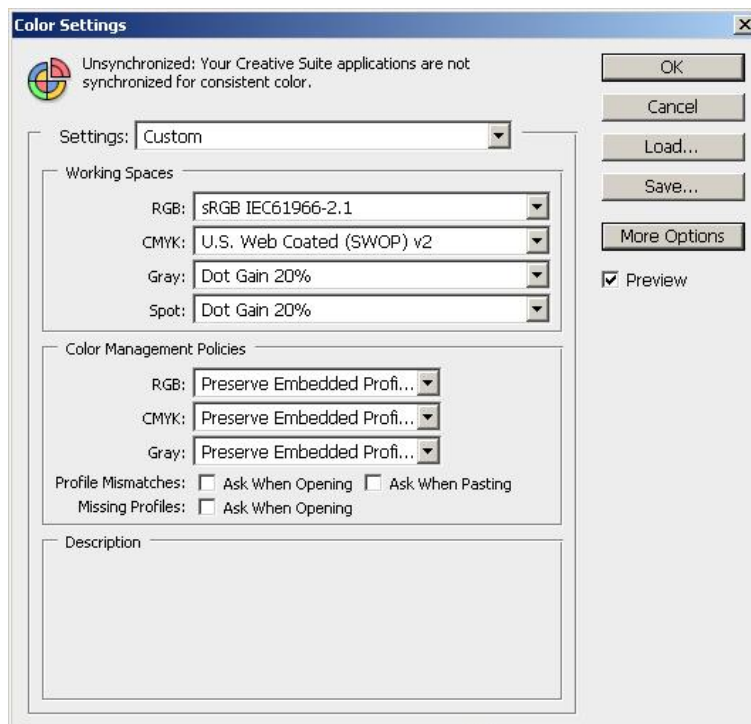
Two things you need to know is what to set the white point to and what to set the gamma. Basically – set white point to **6500 °K** – colour of your whites and set your monitor **gamma to 2.2 effects the contrast**. When you are done save the colour profile – I like to include my name and date in the file name e.g. **rberdanNov22.icm**. This profile will be saved as an .icm file which is simply a text file that describes the characteristics of your monitor. I will demonstrate colour calibration in the workshop. It is now recommended that the same gamma settings be used for both Mac or PC computers. Older Mac computers used a gamma setting of 1.8.



3.3 Photoshop Colour Configuration Settings

Most people that start up Photoshop for the first time do not realize that the colour settings should be configured first if you plan to make prints. By default, Adobe Photoshop is set to **sRGB** colour space which is designed for producing images for the web. Adobe defaults to sRGB because they realize that most folks simply do not calibrate their monitors and hence images produced in an sRGB colour space will tend to look better. Most digital cameras are also set to the **sRGB** colour space by default for the same reason and JPG files are usually created in this smaller colour space. If you plan to use Photoshop primarily for adjusting your image to make prints then configuring Photoshop to an Adobe RGB colour space provides the best result. You should also set your digital camera to Adobe RGB colour space if you shoot RAW files. If you also make files for the web you can still convert them to sRGB when you save them. One last point to note is that when you or Adobe updates Photoshop – it may reset the colour configuration settings back to the default values. If you update the software – check the colour settings and reset them if necessary.

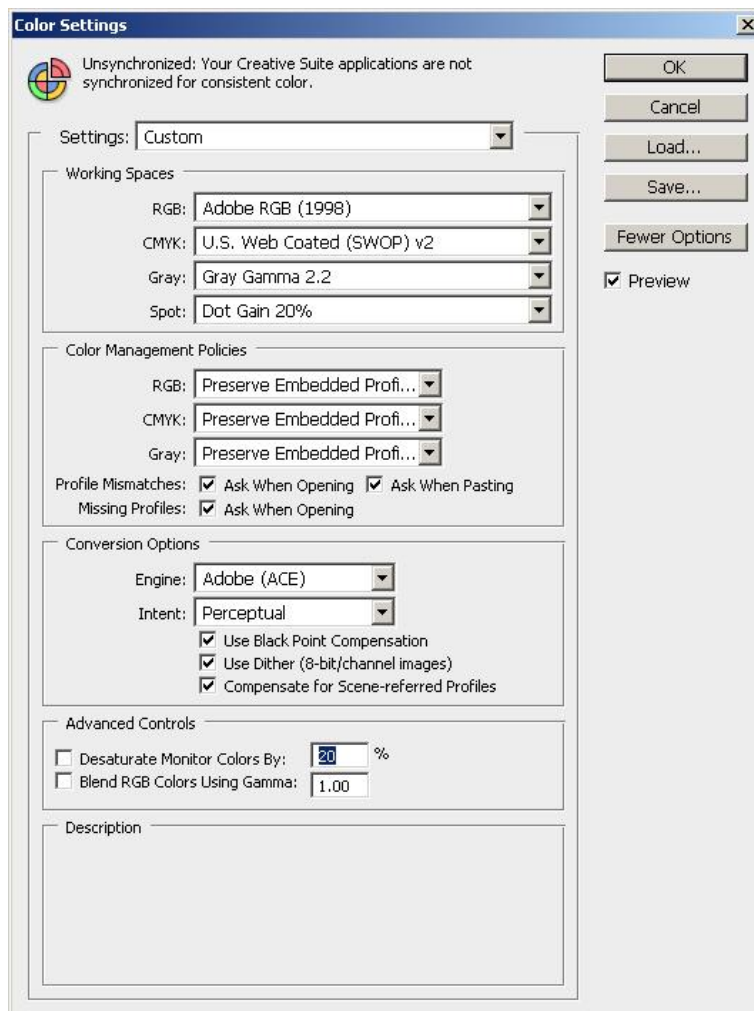
To set your Colour Settings in Photoshop for making prints select **Edit>colour settings**. (You can do this anytime). Initially the box will look like the image below. Select more options button on the right and fill out the boxes as shown in the second box below it so Photoshop uses your monitor colour profile. You should calibrate your monitor first before you set up color settings.



Photoshop's Default Colour Settings - these settings are OK for creating pictures for display on the World Wide Web but are not ideal for making prints.



See coloursettings.mov



Above are my recommended Colour settings for making prints. Some photographers use Relative Colourimetric intent (default). But If you like slightly more saturated prints I recommend setting the Intent to Perceptual. But, if you photograph people or subjects low in colour saturation then you may prefer to use the Relative Colourimetric rendering intent.

Perceptual intent is recommended for images where you have many out of gamut colours (highly saturated colours e.g autumn leaves). This rendering intent attempts to compress the gamut of the target space (document profile) so that the overall image appearance is preserved –though all the colours in the image may change slightly in lightness and saturation.

Relative Colourimetric intent maps the white in the source to the white in the target i.e. your paper. It reproduces all the in-gamut-colours exactly but clips (throws away) out-of-gamut colours and instead uses the closest reproducible hue. This rendering intent is best suited for images that don't contain significant out-of-gamut colours and may be a better choice than perceptual because it preserves more of the original colours - at least for subjects without saturated colour like wedding and portrait photos.

Saturation intent is good for pie charts where you want vivid colours without concern for hue & lightness – **do not use for printing photographs.**

Absolute Colourimetric – Similar to relative colourimetric, but does not scale white to white. **Do not use this setting for printing photographs.** If you want to understand more about colour management– see B. Fraser et. al 2005 – Color Management 2nd Ed – Peachpit Press.(for geeks only)

For best results the other conversions options should all be selected.

4.0 Making a Test Print

In order to see if you are getting the expected results it's a good idea to create or use a test image. A good test image should have some neutral gray areas, a wide variety of colour and skin tones. On the CD I provide you with several test files like those shown below. Note that the colours in your prints will never look as saturated as they do on your monitor – the goal is to make certain the white, black and gray areas are neutral and there are no traces of colour in them. If your test print looks good – then your system is calibrated and you can focus on printing your favourite pictures.



Test files like these are provided by some web sites and software companies and should be used to test your colour printer before you start printing your own photos. The image on the left is from PhotoDisc, Inc., the one on the right is from an earlier version of Adobe Photoshop. When you print these images look for any hint of colour in the gray areas - if there isn't any and the prints look similar to the test images on your computer you are good to go.

Note each printer has different controls and settings – if the printer has a print preview, then select this option as it uses the monitor profile, your image profile and outputs a simulated print on the screen. If the simulated picture does not look good – then close the window and make some adjustments before sending the file to the printer. Keep notes as to what the best printer settings are so you can repeat your results in the future and save money on ink and paper.

4.1 How to Calculate the file size required for making colour prints

Size of print you can make is determined in part by the number of Mega pixels (MP)

Number of Mega pixels (MP) Approximate size of print you can make

1 MP	4 x 6 to 5 x 7 inches
2 MP	5 x 7 to 8 x 10 inches
3 MP	8 x 10 (11 x 14 inches in RAW mode)
6 MP	11 x 14 to 20 x 24 inches (approaches resolution of film)
12 MP	30 x 40 inches or more (exceeds the resolution of 35 mm film)

Other factors that determine how large a print you can make include optical quality of the lens, use of a tripod, camera sensor size, lighting, ISO setting, and skill with software. Cameras with larger sensors like SLRs will always produce higher quality images compared to a compact cameras with the same number of mega pixels.

4.2 Setting the Print Resolution

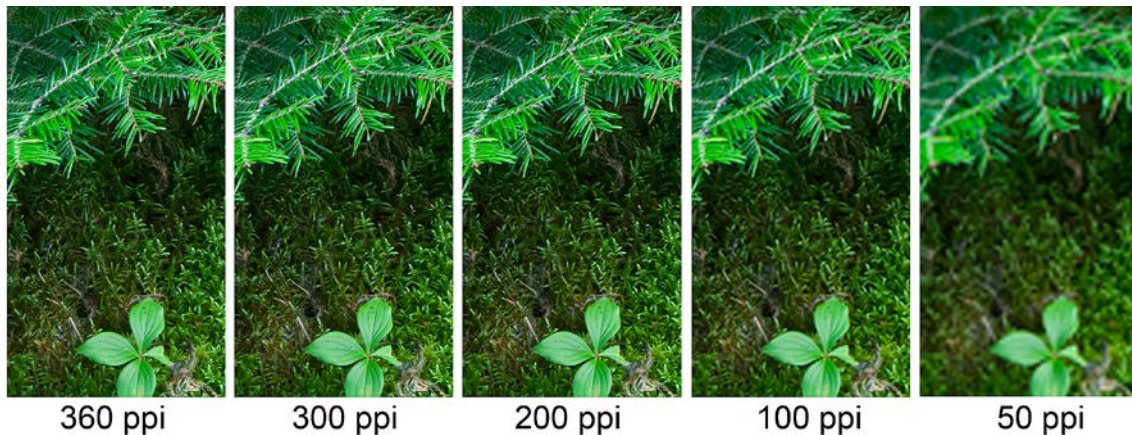
My advice is simply choose the highest resolution or quality setting on your printer can output when making prints for presentation or sale. The important feature is to set the number of pixels per inch or dots per inch in your image file in Photoshop to between 200-300 dpi or ppi - pixels per inch (ppi or dpi). Most high quality magazines and book prefer 300 dpi images.

Formula to determine how many mega pixels you need to make a specific size print

(Length inches x width inches x image dpi² x 3 (RGB))/ 1, 048,576 = File Size in Megabytes
8 bits (0 or 1) = byte; 1024 bytes = 1 kilobyte; 1,048,576 = 1 Megabyte, multiply by 3 for RGB

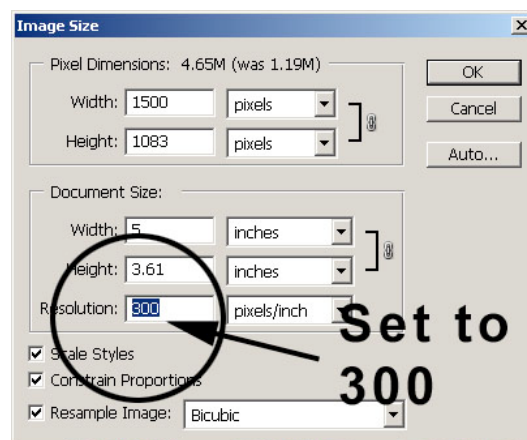
e.g. for a 10 x 15 inch print (8 bit colour)

$(10 \times 15 \times 300 \text{ dpi} \times 300 \text{ dpi} \times 3) / 1,048,576 = 39 \text{ Megabytes}$



Images at different resolutions - the differences are more apparent if you were to make test prints from images at these different resolutions. 50 and 100 ppi appear pixilated where as images over 200 ppi generally look very good with 300 ppi being a good balance between quality and file size.

I recommend using 300 ppi for printing as this is what most book and magazine publishers require. It is however, possible to get decent quality prints at 200 ppi and the files sizes are smaller. Larger files will take longer to print and more space to store. If quality is your main concern you should set your print to print your images at 300 ppi (dpi – printer output, ppi setting in Photoshop).



Photoshop Select> Image>Image size and set the resolution to **300 ppi** for making quality prints. For web images set the resolution to **72 ppi**. Also when saving your image for the web select File>Save for Web & Devices - choose .jpg file, check convert to sRGB and set the quality>OK.

5.0 Digital Work Flow – Steps to prepare a digital file for Printing or the Web

A workflow is just a series of steps used to adjust and colour correct your digital images. Your workflow will vary with the images you import and will depend on what corrections are required. With practice most images will only need a few minutes in order to optimize them for printing.

Your workflow will depend on whether you are working on a JPG file or RAW file. RAW files require a few additional steps and then the process becomes the same as that for JPG file. If all your images are exposed under the same lighting conditions you can also batch process several images at the same time. The workflow steps described here should be considered as a starting point on which to create your own and keep in mind that some images may not need certain adjustments or fixes.

5.1 Processing RAW files in Adobe Camera RAW (ACR)

Adobe Camera Raw (ACR) is a feature built into Photoshop – the same software is used in Adobe Lightroom and a less featured version in Adobe Elements. The program allows you to view, size and manipulate your camera RAW files. As new cameras become available these cameras may use RAW files that can not be opened until Adobe updates their software which can sometimes take a few months. If you can't open a certain RAW file, try to update your camera RAW by selecting **Help>Updates** and see if there is an update available to download and then try again. If you are using an older version of Photoshop you may have to upgrade to the newer version of Photoshop to open the latest RAW files. If your camera shoots a generic .DNG RAW file – only a few cameras do – you should be able to open the file with no problem. The Alternative is to use software from your camera company e.g. Nikon or Canon and convert the RAW file to a TIF then open in Photoshop, but this defeats some of advantages of shooting in RAW format. The basic workflow steps are:

1. Open the RAW file - adjust the size, resolution, bit depth and colour space in ACR.
2. Adjust the white balance.
3. Optimize the exposure.
4. Adjust saturation, contrast, vibrance, noise reduction and other features as desired.
5. If the sky needs to be darkened add a gradient overlay.
6. Click OK to view in Photoshop – start processing your file as below for a JPG.

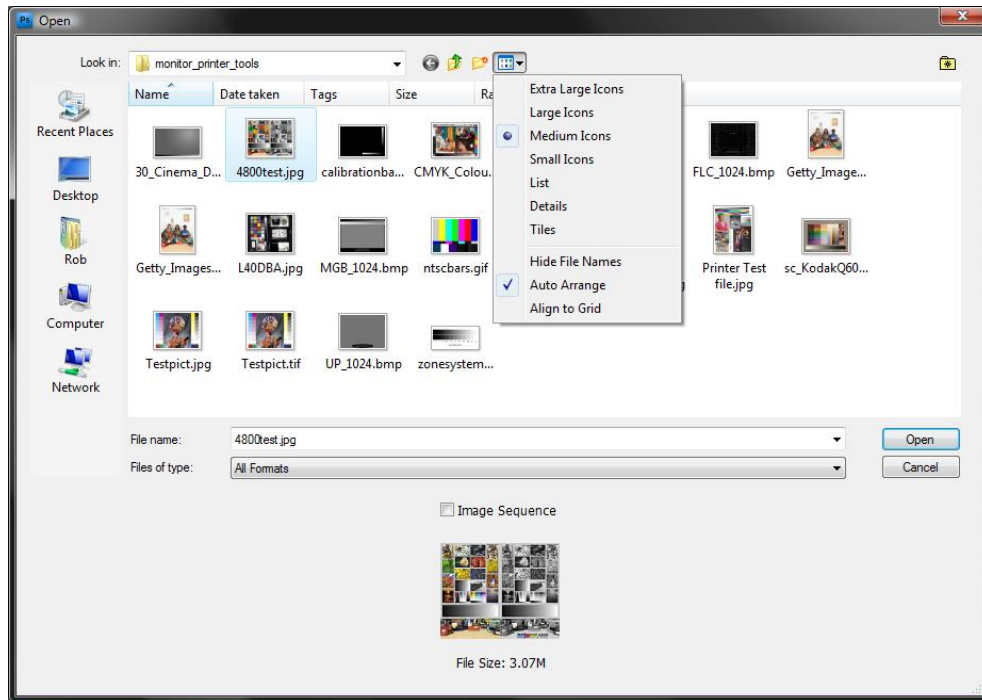
5.2 Basic steps for processing JPG or TIF files and making a print

1. Open the image file – check the size and resolution – crop if necessary.
2. Adjust the images size for final output set it to 300 dpi for prints, 72 dpi for web.
3. Optimize the tones in the image by checking the levels histogram.
4. Colour correct the image using autocolour or curves and colour balance a gray area.
5. Inspect image for dust spots and repair damaged areas
6. Darken, lighten or saturate specific areas of your image.
7. Adjust the overall colour saturation or convert image to black and white.
8. Sharpen the image with unsharp mask (last step after you do any kind of resizing).
9. Add border, apply any filters, text or copyright information.
10. Convert image to 8 bit mode (RAW files can use up to 16 bit colour).
11. Name the file, save as a TIF format for best prints or JPG file for the web.

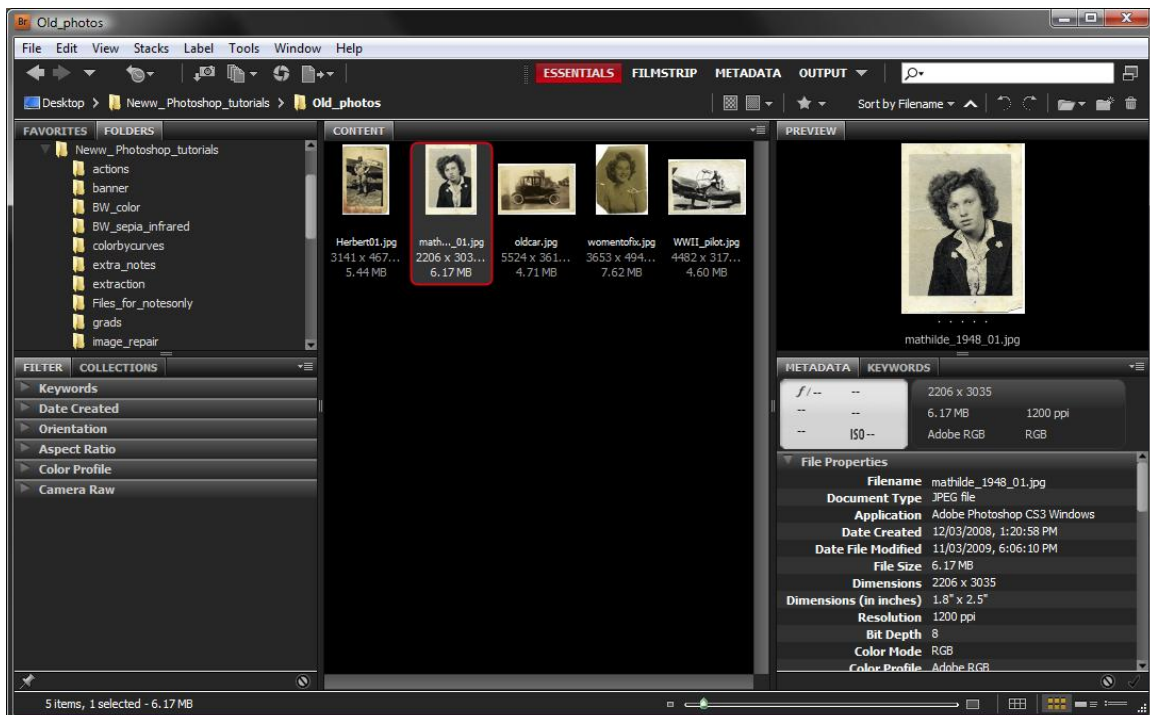
Before starting to work with Photoshop I will provide you with an overview of the tools, palettes and how you can optimize performance by setting scratch disks and memory allocation. Also we will look at Photoshop's **HELP** where you can find more information about specific tools and features and if you don't own Photoshop you can download a 30 day free trial version from: <http://www.photoshopsupport.com/photoshop-cs4/photoshop-11-free-trial.html>.

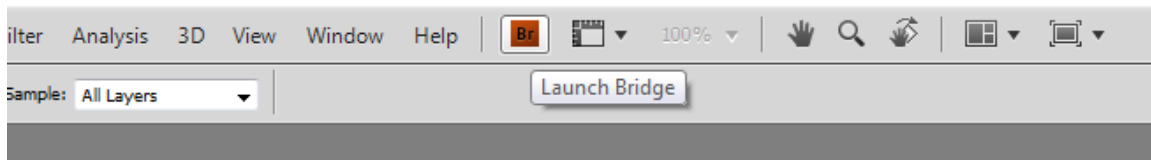
6.0 Photoshop CS4 Tutorials

6.1 Open Image Files in Photoshop - there are several ways to do this. **1) File>open** navigate to the folder with your images and select the image file, This method works best when loading files from a CD or DVD and is fast. In the open box you can select to view files as a list or thumbnails.



2) Select File>Browse in Bridge - have Essentials selected at the top of Bridge. You will have to navigate to the folder with your images and then view the thumbnails in the main window - double click on an image file to open it in Photoshop. If you double click on a RAW file, it will first open in Adobe Camera RAW. You can also simply drag the files from Bridge into Photoshop.





You can also Launch Adobe Bridge by selecting the Launch Bridge Button at the top of Photoshop.

3) The third way to open files in Photoshop is to have Photoshop open, select your folder, open the folder then drag the image file into Photoshop i.e. Drag and drop into main window. You can also right click on the image file and select Open with > Photoshop.

If you don't see thumbnail views for your RAW files you may have to upgrade Photoshop to get the latest RAW converter - to do this select the Help menu at the top > Updates and Photoshop will check if there are any updates and if so it will download and install them. If you still don't see the RAW files you may need to upgrade your version of Photoshop if using a version before CC.

Digital Workflow - we will start with a RAW file, adjust exposure, white balance, saturation, size and bit depth - then open the file in Photoshop and make further adjustments including colour correction, resize, burn, dodge, paint with the sponge tool, add a border and save it as .TIF file for printing. If you are starting with a JPG or TIF file - the steps will essentially be the same once the file is open in Photoshop.



