

IMAGE EDITING

The objective of this article is to help you understand the steps that can be taken to enhance an image prior to printing. The steps are:

1. Cropping & Resizing
2. Applying Layers
3. Image Cleaning
4. Colour & Contrast Correction
5. Sharpening

Capturing the Image

Prior to taking any of the above steps it is first necessary to capture the image. If you are using a digital camera this is an automatic process. If you are shooting using conventional film you will need to scan the transparency with a suitable scanner.

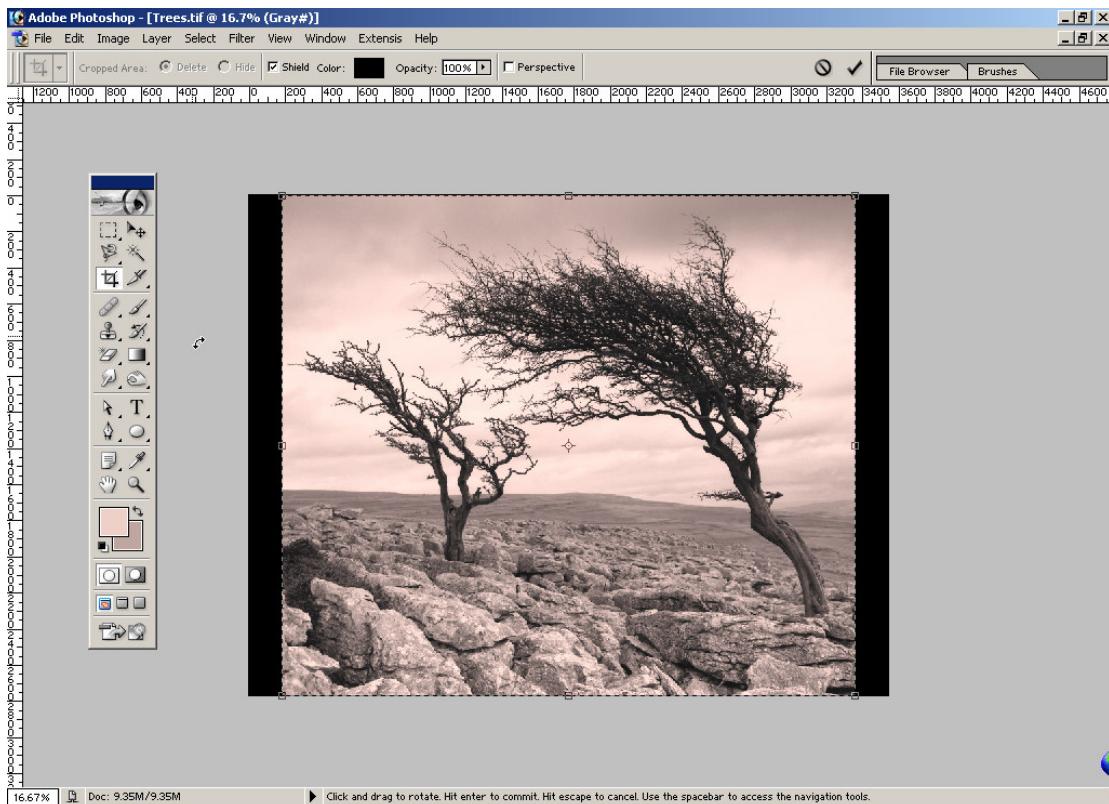
With a digital camera it is a good idea to capture the image using the higher resolution settings as this allows you the freedom to reduce the size of the image as required. Attempting to scale up an image is far more difficult and subject to a number of limitation. Another tip is to capture your images as RAW files wherever possible. Many camera manufacturers provide software that will enable you to manipulate RAW images as if you were changing the camera settings e.g. applying compensation control and so allowing correction of mistakes made when taking the picture. The resulting images can then be exported to TIFF files for possible enhancement and printing. I would recommend avoiding the use of JPG format for serious work as information is lost through the files compression process.

Whilst the basic operation of scanners is relatively easy you would do well to understanding their advanced features to achieve top quality results. One of the downsides to capturing images with scanners is that you also tend to capture dust and hairs that might be on the film. This can be corrected but takes a little time and effort. It is therefore always wise to clean any images with compressed air immediately before scanning.

Having captured your image digitally you can progress to preparing it for printing. The following sections refer to tools found in Photoshop 7 however similar tools and correction can be found in Photoshop Elements as well as many other image editing software packages.

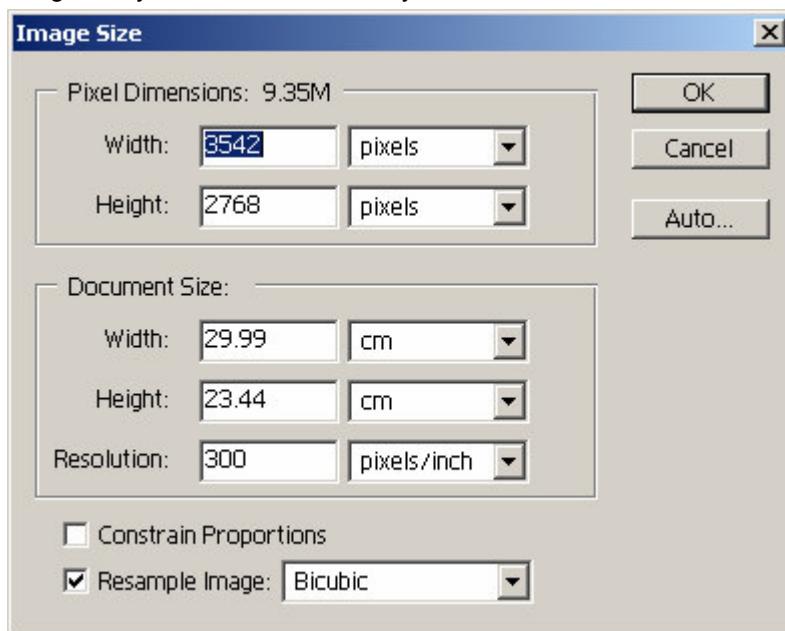
Cropping & Resizing

The first step is to crop the image to improve the composition and focus the attention on the reason you took the shot in the first place. It's often difficult to compose the shot you have in mind in the confines of the camera's viewfinder and cropping out unwanted distractions or space can help create a more pleasing image.



The screen shot above illustrates the crop tool in use. Having selected the crop tool (third icon down on the left side of the toolbar), hold down the mouse button whilst dragging out a square with the mouse. This will cause an area of the image to be selected whilst the rest of image is shaded. Having selected an area of the image you can use the drag handles at the sides or corners of the selection to change its dimensions. It's also possible to rotate the selected area by holding the mouse to the side of the image and the clicking and dragging.

Having composed your image by selecting the area you want to keep, double click on it and the image will be cropped. If you think that you have made a mistake you can use Edit|Undo menu option. I would however suggest that you get into the habit of working on copies of images as you never know when you won't be able to undo a change.



In addition to cropping an image you need to know how it can be resized. This can be done using the "Image|Image size..." menu option. This will cause "Image Size" dialog to be displayed. When resizing an image it is always easier to reduce the size rather than increase it. This is because the software has to "guess" at how to create image information that is not present in the original. In practice you can scale an image up in size but the larger you get the lower the quality.