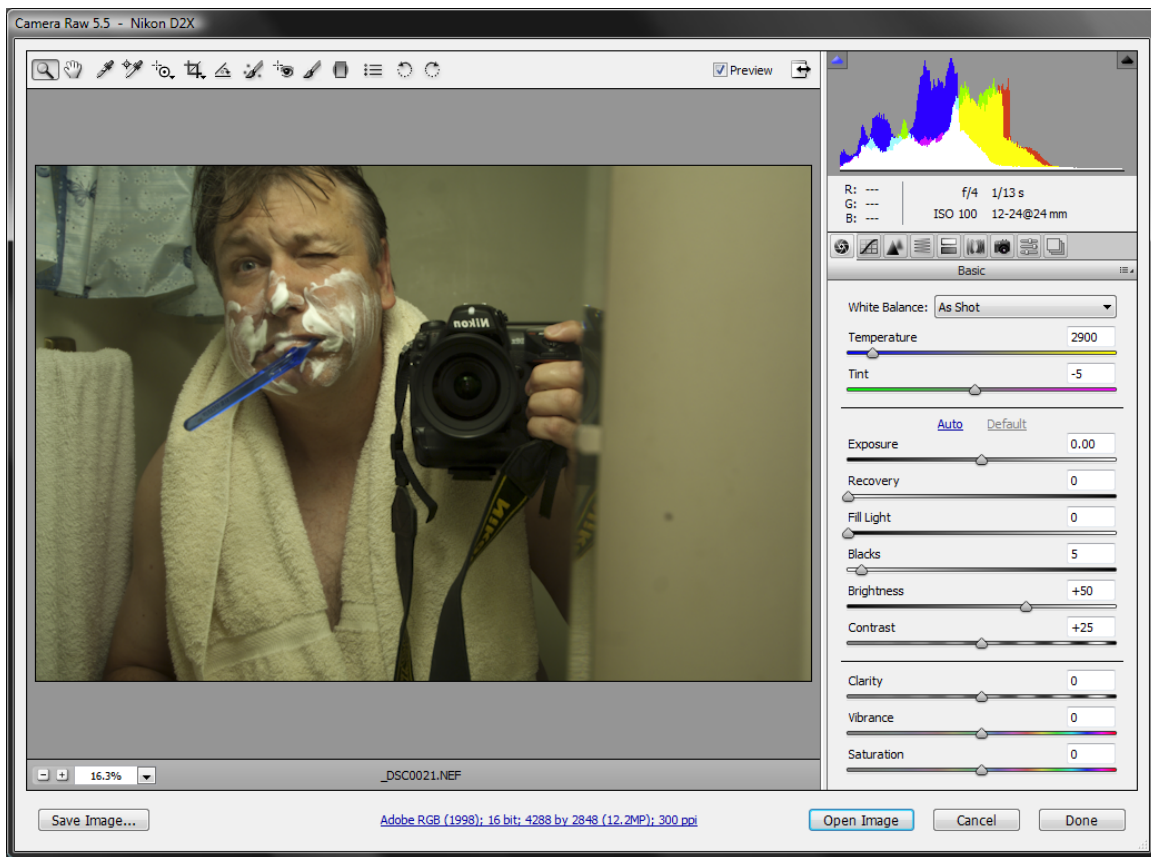
See openfilesCS4.mov

6.2 RAW workflow

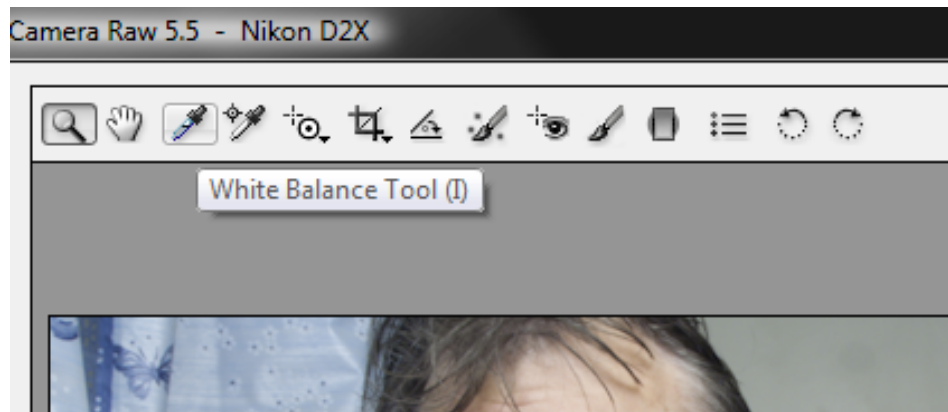
Each camera manufacturer offers its own RAW file format and file extension. RAW files also differ even from the same manufacturer on different camera models. A few cameras can create a generic RAW format that Adobe promotes the **Digital Negative Format** and it has the file extension **.dng**. You can convert any RAW format into .DNG format using Adobe Camera Raw (ACR) by selecting Save Image in the lower left of the Adobe Camera Raw (ACR) window. To find out what cameras are currently supported by ACR check out Adobe's web site:

<http://www.adobe.com/products/Photoshop/cameraraw.html>. (Note Adobe Lightroom uses the same ACR Adobe Camera RAW engine to open RAW files and also needs to be updated periodically).

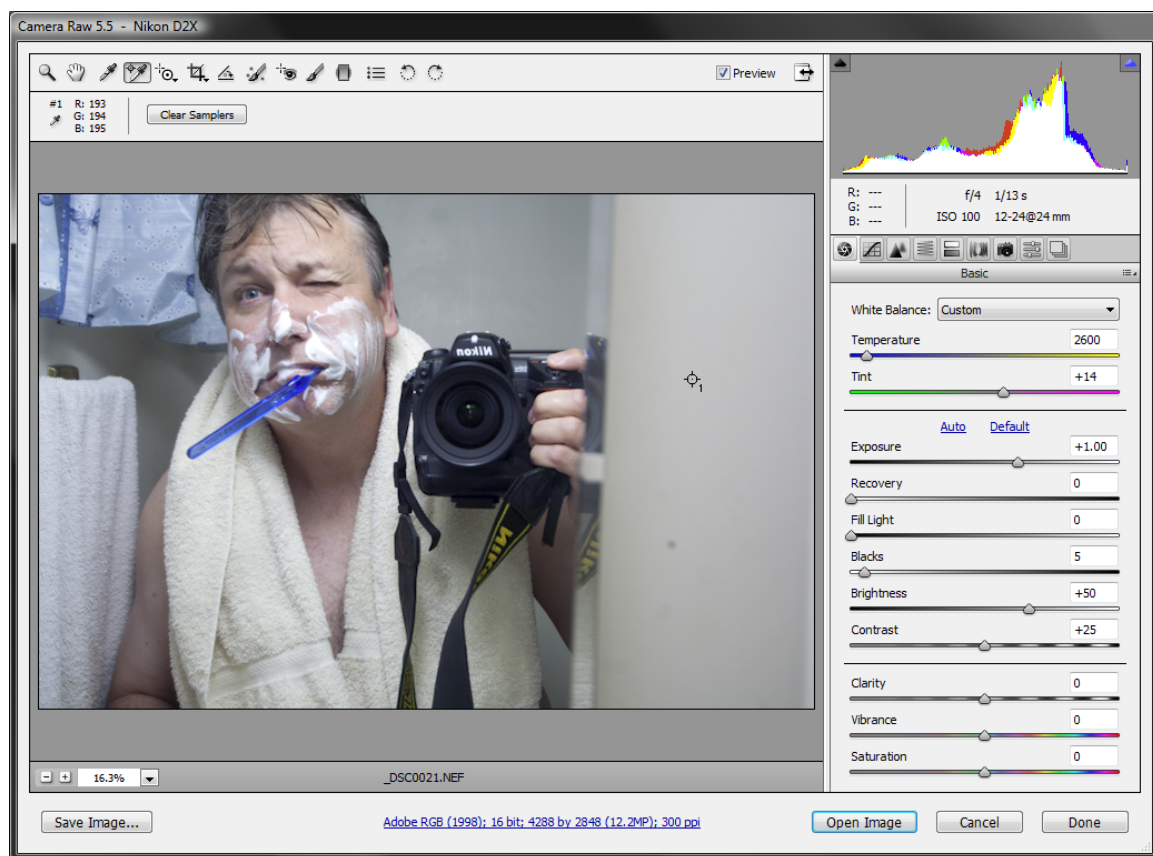
1. Select Adobe Bridge and navigate to the Photoshop tutorials folder and select the RAW folder.
2. With the thumbnails displayed, select and double click on Morning.NEF a picture of Robert first thing in the morning with his Nikon Camera. Before we correct the white balance we will set the default ACR settings. At the bottom of the picture you can see a blue hyper link - click on it and ensure the settings are set to: **Space: AdobeRGB (1988); Depth 16 bits; Size 12.2 MP** - note you can select smaller or larger file sizes, even enlarge your image up to 25.1 MP with very little noticeable degradation. Set Resolution to 300 ppi and leave the other settings at their default. If you want to enlarge your image or a component within your image you always have the option to increase the file size in ACR to a maximum of 25 MP. However you upsize your image even more inside of photoshop using the resize feature – I have upsized 12 Megapixel image files to 12 GB in order to make prints 19 x 9 feet suitable for billboards or a museum backdrop.



3. Above in ACR the picture is surrounded by a large number of controls on the right and at the top. We will focus for now just on the main controls needed to manipulate your image.
4. Select the exposure slider and move it to the right or left and notice how you can change a picture's exposure. This is a very powerful feature, but if your picture is very overexposed with blown out highlights you may not be able to recover them. Move the exposure to about +1.0 which is equivalent to 1 F-stop increase in exposure. Because it is possible to alter exposure after taking a picture in RAW format there is no longer a need to bracket photo exposures (unless you are making HDR photos). Bracketing means taking several shots increasing and decreasing the exposure.
5. Next we will fix the white balance or color cast. There are three ways to do this. A) Select White balance drop down menu on the right and select the different options e.g. Auto, daylight etc and note how the white balance changes. Usually auto gives the best result. 2) you can adjust the tint slider to eye ball the photo (monitor must be calibrated for this to work) or 3) Select the white balance tool – eyedropper 3rd from top left of the screen and click on a light tone (e.g. the wall) and it will set the colour to “white”. I will show you how to measure if the area is white it should have three numbers RGB all about the same e.g. 15,15, 15 (some number between 0 to 50) which represents a light tone – 3/4 white light tone is best. . If you have a neutral white or gray card in the pictures you could click on it the RGB values should be approximately equal. This eliminates any "subjectivity". I will demo the white balance tool – it's very easy to use to correct the white balance if it was photographed under tungsten or fluorescent lighting.



Above -select the white balance tool and click over an area that should be neutral like the wall to the right. Do not select very bright or very dark areas.



Click the eyedropper with cross above it over the wall and note the RGB numbers when they are all equal or very close - as shown R 193, G 194, B 195 your picture should have a proper white balance. When you are done select>Open image. From here you can make additional adjustments but we are going to work with some different RAW files - so close the file without saving.

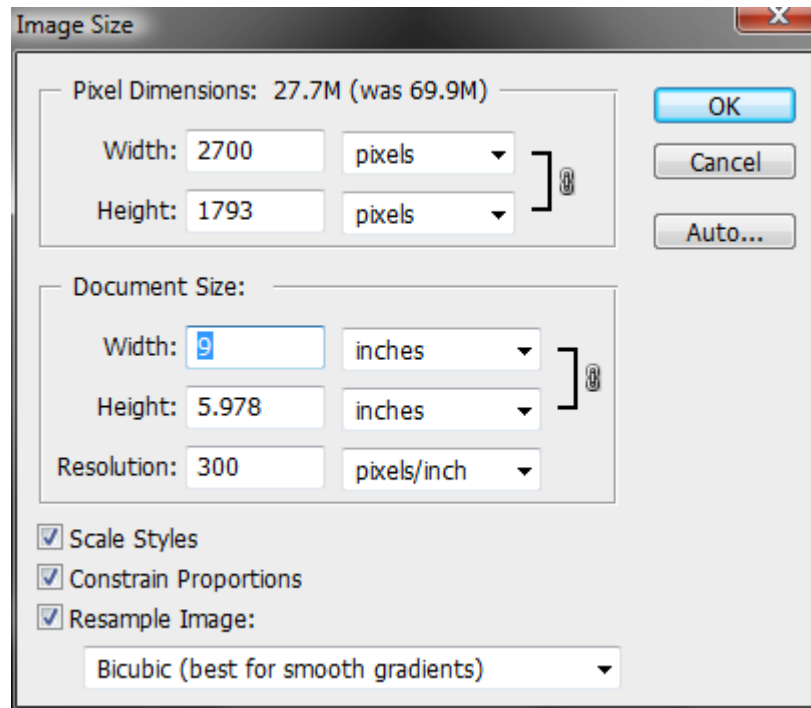
The RAW converter has so many features that there are entire books describing its' features. When you start out with ACR concentrate on the main controls before you begin to explore the more advanced features. In this workshop we will only briefly explores at some of the advanced features such as recovery, clarity, noise reduction, and fixing chromatic aberration.



See cameraraw1.move

MORE RAW FILE EXAMPLES – Preparing for making a print

1. Select the RAW file folder and open image _DSC0003.NEF - a photo of close-up filters on a white background. Note the strong color cast. In this example select the white balance tool and click somewhere on the white background - that should neutralize and set a proper white balance. Then adjust exposure to +1.75 to make the background lighter in tone and open the file.
2. If we wanted to make a 9 x 6 inch print we need to resize the image. Select Image>Size set the dimensions to 9 x 6 inches at 300 dpi and click OK.



Resize your Image to make a 9 x 6 inch print at 300 dpi.

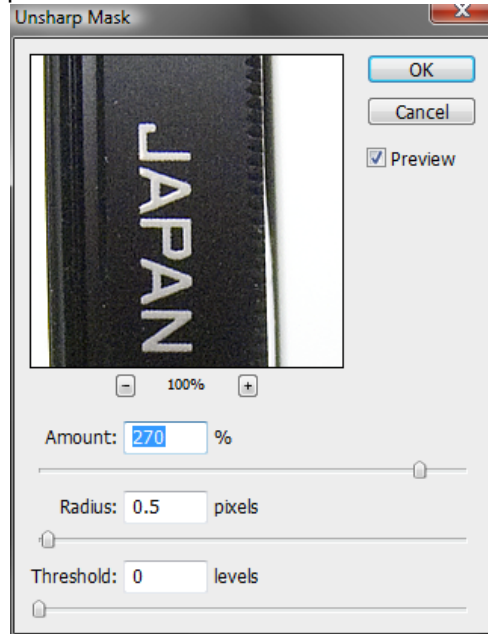
3. Since the image should look pretty good at this point - we just need to reduce the bit depth from 16 to 8 bits, sharpen the image and save it as a TIF file. To do this Select>Image>mode>8 bits per channel. It is best to edit your images in 16 bits and then convert to 8 bit mode before you save your files as only a few programs support 16 bit image files. Sharpening your image should usually be the last step in your workflow or after you resize your image. To Sharpen the image select **Filter>Sharpen>Unsharp Mask**.
4. Set Threshold to 0, Radius between 0.5 and 1.5 and drag the amount slider while viewing the enlarged area in the window.

Threshold refers to how different the tones need to be in order for them to be sharpened on a scale of 0-255. Setting the threshold to zero indicates you want to sharpen all tones.

Radius - refers to the distance in pixels from each edge you have in your picture that you want to enhance the apparent sharpness. Photoshop enhances the sharpness by increasing the contrast at edges. Do not set the radius to greater than 1.5 pixels or you will start to see halos around the subject.

Amount determines how dark or light the adjacent lines are next to the edges. You need to judge this visually. Most images can use some sharpening to offset softening that occurs during printing. Even images taken with a tripod can benefit from some sharpening - just don't overdo it!

The window that you view the sharpen effect should be placed over critical elements like the text on the filter or the eyes of a person or animal.



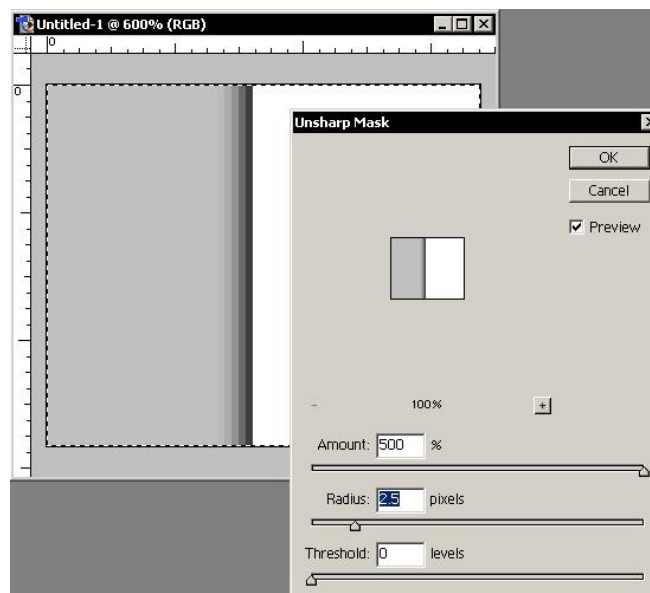
Unsharp Mask Box - this is the best tool to use for sharpening Photographs.

How does the Unsharp Mask work?

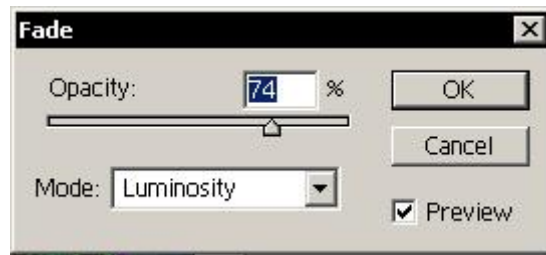
The best way to demonstrate how the unsharp mask works is to apply it to an edge. I have created a box for you in the folder called monitor_printer_tools called grayboxes_forsharpening - open this file and zoom in on the edge about 1200%. Select Filter>unsharp mask - then begin to modify the radius and amount. The greater the radius the farther from the edge you will see a darkening effect. The greater the amount, the darker the edge becomes on side and lighter on the other. If the Threshold exceeds the difference between the white and gray tone - nothing is sharpened. Unsharp mask enhances contrast at edges increasing the apparent sharpness in an image and I have found it to be the best tool for sharpening most photographs.



See cameraraw2.mov



TIP – if the effect of the unsharp mask is too great you can fine tune the effect using the Edit>Fade Unsharp Mask (Optional step for fine tuning sharpening, I use it rarely).



Select Luminosity from the drop down menu than adjust the strength of the Unsharp Mask. This is recommended as one of the best ways to sharpen your images. Some folks convert their images to Lab Mode then select the lightness layer (black and white only) and sharpen it – the goal is not introduce colour fringes when sharpening the pictures edges.

One of the problems with using sharpening tools is that it can also accentuate any grain, scratches or dust on your images. Most images will benefit from some sharpening though the amount required will vary with the picture and the size of print you are making. Some photos such as glamour portraits should not be sharpened. You may wish to experiment with the other sharpening filters, some are better suited for graphics.

Fixing Chromatic Aberration - Colour Fringing caused by the lens

Chromatic aberration is the inability of glass lenses to focus Red, Green and Blue light to exactly the same point. Lens manufacturers design lenses to minimize these aberrations but they usually can't eliminate it completely. Chromatic aberration is most commonly seen with cheaper lenses and even expensive wide angle lenses near the edge of the field. Adobe Camera Raw can fix **chromatic aberration** (color fringes) around fine details like branches near the edge of a photo. To see how to do this - select the RAW folder and open the file Backyard.CR2. Zoom in on the image in the ACR window to 400% and view the tree branches on the right side of the image. You will see purple fringes around some of the branches. Select the Lens corrections tab on the right side (5th one from the left) and move the two sliders Fix Red/Cyan Fringe (-71) and Fix Blue/Yellow Fringe (about + 23) until the colour fringes are gone or minimized. Zoom out and open the image. See the chromaticaberration.mov for step by step demonstration.



See chromaticaberration.mov

Reduce Colour Noise. ACR can also reduce colour noise in images taken at high ISO speed. Open the file _DSC0096. in the folder called noisereduction. Increase the exposure to +1.0 and increase the colour saturation to +30. Click on the third tab on the right side called (Detail) and in the new side panel at the bottom are controls for reducing luminance noise (noise in gray areas) and colour noise. To better see the affect of these controls zoom into the picture (200%) and select the area around the mother bears head. Drag the colour noise reduction slider to the right to 100 and note how colour noise disappears. You can also experiment with the Luminance noise reduction slider but it will have less of an effect on this particular image.

Click on the other square tabs on the right side of ACR to reveal additional features in the Camera RAW program and you will understand why there are entire books that deal just with Adobe Photoshop camera RAW features.



See noisereduction.mov

6.3 Work Flow for JPG or TIF files

Once you open a RAW from ACR into Photoshop's main window the workflow from there on is the same as for any JPG file from your camera or TIF files imported from your scanner.

In this tutorial you are going to open an image of a Swainson's Hawk that needs to be cropped, rotated, tonal values optimized, color corrected, fix a few dust spots and finally sharpen the image. The RAW file version is also in the folder if you wish to compare workflows.

1) Select Adobe Bridge and navigate to the folder JPGworkflow and open the image hawk.jpg



Note the image is crooked, its low in contrast, there is a colour cast and we have some spots we need to clean up.

2. Usually start by fixing the biggest problem first - in this case the picture was scanned at an angle - we will fix it using two different methods.

a) Select File>automate>crop and straighten image - the image will be duplicated and the white areas trimmed from the photo. Too easy - now lets trim the image manually using the crop tool as well.

b) Select the original image or hit Ctrl-Z to undo the automated fix. Then select the crop tool in the main toolbar and drag it around the image. You may need to zoom out so you have room to work. Place your cursor outside the top right corner and note when you press down the mouse it changes to a curved arrow. Drag your mouse and rotate the selection until the selection lines are parallel with the picture with no space between the lines and photo.

Obviously if your picture did not need to be trimmed like this you would just skip this step in the workflow.



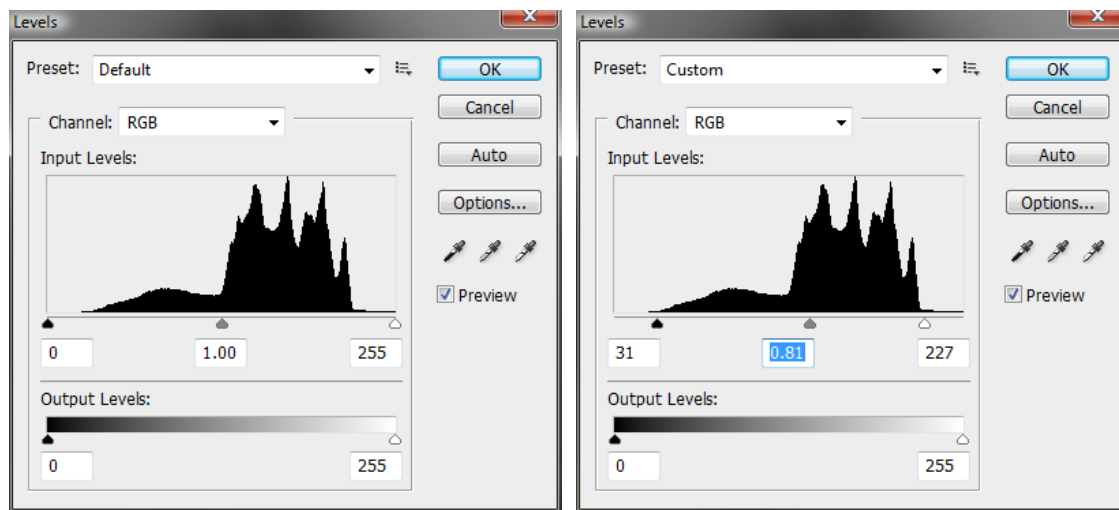
With your mouse select and pull on the middle handles (squares) until there is no white space left around all sides. When you are done - press the ENTER key and you should be looking at a trimmed photo.

3. The next thing to check is the file size and resolution. We want to make a print 9 x 6 inches at 300 dpi. If we were to use this image for the web we would change the resolution to 72 dpi (ppi). Select Image>Image size and set the dimensions to 9 x 6 inches at 300 ppi- turn it on.

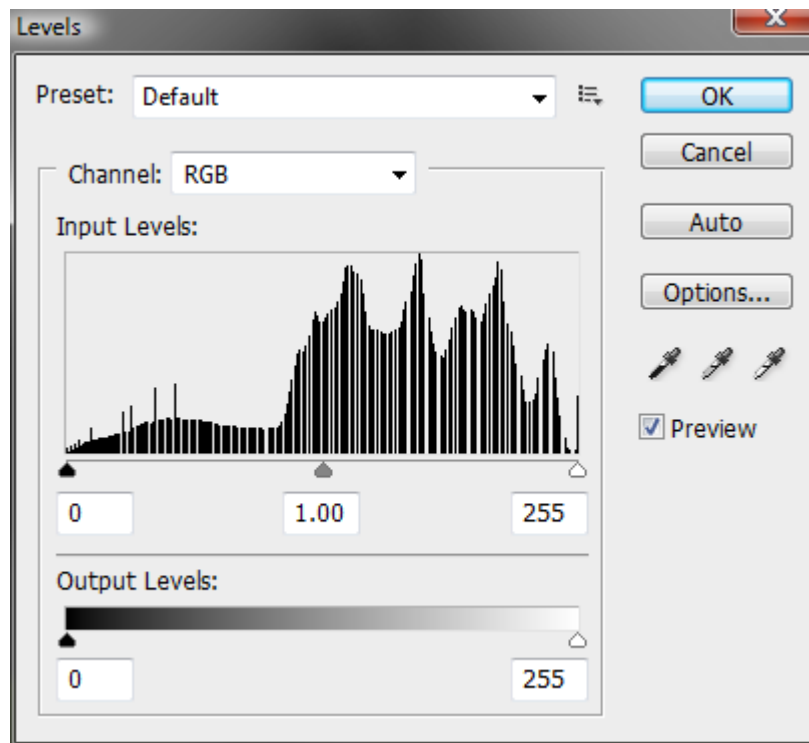
PHOTOSHOP TIP

Play with the magnifying glass to zoom in (+) and out (-) of the image - if you hold down the Alt key with the magnifying glass -zoom tool it changes to zoom out. If your mouse has a scroll button, you can configure Photoshop to zoom in and out using the scroll button. To do this go to Edit>preferences>General>check Zoom with scroll wheel. You can also click and drag your magnifying glass around part of your picture to zoom in. You can zoom in right down to the individual pixels that make up the image. . I set my mouse scroll wheel to zoom in Preferences > General > click box zoom with scroll wheel

4. Next we will optimize the tones in the image. To do this Select Image>adjustments>levels to bring up a histogram showing the distribution of tones in the image. On the left are dark tones and the right are light tones or white. The height of the peaks represents the number of pixels in the image with a specific tonal value that varies from black to white. In this histogram you can see there are flat areas on the left and right which means there are no deep blacks or bright whites in the picture. You can improve the distribution of tones in many images by dragging the right slider to the left and the left most slider to the right until they meet where the histogram begins.



On the left is a histogram representing the opened image and on the right after moving the sliders. When you are done select OK. If you select Image>adjustments>levels again you will see the histogram below after you optimized the tonal range. You can improve the tonal range of many images using this tool, but beware that sometimes you may not want to do this step e.g. for photos with fog or that you want to keep the image low in contrast for artistic reasons.



This histogram shows the redistribution of tones. The general appearance of the image should be improved.

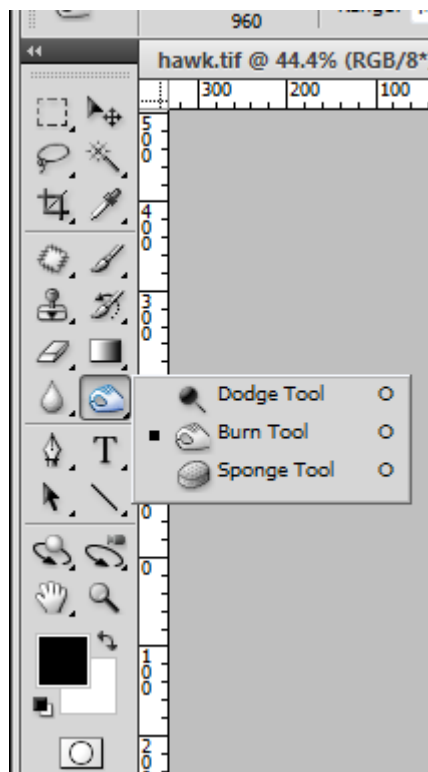
5. Our next step will be to correct the colour cast in the image. The image has an overall yellow cast. You can easily determine the colour cast in an image by selecting the eye dropper tool and opening the info palette (Window>info). With the eyedropper selected go to the top of Photoshop and set the sample size to 3 x 3 - this makes for more accurate colour sampling. Place your eyedropper on a gray, white or black area of your image. Gray is best and the fence post will work well. You should see numbers similar to: R 138 G150 B114. This indicates that blue is low compared to green and the opposite of blue is yellow so the image is about 36 pts too yellow.

Red is low compared to Green by about 12 pts. The opposite of Red is Cyan so the image is also too cyan in color.

TIP when you drag the triangles at the bottom of the histogram inward, hold down the ALT key while you do this and you will see the background of the image turn black but when you reach the point where there is data or information you will see colours. This tells you not go any further or you will clip and remove some of the colours.

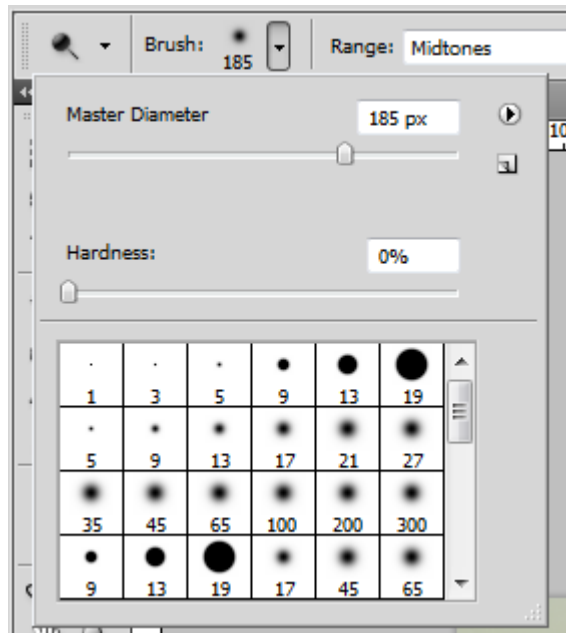
6. To fix the colour cast Select>Image>autocolor you will see a colour shift - now place the eyedropper over the gray fence post again and you should see the RGB colours are much closer something like R 123 G115 B121 - if the gray areas of your image have equal values of RGB that indicates your image is properly colour corrected. We will use the eyedropper tool later to fix individual colors that automatic colour correction is unable to correct.

7. Burn and Dodge tools allow you to lighten and darken specific regions of your image.



The Dodge tool will lighten an area you paint over, the Burn tool will darken an area and the Sponge tool will either increase or decrease the colour saturation over those areas you paint.

Select the Dodge tool. At the top of Photoshop you can control the diameter of the tool, and the edge softness. You want to use a soft edge so set Hardness to 0% and the diameter depends on what you plan to paint over. For this picture select a diameter of about 185 px and then "paint" over the bird's head. As you paint you will see the tones get lighter. You can also fine tune the control by selecting the exposure at the top of the Photoshop window in the options bar - a good starting point is 50%. The lower the value the more fine control you have when "painting" with the Dodge, Burn and Sponge tools.

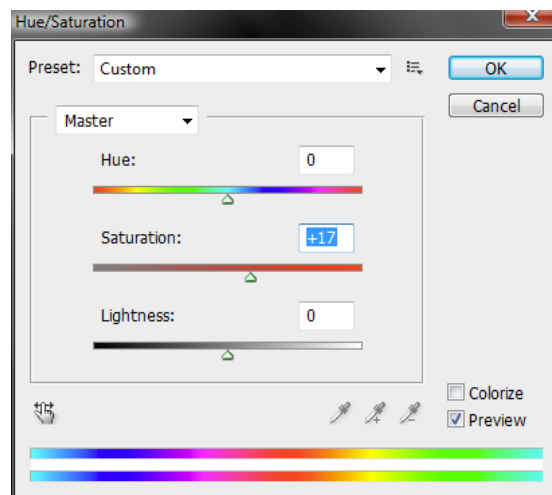


Select the Dodge tool diameter and set hardness to 0%. Below are different brush shapes you can also select.

Burning means making parts of the image darker. Select the Burn tool, set the diameter to 900 px and then paint around the outside edge of the image to darken it. Darkening around the edge of the photo results in the subject being lighter in tone and that draws the eye inward into the photo.

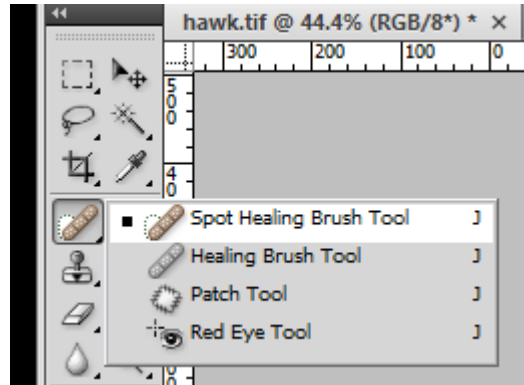
Finally select the sponge tool, set it to about 200 px in diameter make sure the drop down menu in the top options bar is set to **saturate** and then paint over the birds beak and feathers and note how the colors become more saturated. This tool works especially well with coloured leaves or peoples eyes.

8. Boosting Overall colour saturation of an image. Select Image> Adjustments>Hue & Saturation. Select the saturation slider and move it to the right about 25-30 pts and note how the background begins to increase in colour saturation. It is also possible with this control to use the drop down menu and select only a specific colour in which to modify the saturation. Be careful not to go too far or the image will begin to posterize and look unreal - how much is too far depends on the artist but I try to keep it between 20-30 pts. Some images you may choose to desaturate slightly - there are no fixed rules it depends on what you want colours in your image to look like.



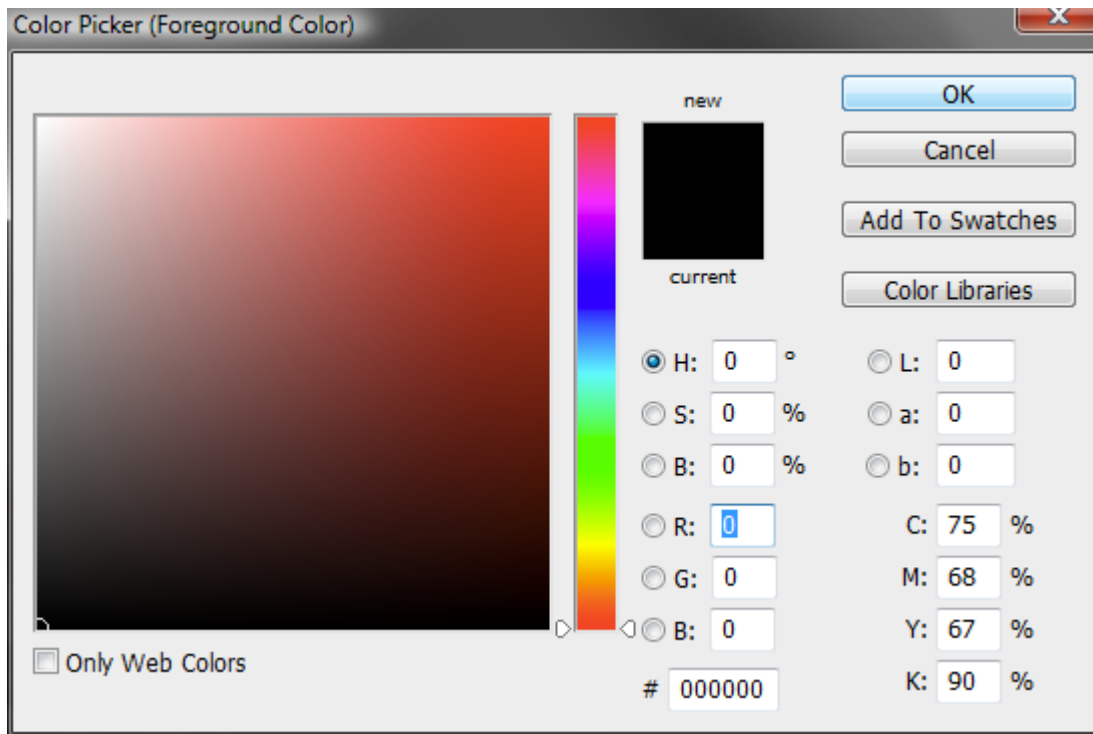
Colour saturation slide

9. Remove spots or dust that might have settled on your digital camera sensor. The easiest way to fix these is to use the spot healing Brush tool. Select it from the menu then adjust the diameter to be just a little bigger than the dust spots you are going to remove. About 90 px will work well.



To apply the tool put it directly over a dust spot and click your mouse. The brush takes areas from around the dust spot, fills in the center and blends it to instantly remove spots. You can also paint with the tool to remove scratches.

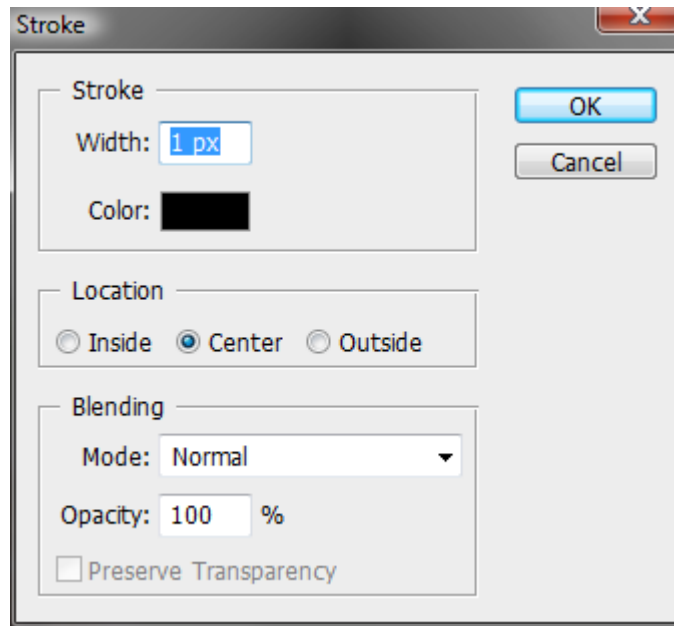
10. To put your name on the image select the T or Text tool. Then at the bottom of the tools menu - select the top square to pop up the foreground color picker.



Click anywhere in the large window to select a shade or colour, you can select different colours by moving the triangles next to the vertical rainbow bar up and down. To select white simply select the region in the top left and click OK. Click on your photo and begin to type your name. The font choice, size and styles are available in the top menu of Photoshop. When you are done select the move tool and drag your text where you want it to be on your picture. To add a copyright symbol © hold the **Alt key and type 0169** on the PC to see a © and you should see it with most fonts (some fancy fonts do not support this symbol if so change the font to Arial or Verdana). To get a copyright symbol on the Mac - hold down the **Option + G** key.

11. Sharpening your image - as with the image before select Filter>Sharpen>Unsharp Mask and adjust the radius to 0.5 and Amount to about 150%. If you get a message this type must be rasterized - this means you need to go into layers and select the bottom image layer to sharpen - not the text layer. You can save the image at this point or if you like you can add a small border.

12. To add a border around your image go to Select>All Edit>stroke. You should see a pop up box - set the border width in pixels and colour you want and click OK. If you don't like the effect select Edit>Undo or Ctrl-Z.



13. Final step is to save your file. If you plan to use the file for making prints then select>File>Save As and select TIF file format. If you need to send this image over the web or by email select Save as .jpg. If the file is destined for a web site, you need to select Image>size and drop the resolution to 72 dpi and then select File>Save for Web & Devices and select the JPG format and the appropriate quality settings to get the file size you need.



See jpgworkflow.mov

In summary a basic workflow for working with JPG or TIF images consists of :

- 1) Open your file.
- 2) If necessary trim or rotate the image.
- 3) Check the size and set the appropriate resolution 300 dpi for prints, 72 dpi for web.
- 4) Adjust the overall tones using the histogram.
- 5) Colour correct the image.
- 6) Burn, Dodge, or adjust local colour saturation with the sponge tool .
- 7) Adjust the overall colour saturation.
- 8) Repair or remove dust and scratches.
- 7) Add text or your name if you like.
- 9) Sharpen the print.
- 10) Add a border if you like.
- 11) Save the file TIF for printing or archival purposes - you can always open the TIF file and convert it into a JPG file at any time.

With practice all these steps can be completed in only a few minutes and will form the bulk of your workflow. Also you don't have to fix all the images you have taken just select the best ones.

6.4 Colour correction by the numbers

Some times autocolour is unable to remove a colour cast. When this occurs we can use the eyedropper tool, identify a region in the print that should be neutral in color (i.e. gray, white or black) and adjust the colours so the RGB numbers are equal or very close.

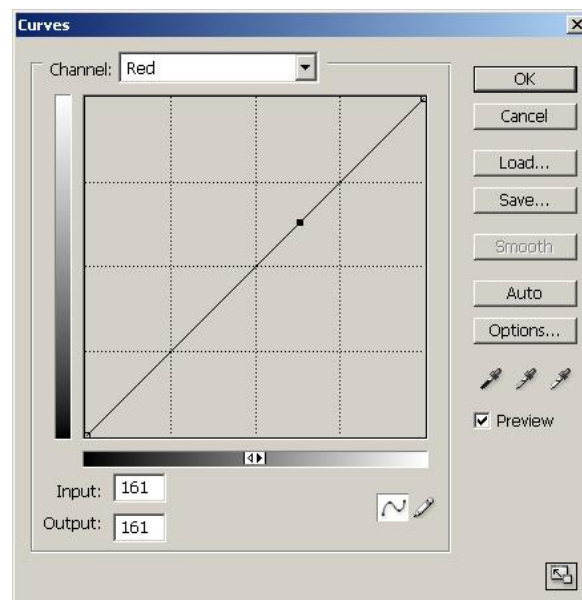
1. Open the file called bluepolarizer_uncorrected.TIF in the folder colourbycurves. Select the eye dropper in Photoshop, open the info palette and move the eye dropper over the background trees and snow to determine the colour cast by reading the RGB values. Remember white snow or gray areas should have Red Green Blue values that are about equal.



Left is the uncorrected image and on the right is the colour corrected image

2. Placing the eyedropper over the trees in the top left of the image should reveal a strong red bias in the image on the left. E.g. R 166 G149 B128. To reduce the amount of red first start with the autocolour command and then check your eye dropper again. You should read something like: R157 G149 B120 - in other words Autocolour did not completely correct the image. Here is how to fix the excess red and yellow colour (reduced blue).

3. Select Image>Adjustments>Curves – then place the eyedropper tool over the trees in the top left of the image. On the curves window select Red at the top drop down menu. Then hold the Ctrl key and click the mouse with the eyedropper tool positioned over the background trees and you will see a black spot on the curves window (see below). This represents the tone in the image with the red cast that we will manipulate.



To reduce the amount of red you can either drag the dot on the curve down with the mouse or type in a lower number in the output box e.g. 150 – this will reduce the red in the image by the amount you type in. Using this technique you can selectively reduce or increase a specific colour in any area of an image. Once you balance the Red so it is about equal to the green colour, we will repeat this step but choose to fix the Blue colour which is low. Select the Blue channel from the top of the curves box, Ctrl-click the eye dropper on the background trees and then pull the blue curve up until the Blue, Green and Red colours are approximately equal. Essentially we are balancing the gray area (trees and snow) to be equal and all other colours in the picture will be adjusted accordingly. Sounds complicated but it's not - once you learn how to correct colour by the number even if your monitor is not calibrated you can be confident your image is "colour corrected". The main point is to select a gray area - if a gray colour is not available select a white or black - pure white is RGB 255, 255, 255 and pure black is 0,0,0 and middle gray is 128, 128, 128 - whatever shade of gray you use the RGB values should always be equal. In portraiture or commercial photography photographers sometimes include a gray card in one of the photos for this type of reference. In nature photography look for gray tree branches, gray road, rock, gray hair in your picture to select to neutralize. Finally keep in mind that sometimes you don't want to remove the colour cast from all pictures for example for photos taken at sunrise or sunset!



See colourbynumber.mov

6.5 Quick & Easy Photoshop Fixes

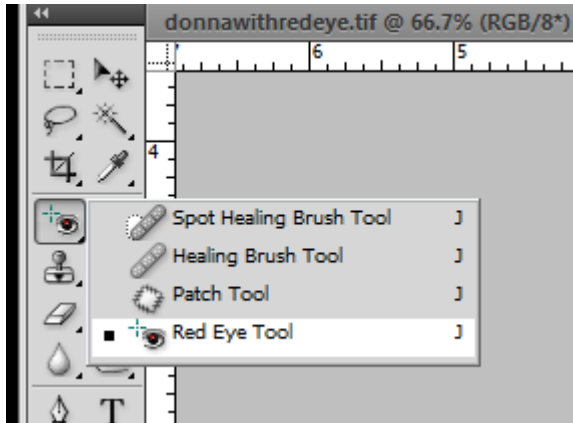
- 1) Removing "Red Eye"
- 2) Perspective Crop - straightening cooked images within a picture
- 3) Fixing crooked horizons
- 4) Fix keystone distortion

6.51 Red Eye is common in pictures taken with small compact cameras in low light. The red eye is caused by the reflection of blood vessels from the back of the eye. This occurs usually when photographing with a flash positioned close to the lens axis as is the case with most compact cameras. To reduce the occurrence of "Red Eye" you can use the on camera red eye reduction which sends out a brief pulse of light before the main exposure, you can also use a flash positioned further away from the lens axis usually higher on top of the camera or off to one side of the camera. If you do get Red Eye its a cinch to fix.

1. Open one of the photos with Red Eye in the folder called RedEye.



2. Select main tool panel and select the Red Eye repair tool - see below.



3. Click and drag a selection just over the red eye component on the photo - the red colour will immediately turn black. If there is still some red left over just repeat. The tool selects anything that is red within the selection and applies a black circular brush with transparency.



See redeye.mov

6.52 Perspective Crop

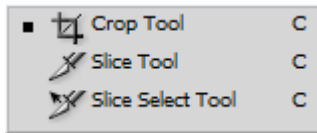
If you ever photographed a painting or photograph in a glass frame on an angle to avoid light reflections off the glass you noticed that your photo will be distorted. Fixing this type of distortion in Photoshop easy.

1. Select the photo in the folder image_repair called perspectivecrop.tif.

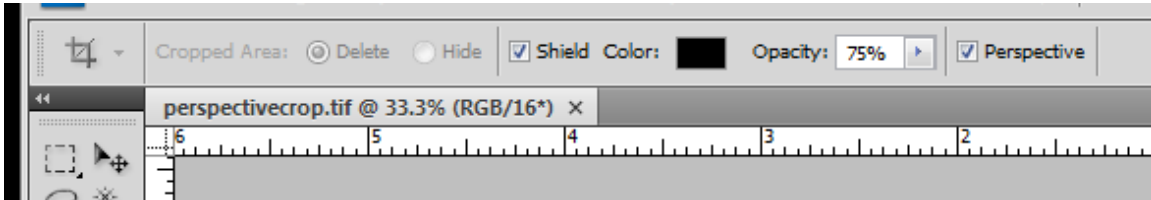


Photo showing perspective distortion

2. Select the crop tool in the main toolbar and drag it around the entire image.



3. At the top of Photoshop in the application bar you will see a small check box with the word perspective beside it - make sure you have selected it i.e. there is a checkmark inside the box.



4. With your mouse pointer drag the corner handles on the selection to the corners of the picture frame.



Above shows the left corner "square" moved to the upper left corner of the photo. Drag all 4 corners and when you are done - press the Enter key and the image will be completely straight.



See perspectivecrop.mov

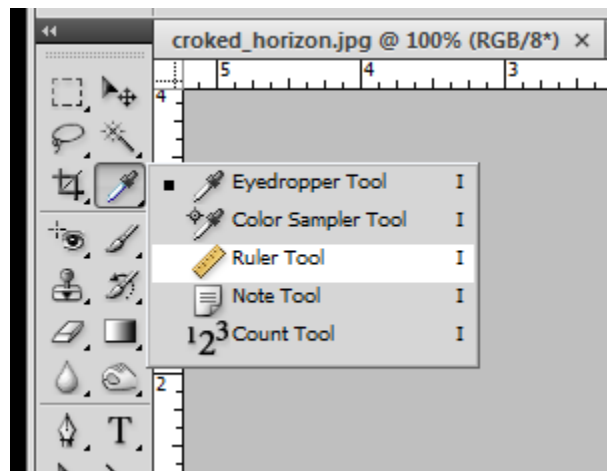
6.53 Fixing Crooked Horizons

Crooked horizons are caused when the camera is not held level with the landscape and it occurs most often when photographing landscapes with water. Crooked horizons can be fixed in Adobe Camera Raw or within Photoshop main window - we will fix a crooked horizon inside Photoshop.

1. Select the folder image_repair and open the image called crooked_horizon.jpg - a picture of a lake scene where the water appears to be running down to the left of the picture.



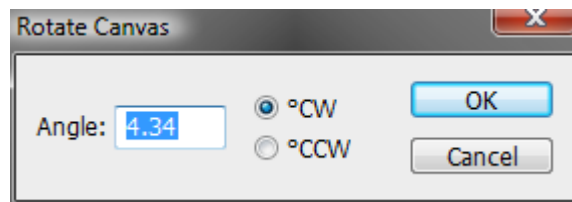
2. Select the ruler tool from the main toolbar as shown below



3. Click on the left side of the picture where the water meets the sky - hold your mouse down and drag a line to the right side of the picture to the point where the water meets the trees on the far side of the picture. You should see a line parallel with the water. If you make a mistake you can move the end points by clicking on them and dragging them with your mouse pointer.



4. From the menus select Image>Image rotation>arbitrary - you will see a pop up box called Rotate Canvas with an angle indicated - click OK and you will see the image rotated so that the horizon is now level.



5. Now it's just a matter of cropping the image to get rid of the white space created around the image. To facilitate cropping, make sure rulers are visible in Photoshop - if not select View>rulers. You click on ruler and hold your mouse down to drag out a blue guideline over the top, bottom and sides of the picture like that shown below.

Note in the latest versions of Photoshop CC - after drawing the ruler to align with the horizon, at the top of the window there is a button in Photoshop CC -called Straighten layer - just click on it and the horizon will be level. You will still have to crop the edges after doing this.



6. The blue guide lines are dragged from the rulers and positioned on the corners. Then select the marquee tool at the top of the main tools panel. Drag the marquee inside the blue selection - it should snap to the guides so it selects the inside picture as shown below.



7. Select from the top menu Image>Crop then Select>Deselect to turn off the marquee tool and you are done and ready to save the image.



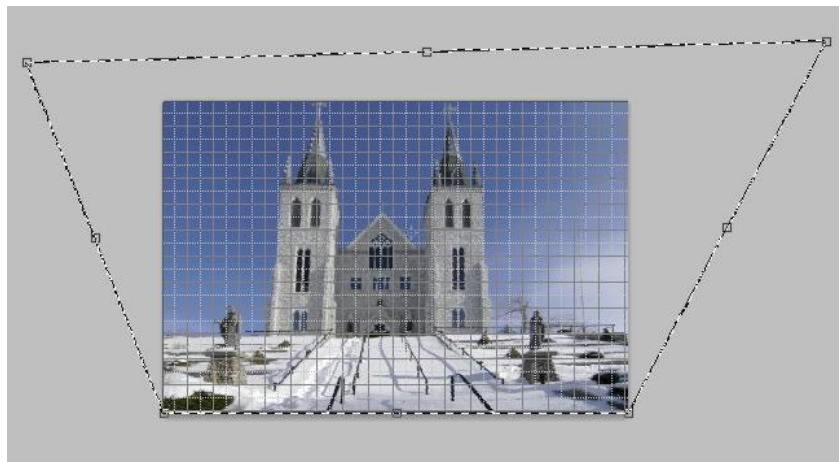
See crookedhorizon.mov

6.54 Keystone Correction



Keystone distortion often appears when you are close to a subject like a building and can't back away so you tilt your camera to capture the entire building. This type of distortion can be easily fixed in Photoshop.

1. Select the folder image repair and open the image keystone2.jpg. Zoom out of the photo so you have some empty space around the outside of the image.
2. From the menu choose Select>All - this puts a marquee selection around the entire image.
3. Then choose View>Show Grid - the grid is just an aid you can use to align the building with.
4. Edit>Free transform or use the short cut Ctrl-T - you should see a small square selection at each corner of the picture.
5. To straighten the building - hold down the Ctrl key and drag a corner handle with the mouse pointer. Start by selecting the top left and then top right corner. When your done - hit the ENTER key to see the result. Remember to turn off the grid when you are done.



Drag the handles by Ctrl clicking on the corner handle and drag up and out - you may need to zoom out of the image so you have room to manipulate the corner handles.

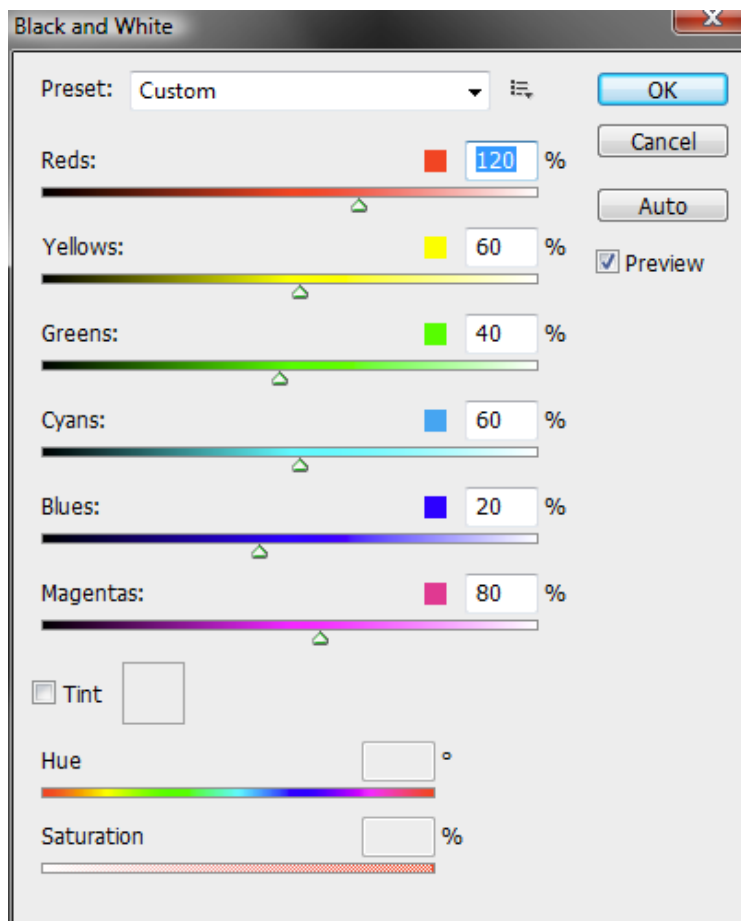


See keystonecorrection.mov

6.6 Convert images to Black and White or Sepia

There are several ways to convert images to Black & white in Photoshop, the simplest is to open the image and select Image>mode>grayscale however this method does not provide any control over the tones. Instead if you select Image>Adjustments>Black and white - you can now control which colours will be light or dark in tone. Before digital photography black and white photographers often used filters to control tones in a picture. For example a red filter would darken its complimentary color like a blue sky, but would lighten anything that is red in the picture. With Photoshop you can control the tones of any colour in your picture by simulating adding a red filter or any colour filter during the conversion. It is best if you always shoot digital images in colour and then convert to Black in white in Photoshop.

1. Open the file kayak_color in the folder BW_color. To convert the image to black and white select Image>adjustments>Black & White.



Drag the red slider while watching the tones in the photo. When you slide red to the right it will make reds lighter in tone, slide to the left and it will make the reds darker in tone. By sliding the different coloured filters you can control the tones of almost any colour in your BW photo. There are no wrong or right settings it depends on what you want your image to look like. At the bottom is also a Tint checkbox you can use to create a monotone tint. You can select different tint colours and vary the saturation with the bottom sliders. Experiment and make a Brown or sepia toned image.

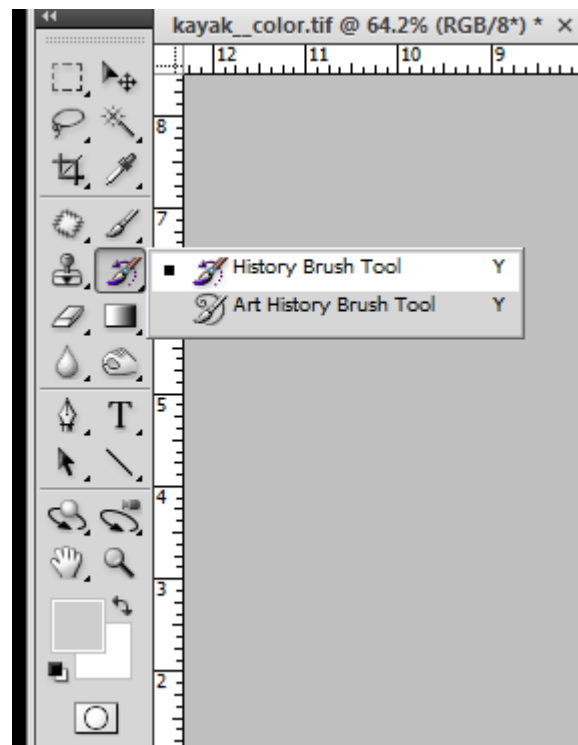


See converttoBW.mov

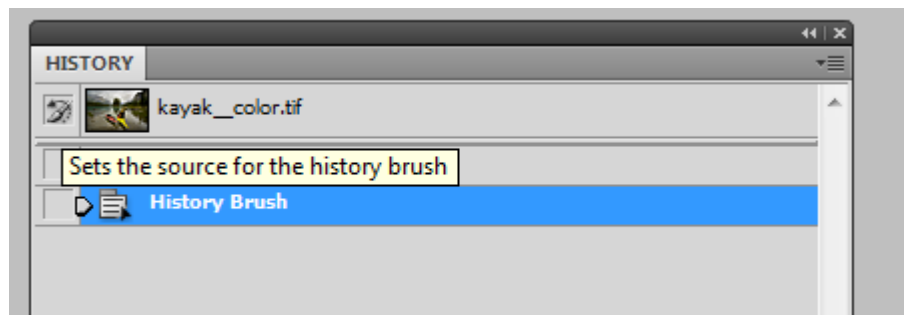
6.7 Create a BW image and return some of the original colors

To create a BW image and return some of the original colour - you will need to use your history palette and the history paint brush.

1. Open the kayak colour picture `kayak_color.tif`. Make sure your history palette is also open select Window>history if it is not visible. The history palette acts like a tape recorder - every time you make a change to your picture it creates a new step and allows you to back up and undo several steps. By default it records 22 steps, though you can capture any particular point in your editing process by selecting the camera button at the bottom. Once you close or save your file, however you no longer can access the history steps. We will use this tool to return color to part of the image after converting it to Black and White..
2. Convert the photo to black and white Image>Adjustments>Black and White> OK
3. Select the history brush tool from the main tool bar.



4. Select the history palette and click on the left side of the picture thumbnail or the step that says open at the top of the history palette- this sets the source of the history brush to the point where you opened the image and when it was in colour. Painting with the brush will return the original colours in the picture from the earlier history state.



5. Adjust the diameter of the brush at the top as required and zoom in if necessary on the picture. Start painting and you will see where ever you paint it will return the original colour. If you make mistake hit Ctrl-Z or use the history palette to back up. You can also vary the opacity of the paint brush at the top of the options panel - set it to 50% or less if you want more control or want to make the colour "thinner". You can apply this technique to any of your photos.



CP Train on Morrants' Curve in Banff National Park - using the BW colour technique.

Exercise: Select one of your own photos and try this technique.



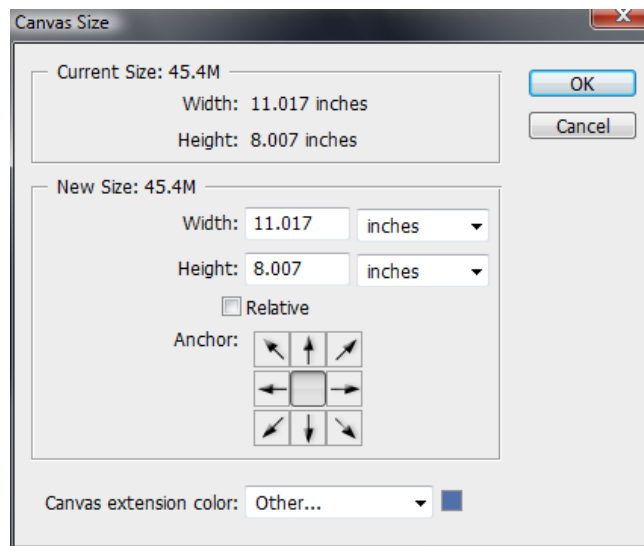
See BWcolour.mov

6.8 Repairing images using the clone tool

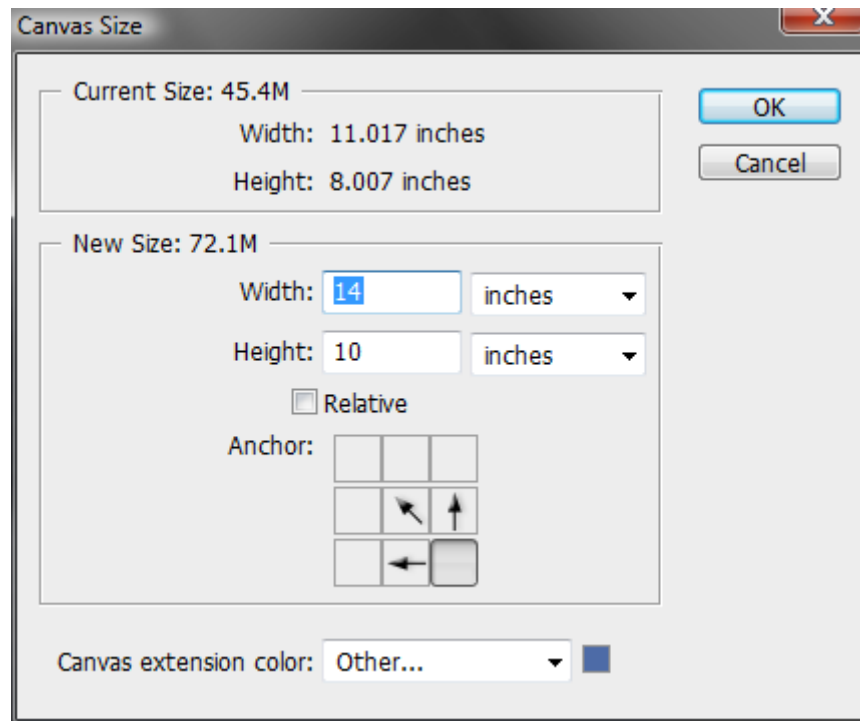


The cloning tool has the ability to add or remove elements from any picture - it is even possible to clone elements from one picture into another. Some might say its cheating and in a way it is. In this exercise you will learn how to remove the telephone pole from the original image, then increase the size of the picture to add more blue sky and finally you will learn how to take the lower left wing tip and copy it over to the top wing which was cut off and make it blend in. Even if you only master the clone tool you will quickly discover how useful it can be when it comes to repairing images. (We will do a bit of cloning first with the snowyowlflight before completing the entire exercise to get you used to this incredible tool).

1. Go the folder called cloning and open the file called snowywithpole.tif - you will see a snowy owl that has just taken off the top of a telephone pole. First thing we will do is crop the image. Make sure the rulers are visible if not select>View rulers. Right click on the ruler to set the units to inches.
2. Select the rectangular marquee tool located at the top left the main tools panel and drag it over the photo so the width is set to 11 inches and the height is set to 8 inches from the top left corner.
3. Select Image>Crop. You should now only be viewing the part of the image that was within the marquee selection you made.
4. We are going to increase the size of the image canvas so we can add more sky. To do this select Image>Canvas size and you will see a pop up box. and you should see the dimension of Width 11 and Height 8 inches.



5. Set the Height to 10 inches and width to 14 inches. Also select the lower right corner in the Anchor boxes - this will make the new canvas area appear to the top and left of your current image. Finally click on the square beside Canvas extension color and then click on a part of the blue sky in the photo to select the blue color. This will make the additional canvas area a blue colour - though it won't be a perfect match. .



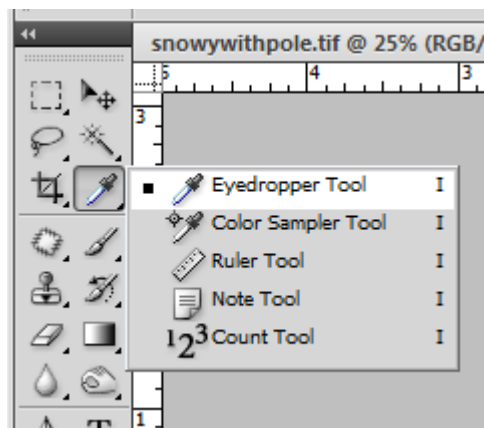
6. Our next step is to even out the sky so it is all one shade of blue. To do this select the magic wand on the main toolbar (2nd from top). In the application bar at the very top of Photoshop

you will see a text box called Tolerance. Set this number to 12 - the default is 32. The tolerance refers to how similar colours are to be selected. Higher numbers mean you will select more colour shades and we only want shades of blue. With the magic wand selected - click on the sky in the top left of the picture.



You will see the marquee extend around the owl and telephone pole selecting most of the picture except for the small blue area on the lower right. To include the blue area in the lower right in the selection - take the magic wand and **shift click** on the blue sky area in the lower right part of the picture. Shift-clicking adds to the original selection (i.e. Hold down the shift key while you click on the area with your magic wand).

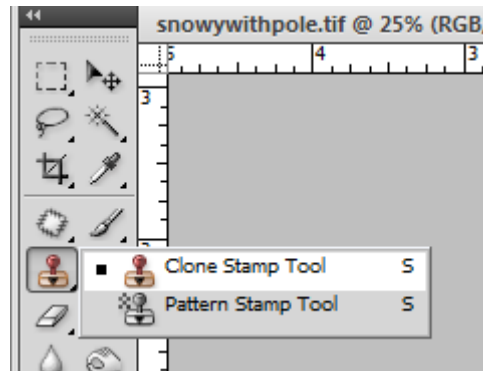
7. Before we fill in the sky selection with a uniform blue - Select the eyedropper tool and then click on the sky in the picture to select a light blue colour.



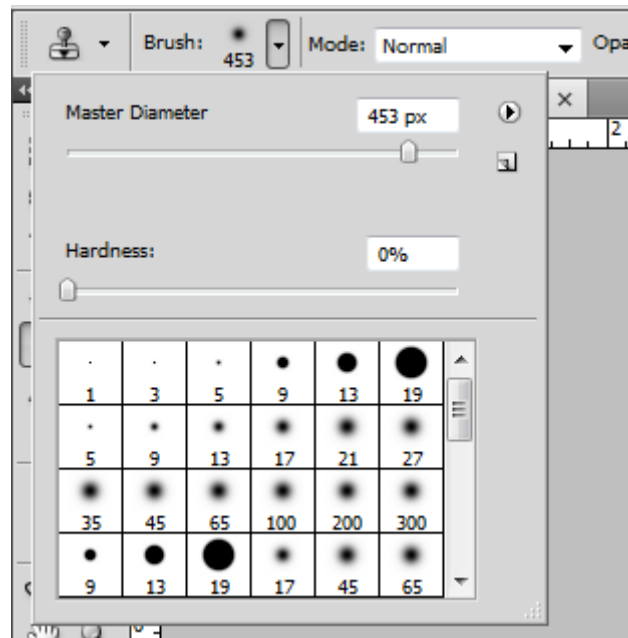
Eyedropper tool

8. Select Edit>fill in the pop up box select foreground colour - the colour you selected with the eyedropper. And finally to remove the marquee selection go to the top menu of Photoshop choose Select>Deselect (or Ctrl-D). The Sky should now be a uniform blue color.

9. Our next task is to remove the telephone pole and wires using the cloning tool. The clone tool takes an adjacent area and moves it over top of what ever you select to paint over. Select the clone stamp tool.



10. Move the tool over the picture and you will see a circle. The diameter of the circle determines how big an area you will select and move - the diameter of the clone area is controlled at the top of Photoshop by selecting the Brush tool.



The brush tool determines the diameter and edge hardness. For cloning I recommend setting the hardness to 0% which means a soft feathered edge. The diameter will vary with the parts of the picture you plan to clone over. A good diameter to start with is 150px for moving sky over the telephone wire.

11. Lets start by getting rid of the telephone wire on the left side of the owl. Place your clone tool above the wire but not touching it. Hold down the Alt Key - your cursor will turn into a smaller target symbol - keep holding down the Alt key (left hand) and with your right hand click down on the mouse button and drag the target over the wire. Then let go of the Alt key (first) then release the mouse button. Now press down on the mouse button and you will see a + symbol where you started your drag. The cross indicates or shows you what area of the picture you are cloning and where you click your mouse down on is where the cloned sky will appear - over the telephone wire. You can change the source part of the picture that you are cloning anytime by repeating these steps and you can adjust the brush size anytime. With a little bit of practice you

can clone and remove almost anything on your picture. Repeat and clone blue sky over the telephone pole until its completely gone - leave the wing for last.



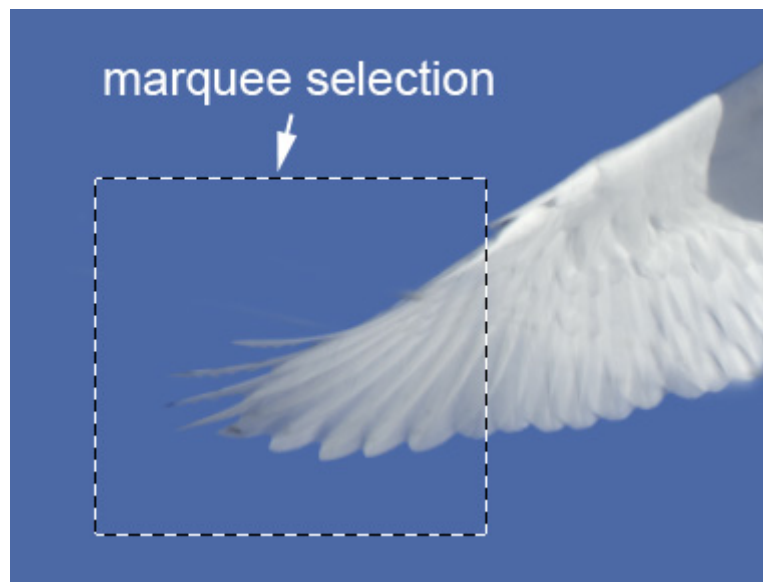
To get rid of the wire on the wing, zoom into the picture and reduce the diameter of the clone tool to about 90 pixels. Then zoom into the wing area and carefully clone out the telephone wire.



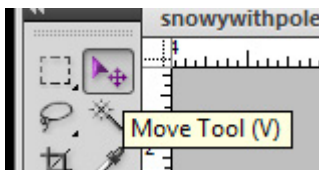
With the wire gone and you should have an isolated bird in your sky. The trick with cloning is to click multiple times during the process- in other words try not to paint long strokes but instead use multiple short strokes or dabs - this results in better blending. Cloning takes a little bit of practice but once mastered you will love what you can do with it.

Finally lets fix the cut off wing. To this we need to select the wing tip from the lower left and transfer to the top right, flip it over and then blend the wing tip into the main wing.

12. Select the marquee tool and draw a rectangle around the lower left wing tip.

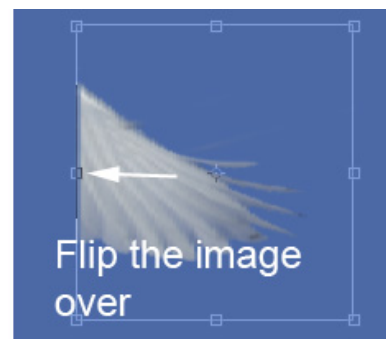
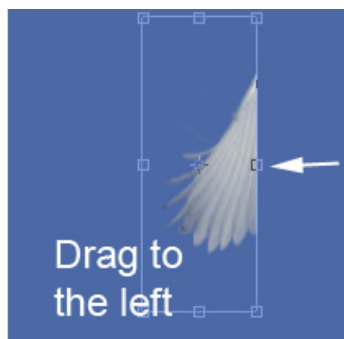
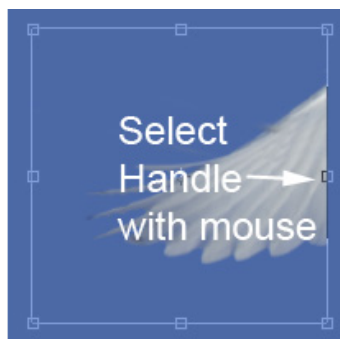


13. Choose Edit>Copy - then Edit>Paste - this will copy the selected area and paste the image back on top of the original. To see the pasted selection - select the move tool (cross with arrows at the top of the main tool bar).



Click and drag over the wing tip and you should see the copied graphic move. Move the graphic to the top right wing.

14. To get the wing tip to fit over top of the right wing we need to flip it over and rotate it. To do this Select Edit>Free Transform (or hit the shortcut Ctrl-T). When you do this you will see a selection around the wing tip. To flip the wing tip click on the right handle and drag it to the left until the image appears to flip over.

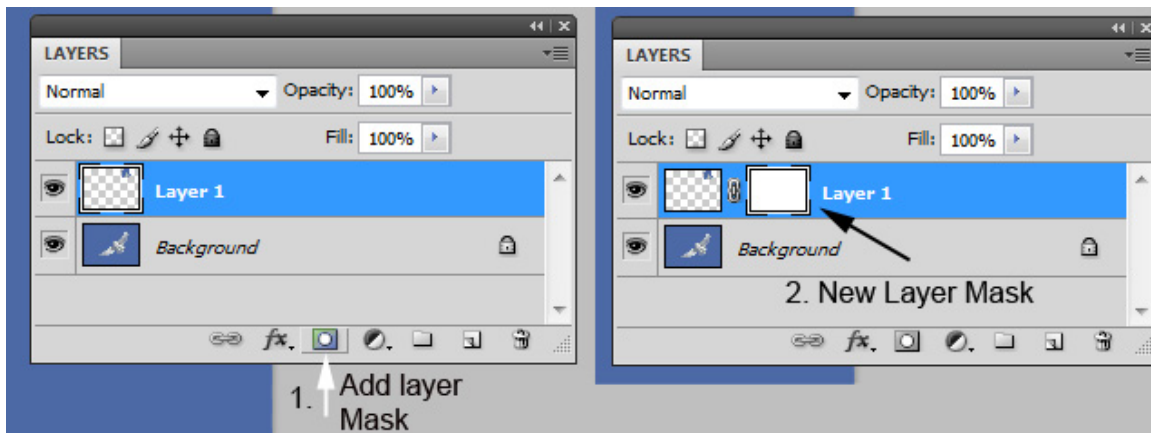


15. Once you have the wing tip flipped - move it to the right top wing edge by clicking and dragging the selection. We need to rotate it and move it over top of the right wing. To rotate the image - you should still have the image and handles visible. Place your cursor outside one of the corners - a few millimeters away and you should see a curved arrow appear. Click and drag with your mouse pointer and you will see the selected area rotate. Line up the wing tip as show below and then click Enter and the handles will disappear. You can move your selection one pixel at a time by using the arrow keys on your keyboard.

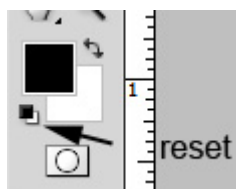


To make the wing tip blend into the existing wing we need to create a blending mask. Blending masks take a bit of time to get used to but there are very powerful and allow you to blend any object into another.

16. Select the layers palette and click on the layer mask button at the bottom as shown below.



17. Set your foreground colour to black and background colour to white which is the default setting in the main toolbar. Select the paint brush tool set the diameter of the brush to about 56 pixels in diameter - hardness set to 0% - so it has a soft edge. Make sure that the top layer mask is selected in the layers palette.



18. With your brush paint around the bottom edge of the wing tip using black. Where ever you paint black it makes the mask layer transparent and so the picture below shows through. If you paint too much you will see the sky show through - no problem - select white and paint again to return the mask. Black makes the mask transparent and painting white makes the mask opaque. The trick is to paint around the edges so it the wing tip above blends nicely with the wing below it. There is a little bit of artistry here to make a smooth blend.

If the brushes are not working for you make sure that when you positioned the wing tip over the bottom wing that you had some overlap with the bottom wing. Without overlap when you paint black you will simply see blue sky below the wing. If this happens move the wing further down along the main wing. When you are done - flattened the layers in the layers palatte top right.

Finally - lets make some more Owls by Cloning them.

19. Select the layers palette - at the top right select the pop out menu and select flatten to flatten the layers - to clone you need all the components on one layer. Select the clone tool and set the brush diameter to about 370 pixels. Place your cursor over the owls head, hold down the Alt key and then click and drag your mouse above and the left of the owl. Let go of the Alt key, lift your finger off the mouse just for a second then press it back down - hold it down again and paint.



Two snowy Owls

The Clone tool can be used to add or remove any elements from your picture; telephone poles, dust spots, scratches and more. The trick is to clone in such a way that it's not obvious what you did. Pay attention to the direction and quality of light if cloning other elements into your picture.



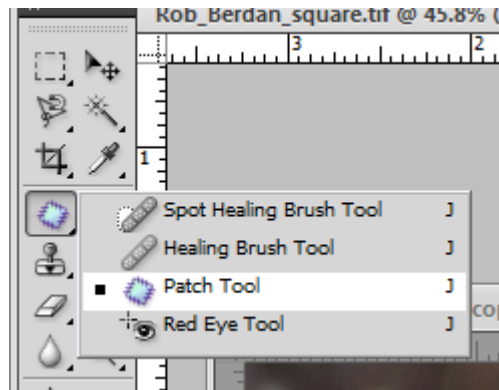
See clonerepaiowl.mov

6.9 Retouching a Portrait - using layers, patch tool and liquify command



Retouching portraits is an art - the trick is to make your clients or friends look their very best but do it in a way that isn't obvious. Many of the cover girls you see on magazines have been touched up in Photoshop. When I photograph young people at their graduation I often touch up the portraits removing pimples, whitening teeth etc. so my clients look their best. Removing wrinkles especially around the eyes and on the forehead can make a person look younger and without botox injections or dieting.

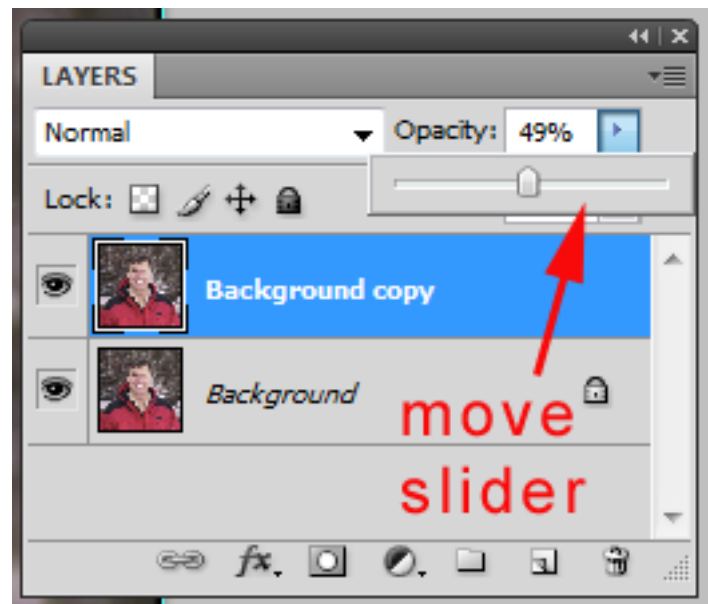
1. Open the image Rob_Berdan_square.tif.
2. Select Image> duplicate - by working on a duplicate image we can compare it to the original.
3. Then open or select the layers palette. Right click on the bottom Background layer in the layers palette and choose duplicate. This will create a copy of the layer. Select the top layer - called Background copy. We will touch up the top layer and then blend it with the bottom layer by varying the opacity for a more realistic effect and makes the changes we make more subtle.
4. From the main toolbar select the patch tool as shown below.



5. Drag around the wrinkles at the side of the eye as shown below - then drag this selection to the cheeks and let go. This will take the skin from the cheeks area and blend them into the area you selected around the eye.

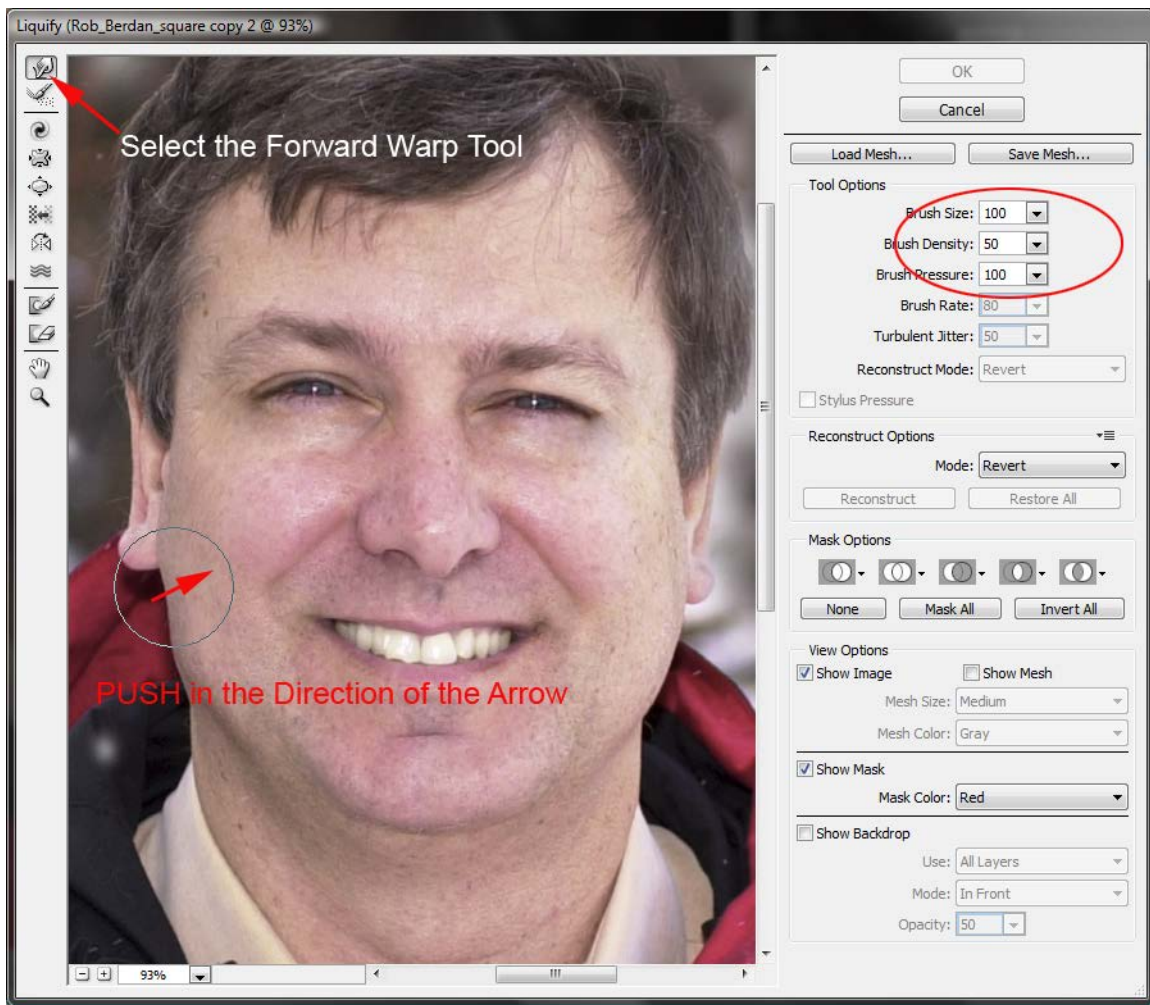


6. Repeat for the right eye and then do the same for wrinkles on the forehead. When you are done - you can see that it looks just a little too smooth under the eyes. So we are going to bring back some of the wrinkles by varying the opacity of the top layer.



As you vary the opacity there will be a point where the wrinkles just begin to appear - that is usually the best setting. Then from the top left menu in the layers palette chose >Flatten image as we did before.

7. Now lets take a few pounds off the face with the liquify command. Select Filter>Liquify. Select the Forward warp tool at the top left and leave the default settings for size, brush density and pressure. Position the circle next to the left cheek then click down and push into the face. This tool can also do wonders reducing "love handles" and can also be used to enlarge or enhance body parts - but we will stop here - the liquify tool is definitely worth playing around with. When you are done click OK and save your image.



Liquify box - Select the Forward Warp Tool on the top left. Brush size of about 100 pixels should work well - position the circular selection to the left side of the face and then click and drag your mouse and watch the face deform. Repeat on the right side and around the sides of the neck. When you are done - Click Ok. You can experiment with the other tools on the left to learn how you can distort images in many other ways. Have fun, but remember some people can be sensitive playing with their face so I recommend starting with your own portrait before you start to play with photos of your friends :-).



See [portraitretouching.mov](#)

6.10 Repairing Old photos

Fixing up old photos can be challenging and fun - most of us have access to old family photos that are begging to be repaired. To fix these old images you can use a flat bed scanner to digitize them or simply copy them with your digital camera. If you want to make prints from the image the final resolution of your images should be 300 dpi. The reason that most flatbed scanners offer much higher resolutions is that if you have a very small image e.g. a wallet photo and you want to make an 8 x 10 in print - you will need to scan the image at 1200 dpi or higher - then resize it in Photoshop to 8 x 10 and drop the resolution to 300 dpi. So long as the resultant file size is not much bigger then what the scanned image was you should get pretty good results. Generally I recommend scanning at 2-4X higher then 300 dpi - because if you are going to spend time fixing the image you probably only want to do it once.



Before and after shots including a hand coloured version from one of my clients

You already have used all the tools that you need to repair damaged photos. The basic steps are:

1. Open the file - crop and rotate the image if necessary (there are several images in the old_images folder you can play with if you don't have your own images).
2. If the image has a strong brown cast or water stains, convert the image to black and white.
3. If the image is low in contrast select Image>Adjustment>levels and optimize the tones - this usually will give you better contrast.
4. Use the clone and patch tools to repair large areas of the print - zoom in close if necessary.
5. If there are many tiny dust spots embedded in the image this could take forever - to reduce these small dirt specks select Filter>Noise>Dust & Scratches set the Threshold to 0 and the radius to 1-2 pixels. If you set the radius higher you will start to blur important features in your photo.
6. You can add a tint to the photo using the Convert to Black and white feature you learned earlier. You can even colour BW prints - a feature I will cover in the Photoshop II workshop.

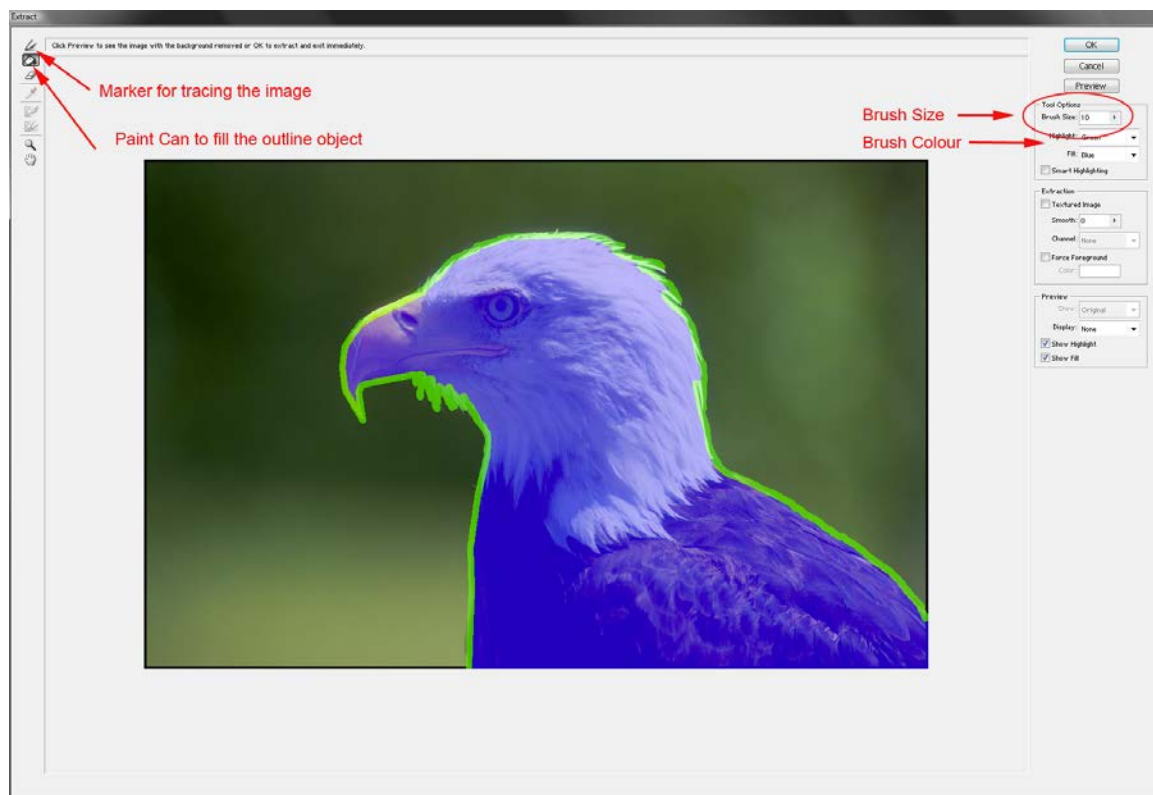


See repairoldimage.mov

6.11 Extracting images from their background

The Extract filter appears under the top menu Filter>extract and should be the third menu down - if you do not see this feature in the menu you will have to install the extract filter. In Photoshop CS4 Adobe has made this feature an optional plug-in that must be installed manually - see Appendix for instructions on how to do this. The extract filter is a very useful tool for isolating and removing subjects from their background and allows you to place the extracted image onto a new background. It is particularly useful for commercial work, but it can also be used to create interesting artistic photos.

1. In Photoshop select File>open and navigate to the folder called extraction. In the folder select and open the image called baldeagle.tif and eaglesintrees.tif. Both images are the same size and resolution.
2. Select the baldeagle.tif file then select Filter>extract and you will see a new window with various controls - Select the highlight marker tool at the top left - set the brush size to about 10 pixels on the right side of the window. The size of the brush can be varied for different types of edges. Trace around the eagle with half of the highlight on the background and the other half on the eagle. You are selecting edges. Where the feathers are jagged and rough, paint to cover the feathers. In regions where the edges are smooth you can shift click between points to join them i.e. click on one spot then move down the edge and shift click and it will join the two points with a line. Zooming in can also be helpful as tracing the image requires less dexterity when you do this. A good smooth moving mouse and mouse pad is essential. Do not leave any gaps in your outline!



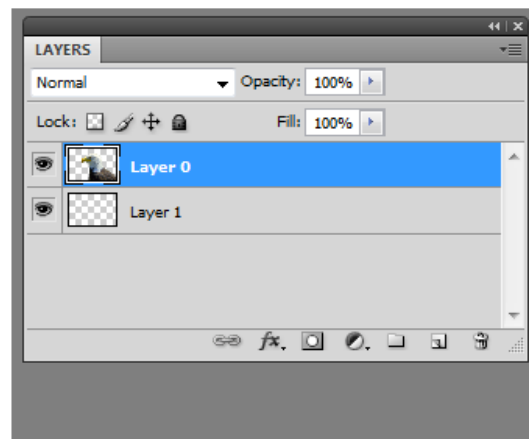
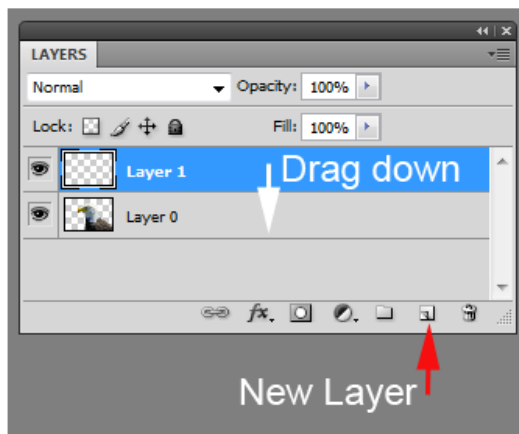
3. If you make a mistake you can use the eraser tool on the left to remove part of the line. When you are done, select the paint bucket and click inside the eagle - if you have not left any spaces it will fill with a translucent blue colour as shown above. If the blue colour spills into the picture you left a gap. Simply select the tracing tool again, zoom in if necessary and fill in any gaps you might have left and then try the paint bucket tool again. If it looks like the picture above - click preview to see the extracted picture - then OK to take you back into Photoshop.



4. Use the eraser tool from the main tools panel in Photoshop to remove any extra pixels around the edge of the eagle. The hatched background indicates the background is transparent.
5. Move the extracted eagle to the other picture > eaglesintrees.tif - to do this, select the move tool in the main tool panel. Have both the extracted eagle and the eaglesintrees.tif files open and positioned side by side. Place the move tool over the extracted eagle - then click down on the eagle and drag it into the eaglesintrees.tif image and let go.



6. Use the move tool to position the eagle on the new background. You can also change the size of the eagle even flip it over - to do this select Edit>free transform or Ctrl-T. You will see handles around the eagle. Click on a corner handle and hold the shift key to keep size proportions and drag the picture smaller or larger. Drag the right handle to the left until the image flips over - when you are done hit you ENTER key. You can even drag over more than one instance of the eagle!
7. To create new background using a solid colour fill select the extracted eagle picture and then open the layers palette if it is not already open - Window>layers. At the bottom right of the layers palette click on the new layer icon to create a new layer- it will be called Layer 1 and appear above your existing layer. Click on the top layer and drag it down so it is below Layer 0 as shown below.



8. Select Layer 1 - the bottom layer in the layers palette by clicking on it with your mouse. Select a foreground colour in the main tools panel - then choose Edit>Fill - the pop up box should say use foreground colour>OK - you should see a solid colour behind the eagle.

You may wish to try some additional examples in the folder. Included in the folder is a picture of a model fish - you can see the before and after shots below. The completed fish has three backgrounds, transparent, white and black. The edges of the fish were blurred slightly so the edges did not appear rough after extraction. The extracted fish image was prepared for a multimedia program.



Before



After



See extraction.mov

6.12 Simulate a neutral density gradient filter



Without a grad filter

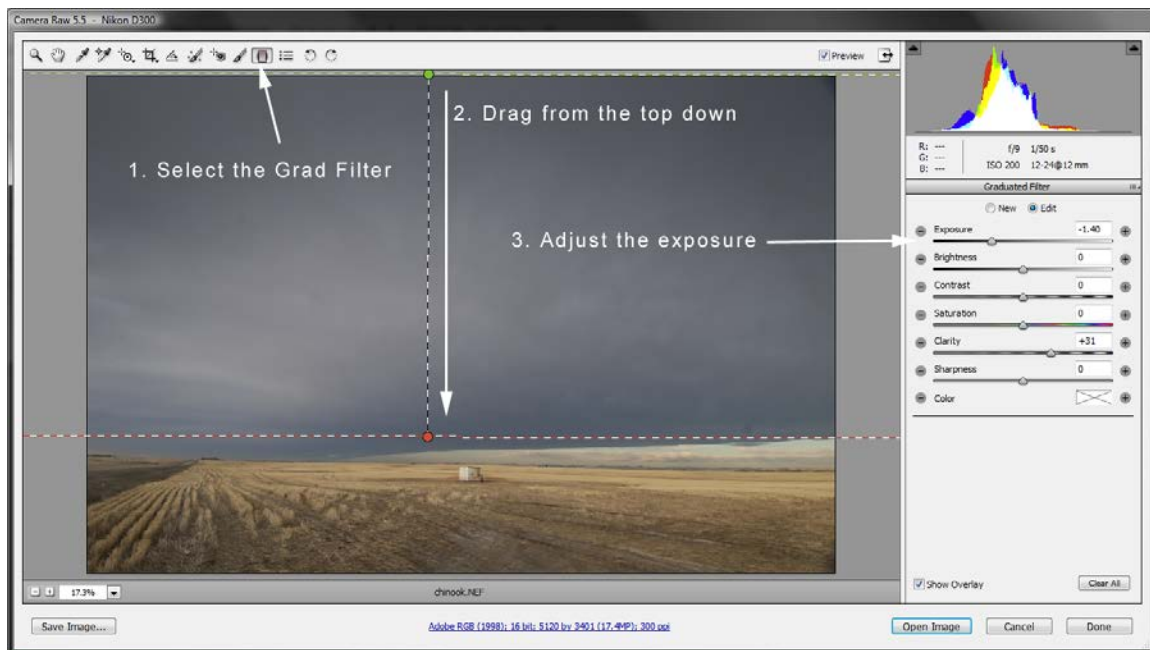


With a simulated graduated filter

Photographers often use a neutral density graduated filter to darken skies and lighten the foreground of pictures - especially photos taken at sunrise or sunset. If you don't own a grad filter or did not have one with you - it is possible to simulate adding a grad filter afterwards in Photoshop. There are two ways of doing this. 1) In Adobe Camera Raw and 2) in Photoshop using layers.

Adding a Neutral Density Graduated filter using Adobe Camera RAW

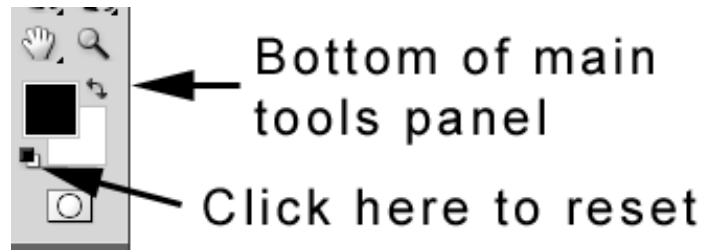
1. Open the grads folder and select the Raw file Chinook.NEF in ACR.
2. Then select the grad filter at the top of ACR window (see below), click and drag your mouse from the top of the picture to the bottom of the sky and adjust exposure in the right panel. When you are done - select Open Image.



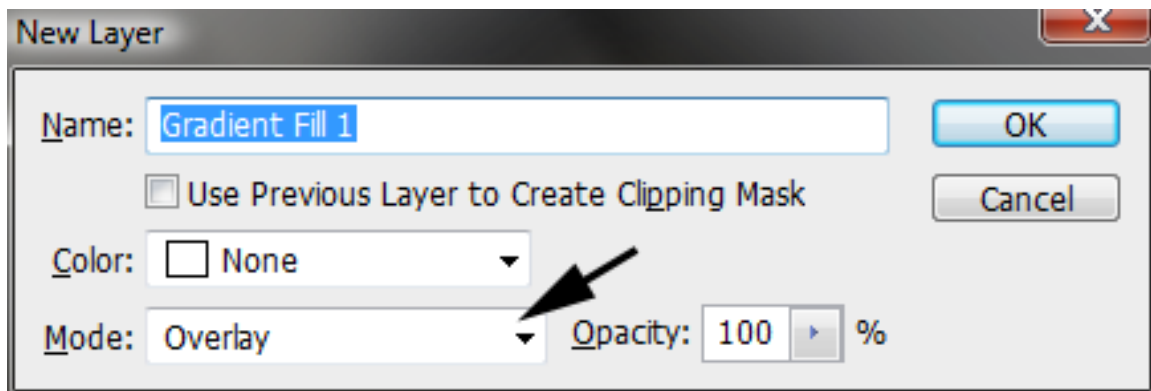
Chinook, NEF file in ACR. A neutral density grad filter can add drama and darken your skies

Another way you can add a Graduated neutral density filter within photoshop is to use the layers palette. You may have a print or slide you scanned that you want to apply the grad effect in Photoshop.

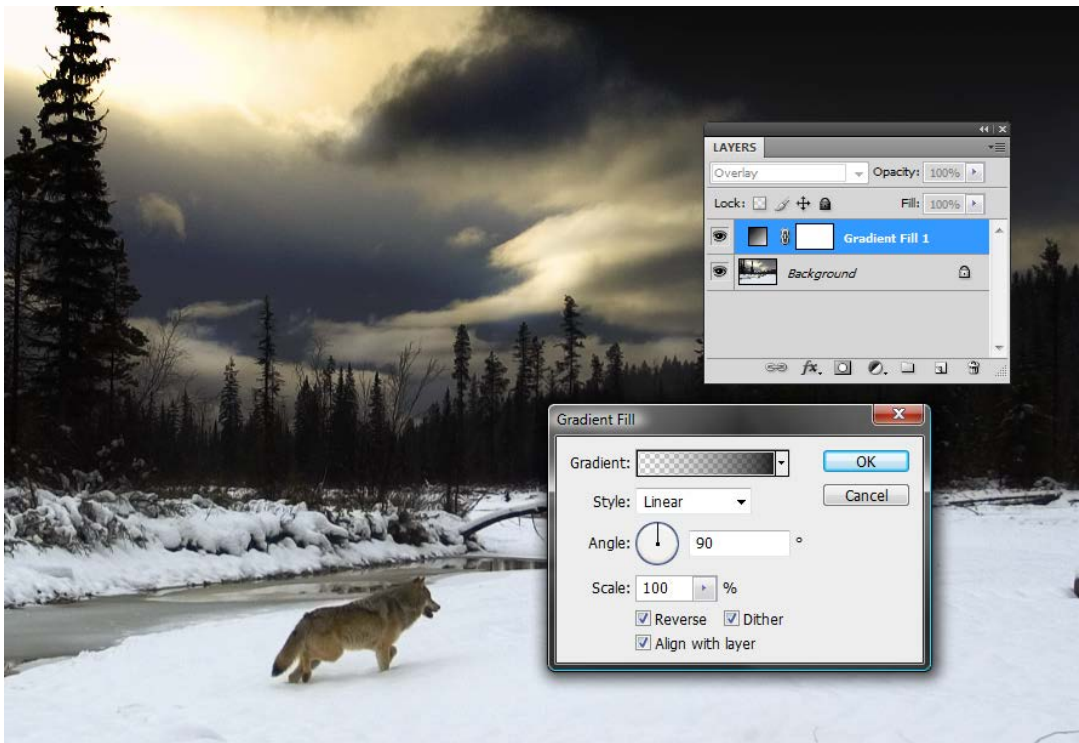
1. Select the grads folder again and open the image called wolf_nograd.tif. This image has a fairly dramatic sky but we will darken it even more.
2. On the main tool panel reset the foreground and background colors to Black (on top) and white on the Bottom.



3. Open your layers palette if its not already open select Window>layers. At the bottom of the layers palette, Alt - click on the fill adjustment layer icon (black and white half circle) and from the pop up menu select>gradient. (The reason you must select the Alt key when you click is so you will have the option to select a blending mode in the next pop up box).
4. From the New layer pop up box Select>Mode >Overlay>OK. The overlay blending mode simulates the effect of putting a grad filter in front of your picture. If you don't use overlay blending mode you will simply put a black to white gradient on top of your image - we want the gradient to blend into the picture not cover it up.

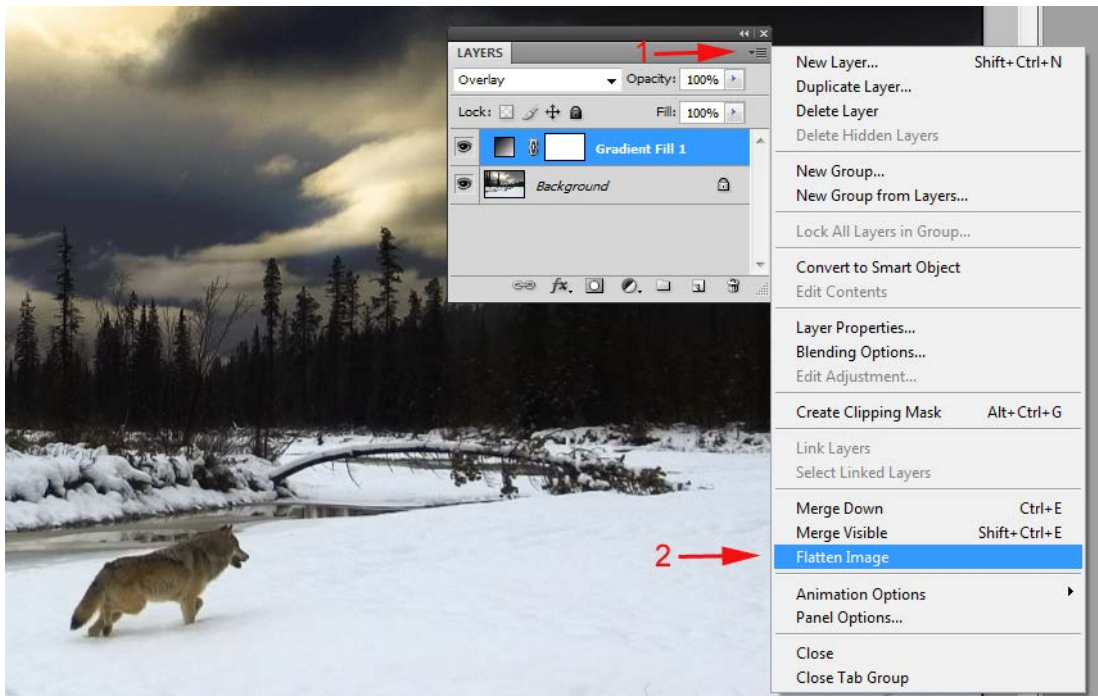


5. In the Gradient field pop up box that comes up put a checkmark in the reverse box and dither box. By default the gradient runs from the bottom up so we need to reverse it. With this box open, you can use the move tool to click and drag on your picture and move the gradient up or down just like putting a real filter in front of your camera lens. Also click on the right side of the Scale control to view a slider. Slide to the left to create a hard edge on the grad, slide to the right to soften the gradient edge. Photographers often purchase hard or soft edge grad filters, Photoshop lets you simulate either type of grad filter easily. It is also possible to add colour to the gradient and rotate the angle - these features will be covered in Photoshop II workshop. When you are done click OK.



Adding a gradient overlay adds a layer above your picture. You can vary the strength of the filter by selecting opacity in the top right layer panel and sliding it left or right. Click on the eye ball next to the layer palette to turn the filter effect off to see the difference between before and after.

6. The final step is to flatten the image before you save it. To do this click on the top right of the layers palette to open the pop down menu and from the drop down menu select flatten. This will combine the gradient filter with the bottom layer. Save your file as whateverfilename.tif.



See neutralgradient.mov

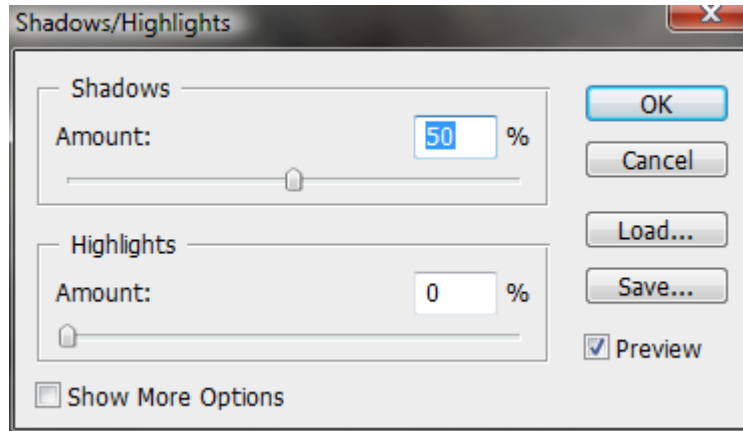
6.13 Shadow Highlight tool

The Shadow Highlight tool lightens areas in the shadows and can reveal hidden detail and it can also be used to bring down overly bright areas or highlight regions.



Before and after images using the shadow highlight tool

1. Select the folder called shadowhighlight and open the image called kayak01.tif.
2. Select Image>adjustments>Shadow Highlight - if the checkbox "Show More Options" is selected unselect this box so you only see two sliders - Shadows, and Highlights as shown below.



3. I recommend starting with both sliders set completely to the left.
4. Drag the shadow slider to the right to about 60% and note how details in the shadows become visible. Slide the highlight control to the right and note how very bright areas become darker (about 12% seems good). These controls can allow you to adjust the apparent dynamic range of your pictures. If you select Show More Options - you can vary the tonal width that is affected by the sliders - see the movie Hidden_In_the_Shadows.mov provided by Adobe. I have also included a file shadowhighlightpattern.tif that you can experiment with to see how the controls affect different tones in your picture.



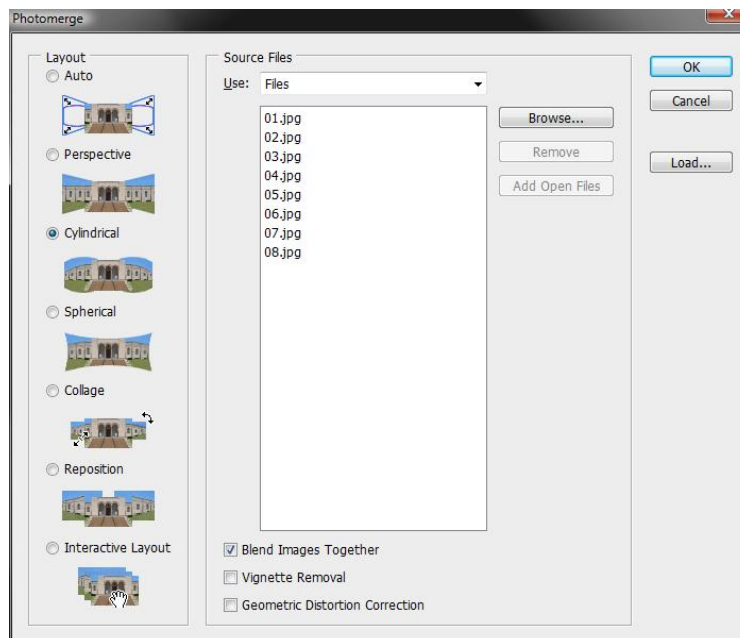
See shadowhighlight.mov

6.14 Blending photos to make a panorama



Stitching images together to make panoramas has never been easier - you don't even need a tripod when you take the pictures though it will help. The two most important things you need to do is 1) lock the exposure so the exposure does not change as you pan your camera taking several pictures. You can switch your camera to manual mode or if your camera has a pan mode use it to lock the exposure while taking the series. 2) You need to have overlap between each picture about 20-30% of the frame works well. If you don't have enough overlap Photoshop will not be able to stitch the images. There are special tripod heads you can purchase if you would like to make panoramas frequently. For best results have your camera in the vertical position so your panoramas will be taller as shown above. You can use two or more images - so technically you always have the ability to create wide angle shots no matter what lens you have with you.

1. Select File>Automate>Photomerge select Browse go to the folder called Kananaskis_pan and Shift-click on the images 01.jpg to 08.jpg. In the layout menu select cylindrical - this option is best most of the time. You can experiment with the other modes on the same photo series. Click OK and watch Photoshop stitch your image together.



2. Open the layers palette you will see that each photo has been placed on its own layer and Photoshop created a mask to blend each photo. Select the top right of the layers palette to display the pop out menu and select flatten image to combine all the layers into one.



3. The final step is to crop the image using either the crop tool or the marquee selection tool .



4. If the image needs further adjustments or modification make them - then save the image for printing or the web.



Repeat the steps again and try blending three JPG files that were hand held - road01.JPG, road02.JPG and road03.JPG. Experiment with the different merge modes if you like.

Another hint for taking panoramas is to try not to shoot directly into the sun - place the sun behind a tree or telephone pole. The best time of day to take panoramas is when the sun is overhead. Once in a while Photoshop is unsuccessful in stitching images together this usually occurs if there is not enough overlap between the pictures. The images can still be stitched together manually using masks - a technique I will describe in the Photoshop II workshop. Finally in order to stitch a series of RAW files into a panorama your computer will need a lot of memory so either convert your images in JPG files before you stitch them or be prepared to buy more memory for your computer!



See panoramas.mov

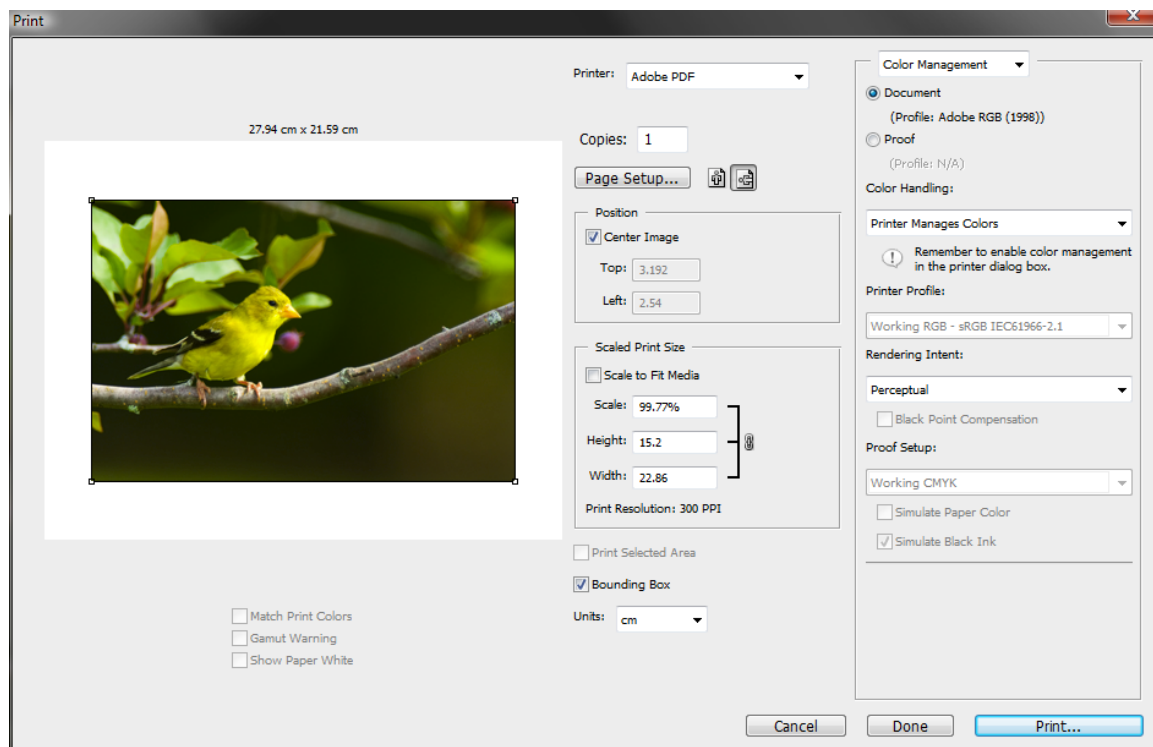
6.13 Archiving and printing digital images

Once you have completed working on your digital images – you should save them onto your hard drive as TIF files. If the files were in 16 bit mode reduce them to 8 bit mode for final printing – (Select Image>Mode> change 16 bit to 8 bit) this will also reduce the overall file size of the images by half. If you require a JPG file, open the TIF file in Photoshop and select save as JPG or save for web if the images are destined for email or the web. When you save a file as JPG format the program compresses the file and throws out data. If you save a JPG file multiple times, each time it is saved it will toss out more data and your image begins to deteriorate resulting in JPG artifacts – so don't save a JPG files multiple times save them as a TIF file which you can save as many times as you like and if you need a JPG file open the TIF and save it as a JPG. Also never throw out your RAW files! Software for processing these files continues to improve – you may be able to make even better images with them in the future. Also your RAW files include your EXIF data i.e. date, F-stop, lens used etc. If you select save for Web you images should be at 72 dpi and also select the option convert to sRGB mode so they appear good on non-calibrated computer monitors.

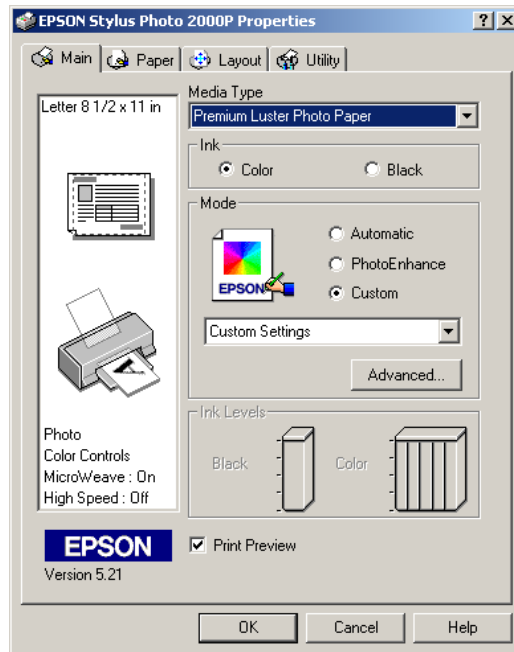
To archive your valuable files use a good quality CD or DVD and if possible burn two copies and store them in different places – set the CDs upright and preferably store them in the dark. If you have a lot of images I recommend purchasing two identical external hard drives. When you save your files put a copy of each on both hard drives. If anything happens to one hard drive immediately make a backup of the other one. I no longer backup my digital photos onto DVDs or CDs as I simply have too many files and can't find specific images quickly enough from my DVD collection. Instead I use two large hard drives (2 Terabytes each) to store my digital images and I use Picasa to create an image database. When my drives fill up – I will buy another pair of large hard drives and store one of the old extra drives in a bank vault to protect them from fire and theft.

Epson Printers - suggested starting points

1. File>Print – select portrait or landscape mode and the size of the paper you want to print on.

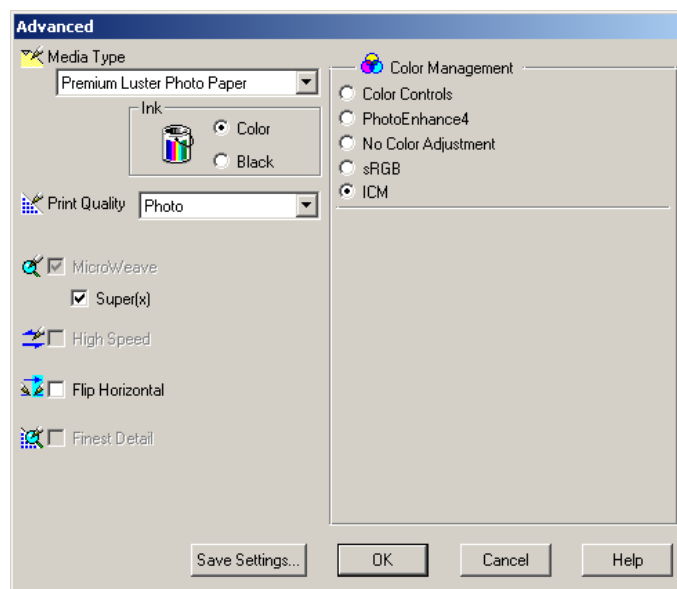


2. Make sure Colour management is turned on and select the Document Profile (Adobe RGB) - let printer manage colours.
3. Colour Handling – I use let printer determine the colours and set the rendering Intent to Perceptual, you may want to use Relative Colourimetric rendering intent - see page 9 for information on rendering intents.
4. Select Print> if you have more then one printer choose the printer e.g. Epson 2000P>Properties>Select media type e.g. Premium lustre and Custom>Advanced

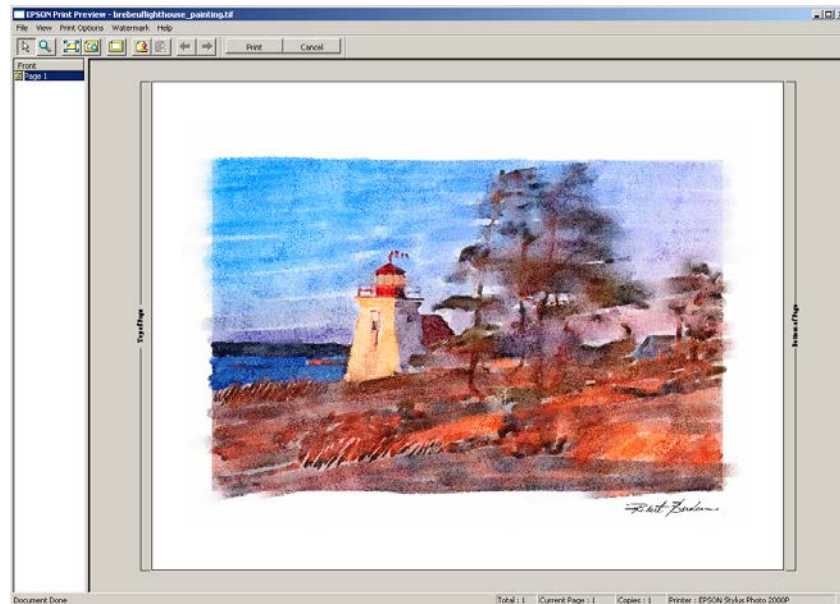


Always select Print Preview so you can see the image as a soft proof before it is sent to the printer. If the preview does not look right – stop go back and modify your printer settings or modify your image.

5. After selecting Advanced – set the colour to ICM and best quality (Super FX) - note your printer's output boxes may look different.



6. Click OK – then back in the main printer window click OK again to see the soft proof (below) this image is what you want your final print to look like.



These basic guidelines are meant as a starting point only. You should take some notes as to which printer settings work best with your images and your printer so you can achieve the best results

Ink and paper can be expensive so keeping a few notes can save you money. Also I recommend printing one of the provided test images before you start making prints of your own images.

Summary & Conclusion

1. **Calibrate your monitor - it is one the most important elements in your digital workflow.**
2. **Configure Photoshop's Colour settings to use the monitor profile.**
3. **Develop a workflow that works for you so you can edit and colour correct images quickly and efficiently.**
4. **Make sure you set the resolution of your images to 200-300 ppi before sending the output to your printer.**
5. **Save your files for printing in TIF format and back up your images onto CD/DVD or external hard drive – have two copies if the images are valuable.**
6. **If you plan to sell your prints use archival quality paper and Inks in your printer, so they don't fade after a few years.**

APPENDIX – ADDITIONAL TUTORIALS

NOTE – The Extract Filter was removed in Photoshop CS6 and replaced with the Quick Selection Tool, if you are using a newer version see the steps below to learn how to extract objects using this new tool.

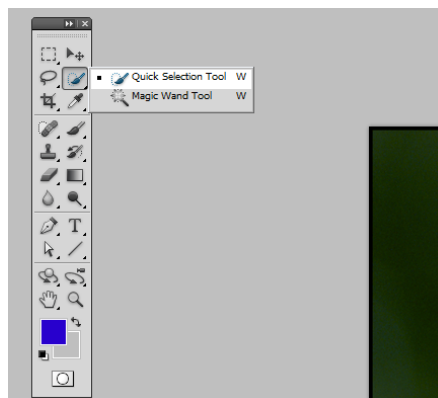
7.1 Image Extraction using a Quick Mask CS4 to CC2014

There are several ways to extract a subject and change the background. In earlier versions of Photoshop we used Filter>extract and traced around the subject. This filter, however in CS5 must be added manually from the Goodies folder on the Software DVD and most folks never even investigate these additional free filters. Adobe has a new way to extract objects using the quick mask tool that does a similar job and is described below.

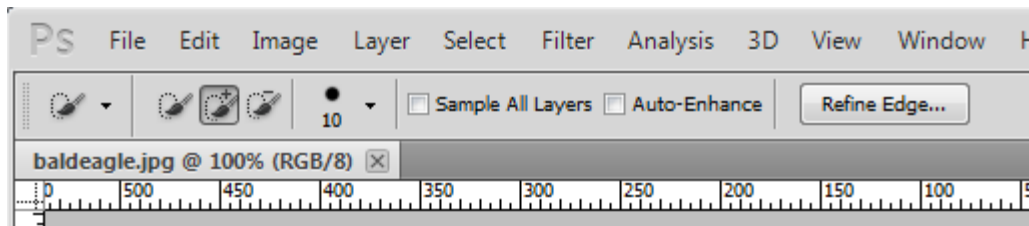
1. Open an image in Photoshop CS5, 5.5 or CS6 with an animal or person you want to extract and modify the background. For this tutorial I am supplying an image of a bald eagle.



2. Select the Quick Selection tool in the tools palette and paint inside the eagle to select just the eagle. From the top, tool properties options bar you can select + or – brush to add or subtract from your selection.

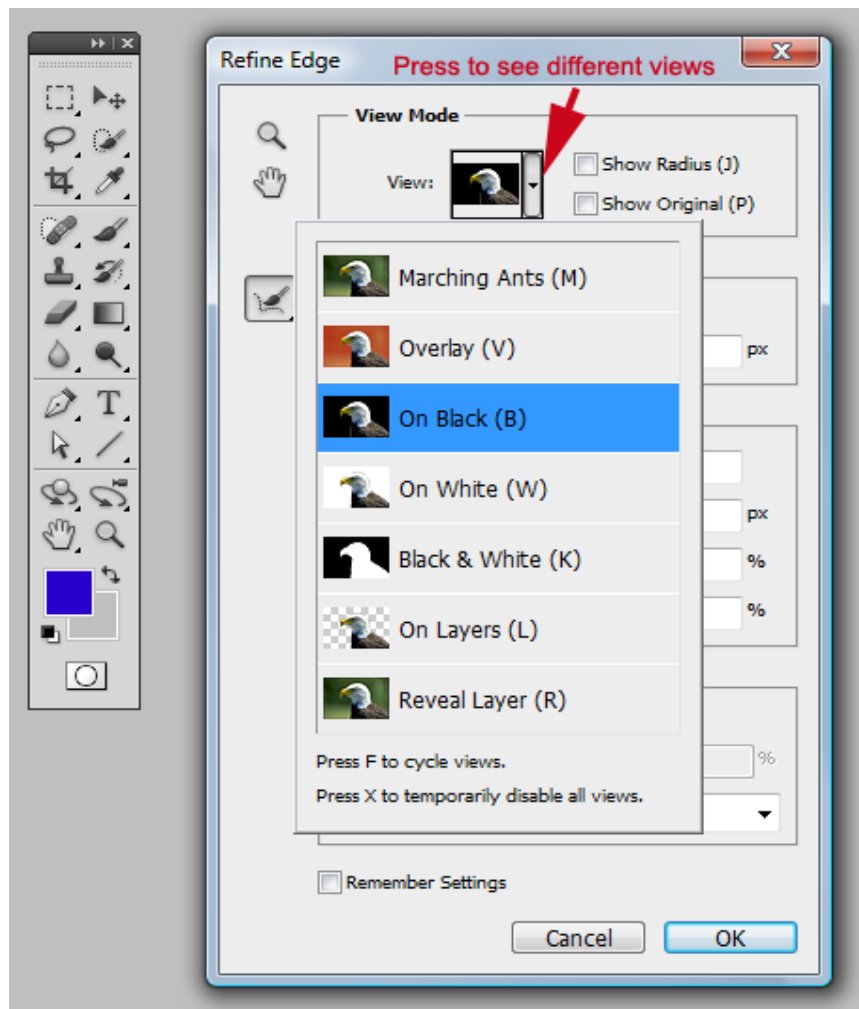


Quick Selection tool



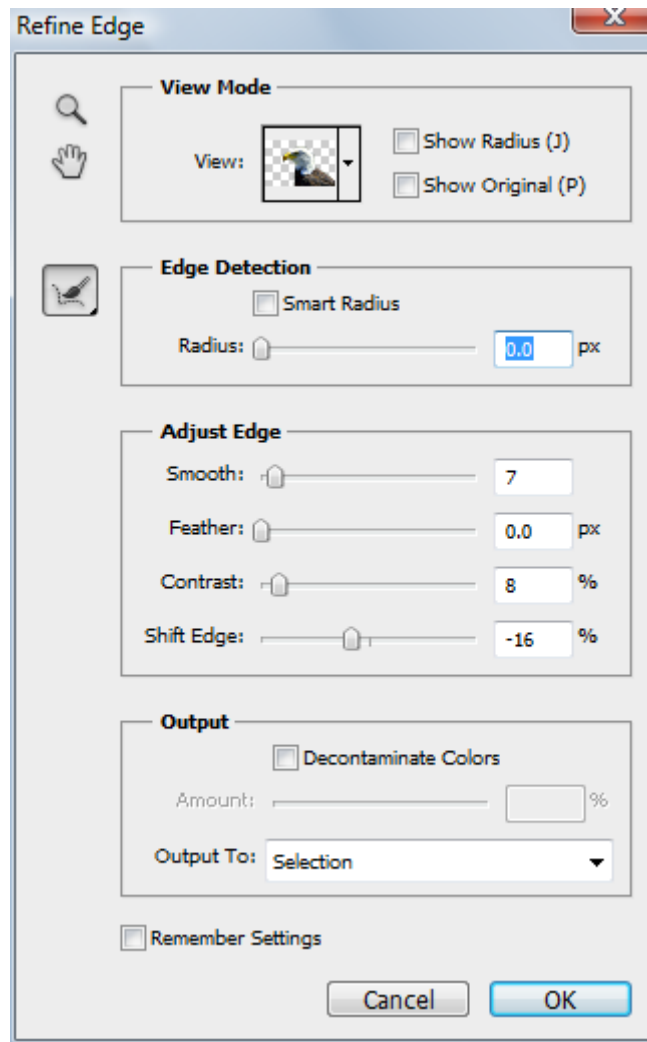
Top +, - quick selection brushes allow you to add or subtract from your selection

3. Once you made your selection, at the top of photoshop, in the tool properties options bar, press Refine Edge.



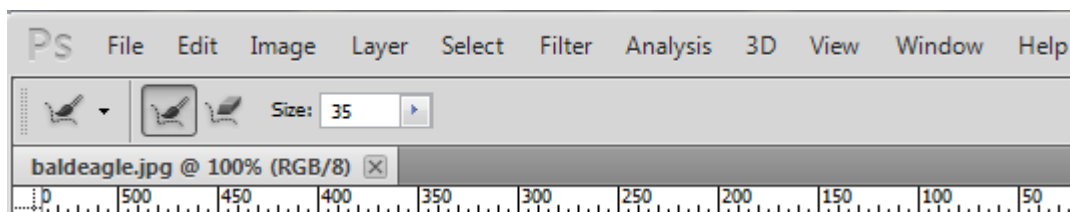
Refine Edge Box – Select to view the selected object on different backgrounds

4. In the Refine Edge box (below the pop down View menu) are a number of options that you can use to make the selected edge smoother, or contract the edge. In the Adjust Edge section of the Refine Edge box, adjust the sliders smooth, feather, contract and shift edge to see how it affects the selection. Often you can improve the edge. Decontaminate colours can sometimes eliminate extra colour on the edge remaining from the background. Sometimes changing the View mode can also be helpful when you refine the edge of your selection.



Adjust Edge sliders allow you to move the edge inside or outside of the selection

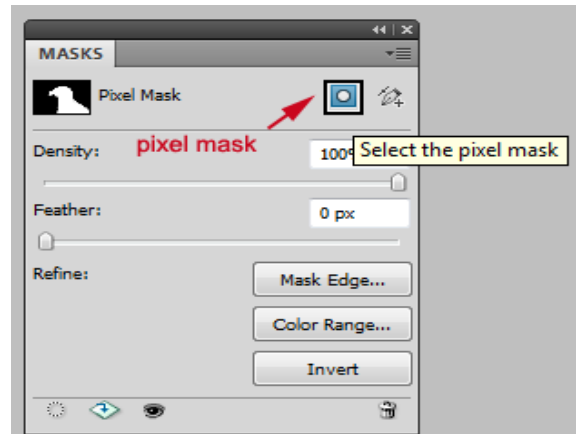
5. In the box above, select the refine radius tool – brush left of Edge Detetion. This brush allows you to add back fine detail and\or remove some of the background colour around the edge of your subject.



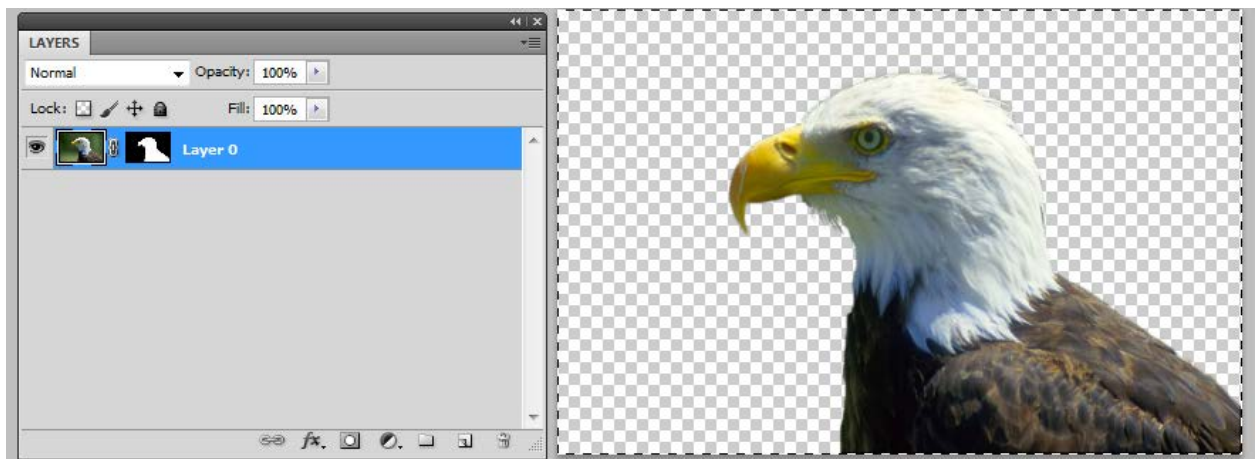
At the top in the options bars when you select the Refine radius tool you can select add bruch (selected) or subtract background pixels (eraser). You can also vary the radius of the brush.

6. With the refine radius tool, select the add brush tool as shown above and paint around the edge of the eagle's head, this should get rid of some of the extra background green pixels around surrounding the feathers. Experiment with both the brush and eraser tools on the edge of the eagle. When you are finished in the Refine Edge box select OK.

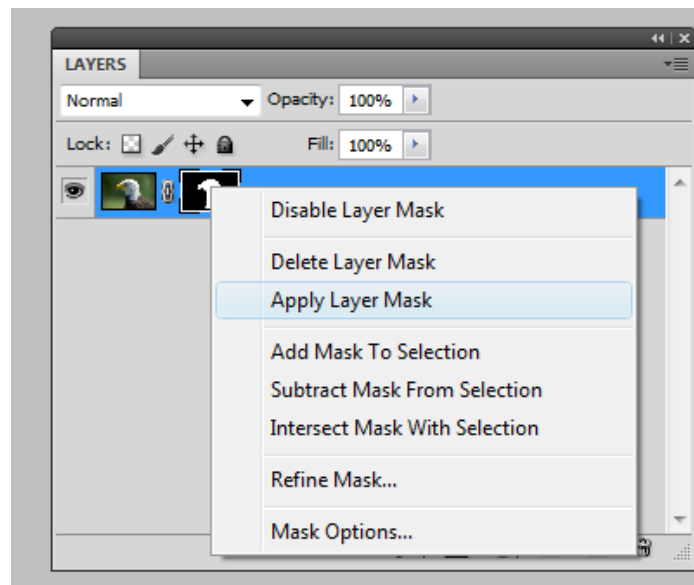
7. You should see the eagle with a marquee selection around it. To eliminate the background Select the Masks Tab Choose Window > Masks if the masks panel isn't open. Click on the pixel mask button on the top right as shown below. This will extract the background so it appears checkered. A checkered background indicates areas of the picture that are transparent.



Masks Tab – select pixel mask to eliminate the background.

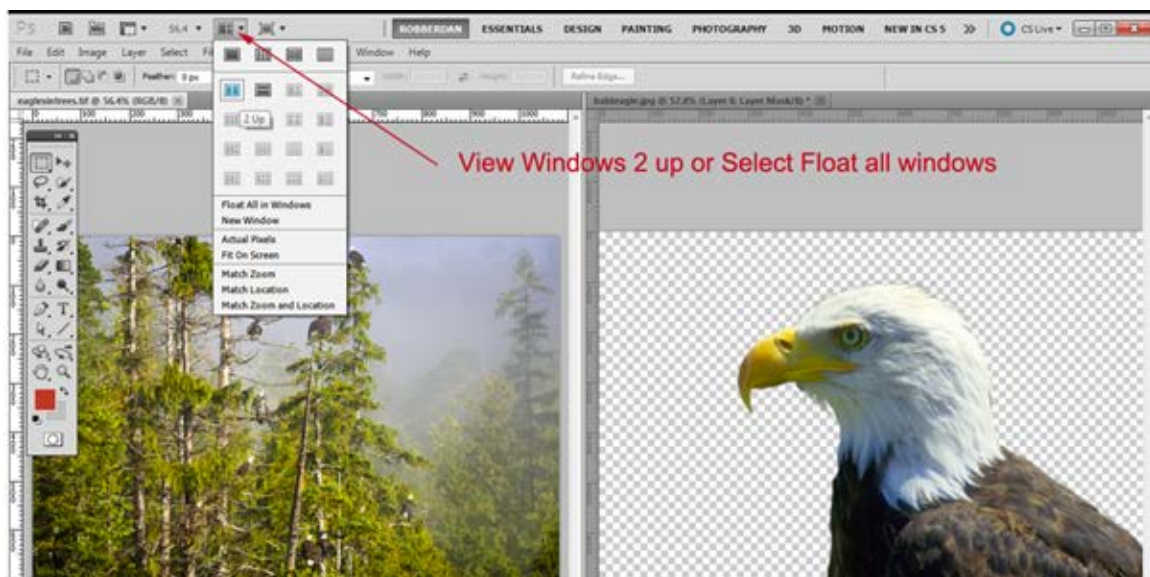


8. The layers palette shows a mask in black and white in the layers palette. To apply the mask and remove the background from the picture – place your cursor on the mask in the layer, right click on the mask and select >Apply layer mask.



Right click on the Mask and select Apply layer mask from the popup menu to remove the background. The mask will disappear and only the eagle will be visible on a checkered (transparent background).

9. Once the background is removed you can drag (use the move tool) or select and copy the eagle to another image. You can also create a new layer, drag it below the eagle and then fill the new layer with a solid colour or gradient.
10. To place the eagle onto another image, open up another picture e.g. eaglesinatree.tif that you want to drag the eagle onto. Click on top to view Windows 2 up or select float all windows.



11. In the tools palette, select the move tool (top right, the cross with arrows), click on the eagle, hold the mouse down and drag the eagle over the new picture, when the eagle is visible release the mouse. You can move the eagle around with the move tool, you can also resize the eagle (Ctrl-T) or select Edit > Free Transform and drag the handles. You

can even flip the eagle over by selecting Edit>Free Transform select a handle (square) on the right side and drag it left.



7. Hockney Style Collages in Photoshop

David Hockney is a famous painter and photographer who created a style of photography that involves standing in one place and photographing a scene or object in pieces like a puzzle. The best way to do this is to use a medium focal length lens 50-100 mm, stand in one place, lock the exposure if possible or set the camera to manual so the exposure does not change and photograph the scene to create overlapping images. You might start at the bottom left - sweep right then move up and sweep left - and continue until the entire object is captured. Start with 8-15 images and then increase the number with experience.



“David Hockney” Collage composed of many smaller photos.

To try this technique you need to find a subject with a strong center of interest and you will need a recent copy of Adobe Photoshop i.e. CS3 or higher.

1. With your camera stand in one place and start photographing your subject. It's important to include only part of the subject in each picture like a puzzle, but try not to miss parts of the scene. Also when you start, try not to shoot more than 20-30 images. Normally I use RAW files and open them up in Adobe Camera RAW as 1.6 Mpixel images so my computer does not run out of memory. Alternatively, if your computer has limited amount of RAM memory you may find it easier to shoot and work with .jpg images for this technique. If you do shoot .jpg files set the white balance and lock the exposure by using manual camera mode or use an exposure lock button. You can use any focal length lens, however I find that about a 100 mm telephoto lens is ideal for most subjects.

2. In Photoshop CS4+ Select File>Automate>Photomerge>Collage and unselect the option Blend images together (we don't want to blend them). Click OK. Photoshop will put all the images onto a transparent canvas in separate layers. You can then adjust the position of the images using the move tool on some layers or delete extra layers if you have too many.

3. Select one of the images and at the bottom of the layers palette select stroke> Select inside> colour white>10 pixels (you can vary the size of the stroke depending on your image size). Then add a drop shadow to the image using FX feature at the bottom of the layers palette.

4. Then apply the stroke and drop shadow to the other layers - Alt-click and drag these effects onto each layer. (this saves time of having to stroke and add a drop shadow to each layer). Note you don't have to add borders and a drop shadow I just like to because it enhances the separation between the images.

5. To add a white background (or any colour background), create a new layer and fill it with white or the colour of your choice and drag this layer to the bottom of the layers palette to create the background.

6. You may want to increase the Canvas size of your image - Select Image>Canvas size and add 1 or more inches, leave the Anchor set to the middle so the canvas increase around all sides and you are done.

The technique is easy and fun to apply to people, animals and buildings. If you are looking for something different to try the next time you go out to shoot - try a Hockney style photo-collage.



Above Hockney Style photo of a General Store in Bottrel Alberta. This technique works well with people. Experiment and also look for other images on the Internet to see how other artists have used this novel technique.

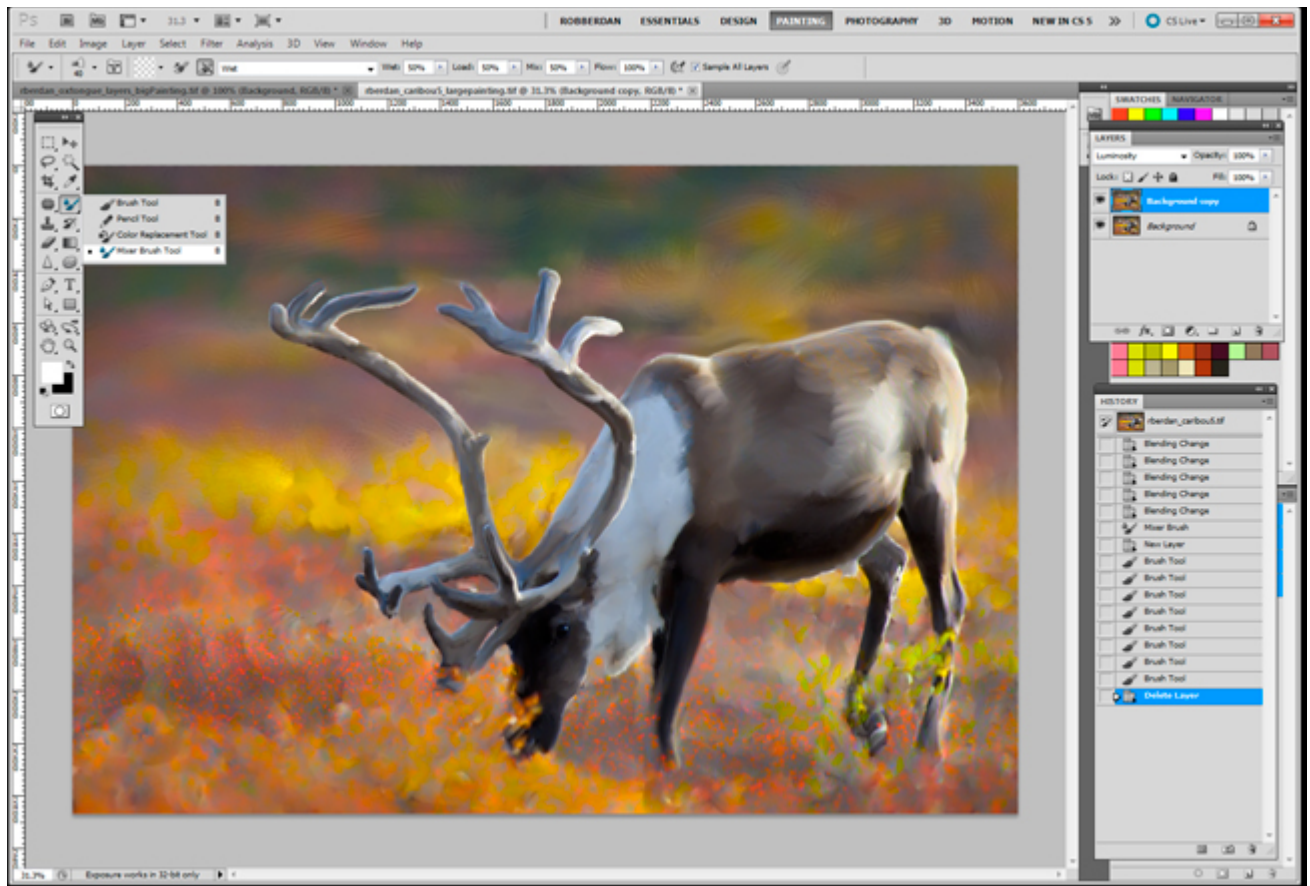
7.3 Simulate Oil Painting with Adobe Photoshop CS5+



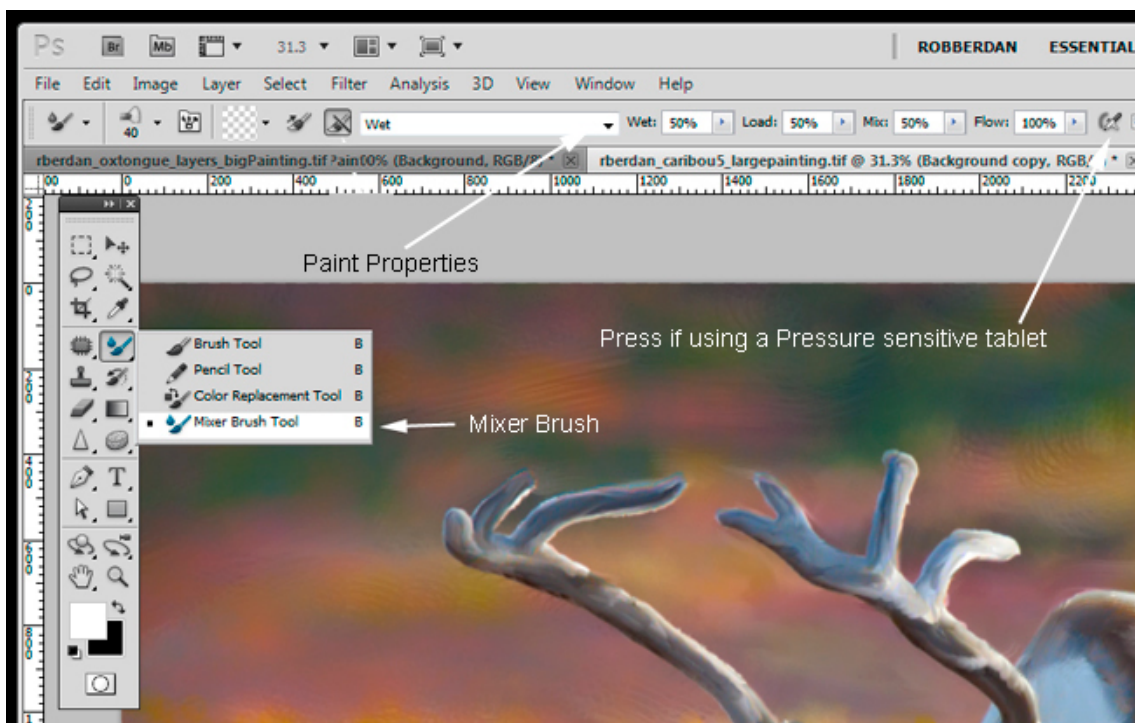
Caribou on the tundra near Peterson's Point Lake in the Northwest territories - Photoshop simulated painting

Some painters use photographs as memory aids to help them paint. It is also possible for photographers to simulate an oil painting using Photoshop's new mixer brush. The results can look strikingly realistic except that your prints won't have the texture associated with a real painting and will never match their sales value - nor should they. It's simply a technique whereby you can convert your photographs into something that is more simplified and sometimes this can make for a great graphic for a book or illustration. There are Photoshop filters that can simulate various types of artistic effects that are faster, but the fun is in making your own unique photo-painting - here is how I do it.

1. First you will need Photoshop CS5 or greater. A tablet is helpful but not necessary you can paint with your mouse.
2. Start Photoshop and open up one of your favorite images - I recommend starting with an image that is not too complex.
3. I like to work with images between 9" x 6" x 300 dpi and 10" x 15" x 300 dpi if I plan to make a print. You can always reduce the size of your photo-painting later.
4. Open the layers palette and right click on the bottom layer and select duplicate image - you are going to work on the top layer and then blend the top layer with the bottom layer later.

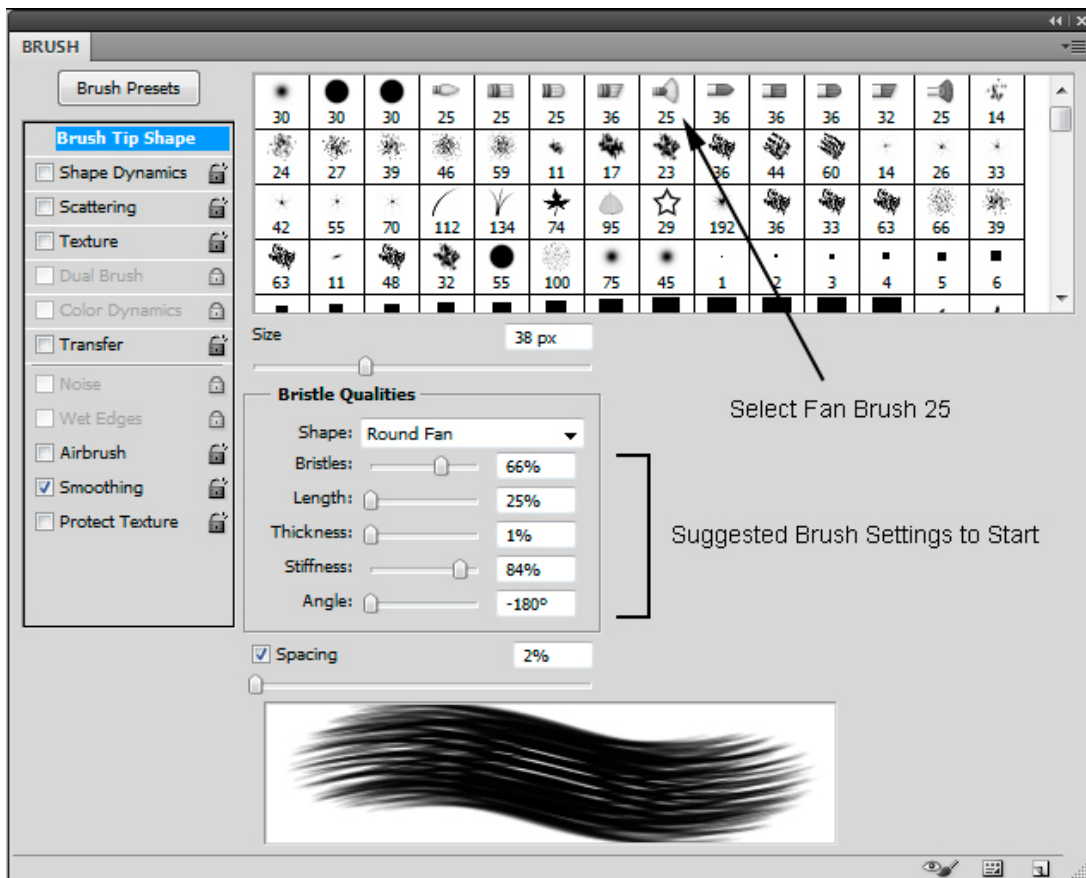


Select the Mixer Brush in the Tools palette

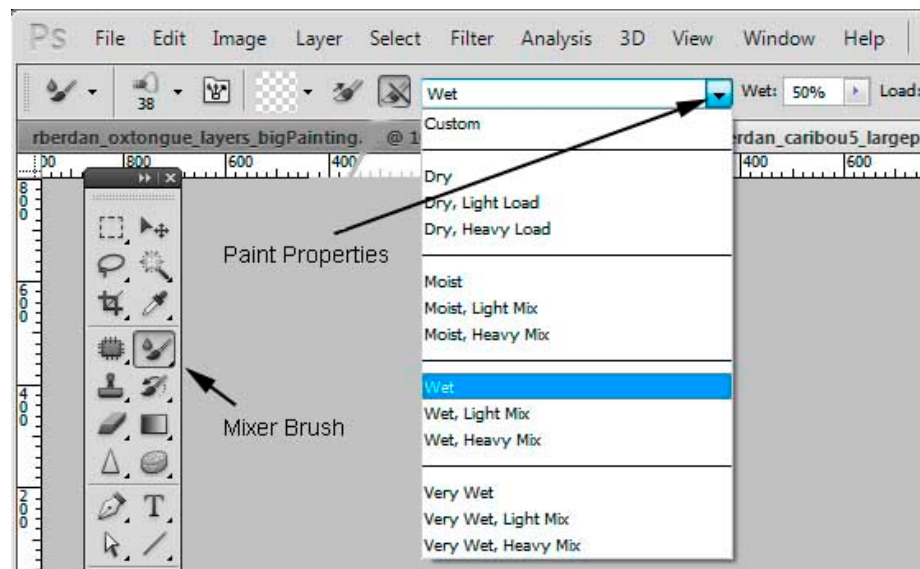


If you are using a tablet you can press the tablet button at the top right

5. Select the mixer brush in Photoshop's Tool bar and the press F5 to open the brush palette parameters box (below) and to start I used the settings below.

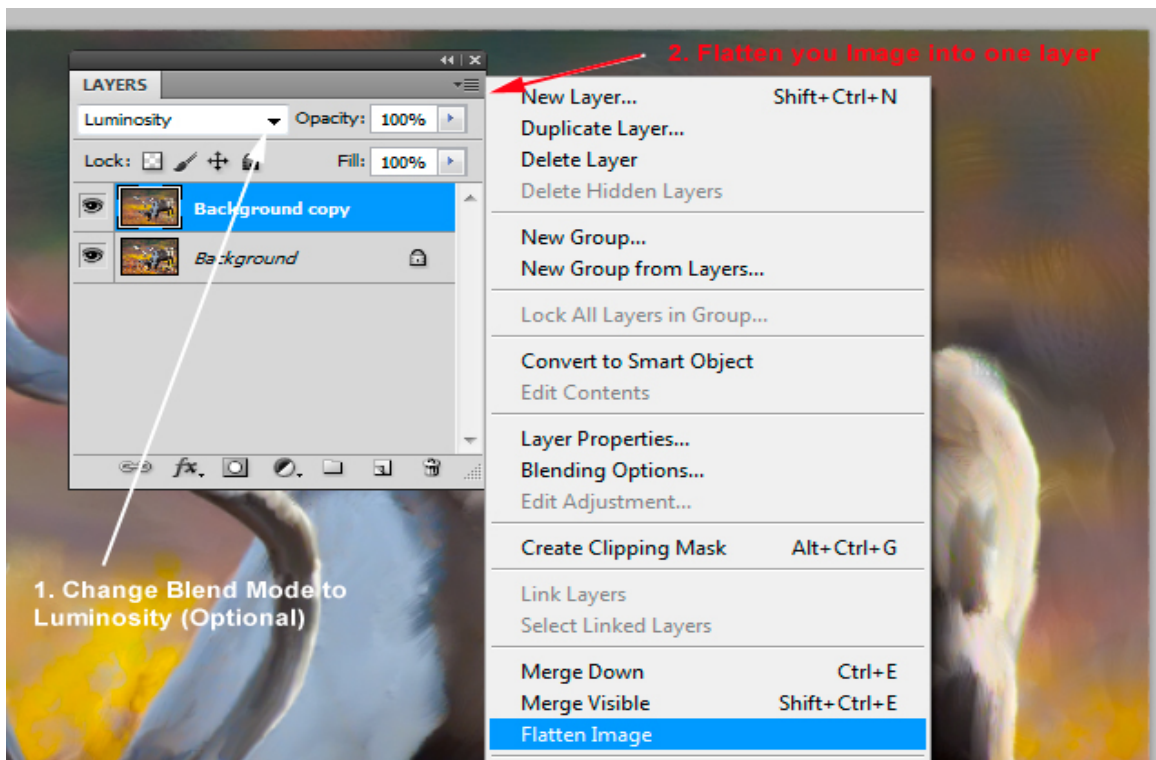


6. Once you selected the Mixer Brush from the tools palette and set the brush settings select the paint properties - I recommend starting with a Web brush (see below)

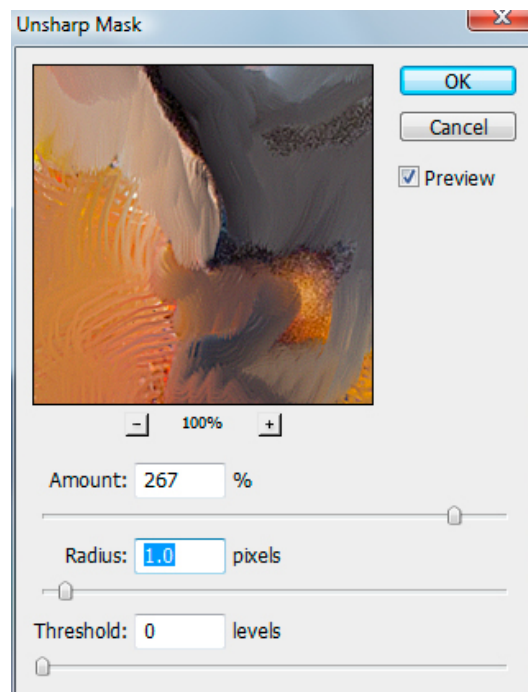


7. Using your mouse or a pen tool and graphic tablet - start painting over the image. You will have to vary your brush size depending on the detail you want to include. You might start with a circular brush movement or short straight brush movements depending on what you are painting over. Take your time - if you don't like certain strokes just backup with history palette and try again. Keep in mind you are not trying to duplicate the detail in a photograph but rather you are trying to simplify it.

8. Once your done painting, select the top layer in the layers palette and change the blending mode to Luminosity (Alternatively you can experiment with altering the Opacity). Then flatten the layers into one.



9. You may wish to sharpen the image to enhance the brush strokes. I usually select Filter>Unsharp Mask settings Threshold 0, Radius 1.0 and Amount can vary between 100-300%.



10. Finally I add my signature - I add a new layer and use the basic paint brush tool. To write smoothly I use a pen with my graphics tablet. It is possible to write your name with the mouse, but definitely more difficult. Save your image and/or make a print.

It takes a little bit of practice and the amount of time you spend depends on how much detail is in the original image and how much detail you want in your final painting. I typically spend 30-60 minutes per image. With a little bit of perseverance in no time you will be creating simulate paintings that may fool your friends. Who said you couldn't paint with your camera and a little help from Photoshop. RB



Killarney shoreline at sunrise - original photograph



Killarney Shoreline - simulated painting.



Bow River from Stony Plain Park – Photo



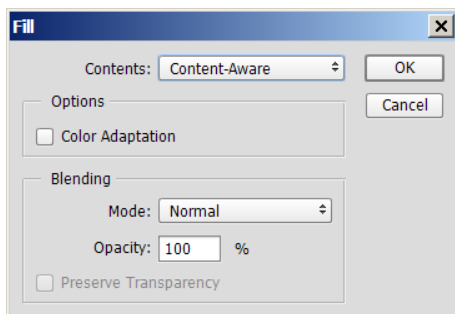
Simulated Painting

7.4 Content Aware Fill available in Photoshop CS6+

Content Aware fill was added in Photoshop CS6 and in CC they also added content aware move. What these amazing tools do is allow you to remove subjects from a picture or fill in sections of an image that are missing so that the changes are imperceptible to the eye. I use it to remove wires, fences and sometimes even people. It is very easy to use and it has become one of Photoshop's most used tools.



1. From the content aware folder load the image of the Grizzly bear and hiker (the bear was a move star Ali Oop and the hiker is Ruth Labarge, a grizzly bear trainer from Canmore).
2. In the tools palette select a lasso tool and carefully draw around the bear leave about a few millimeters between where you draw and the bear i.e. the lasso does not have to touch the bear. When you are finished selecting with the lasso you should see a marquee or dashed line around the bear.
3. To make the bear disappear, select Edit> fill > from the fill drop down menu Select Content Aware > OK the bear should disappear and the filled in with grass and forest. Sometimes it is necessary to use the clone tool to touch up some areas.



Make sure to select Content Aware from the fill palette.

4. The Content Aware move tool is in the tool palette you select the bear then drag him to a new position, the area the bear was gets filled in and the bear or other subject is blended into the new position – Truly amazing tool This will be demonstrated in class.



Final picture after I used Content Aware fill to remove both the bear and hiker.

5. In the folder you will find another picture of an owl flying – see if you can remove the fence post and barb wire – I used a rectangular selection tool to select the wire it is easier to create boxes around the thin wires – then use Content Aware fill.

Additional Photoshop References:

Books

Jack Davis (2008) How to Wow Photoshop CS3 for photography. Peachpit Press.

Adobe Photoshop CS Classroom in a book. Adobe press.

B. Fraser et al. (2005) Real World Color Management. Peachpit press

B. Fraser and J. Schewe (2008) Real World Camera Raw with Adobe Photoshop CS4, Peachpit press.

See folder on DVD called PDFs for additional information about Photoshop and Colour management.

Selected Web sites:

<http://www.canadiannaturephotographer.com> – more free Photoshop tutorials

<http://www.deviantart.com> - free Photoshop brushes, inspirational artwork

<http://www.Photoshoptopsecret.com> - training on advanced techniques

<http://www.blurb.com> - make your own photo books

<http://tv.adobe.com> - free video tutorials

<http://www.inkjetart.com> - supplies for inkjet printers including test images

<http://www.dpreview.com> - in depth reviews of digital cameras

7.5 About Robert Berdan



Robert currently operates Science & Art Multimedia in Calgary, AB where he offers services in web design, photography, video and private training. Robert has developed and taught a wide variety of courses on photography, web design and Photoshop at local colleges (SAIT and Red Deer) and privately in his studio. He started working with Photoshop since version 1.0 in 1989, and has been teaching photoshop for over 25 years. He started taking photos in 1970. His photos have won international acclaim from Nikon, National Geographic and Canadian Geographic. His photos have appeared in numerous magazines and books. Robert is also an adjunct assistant professor at the University of Calgary in the Dept of Cell Biology & Anatomy. Robert enjoys teaching and sharing his passion with others. If you have any questions feel free to contact him or visit his web sites for more information about photography and photoshop.

You can view more of his work on his web sites:

<http://www.scienceandart.org>

www.canadiannaturephotographer.com

www.360vrmultimedia.com

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www.canadainnaturephotographer.com/workshops.html.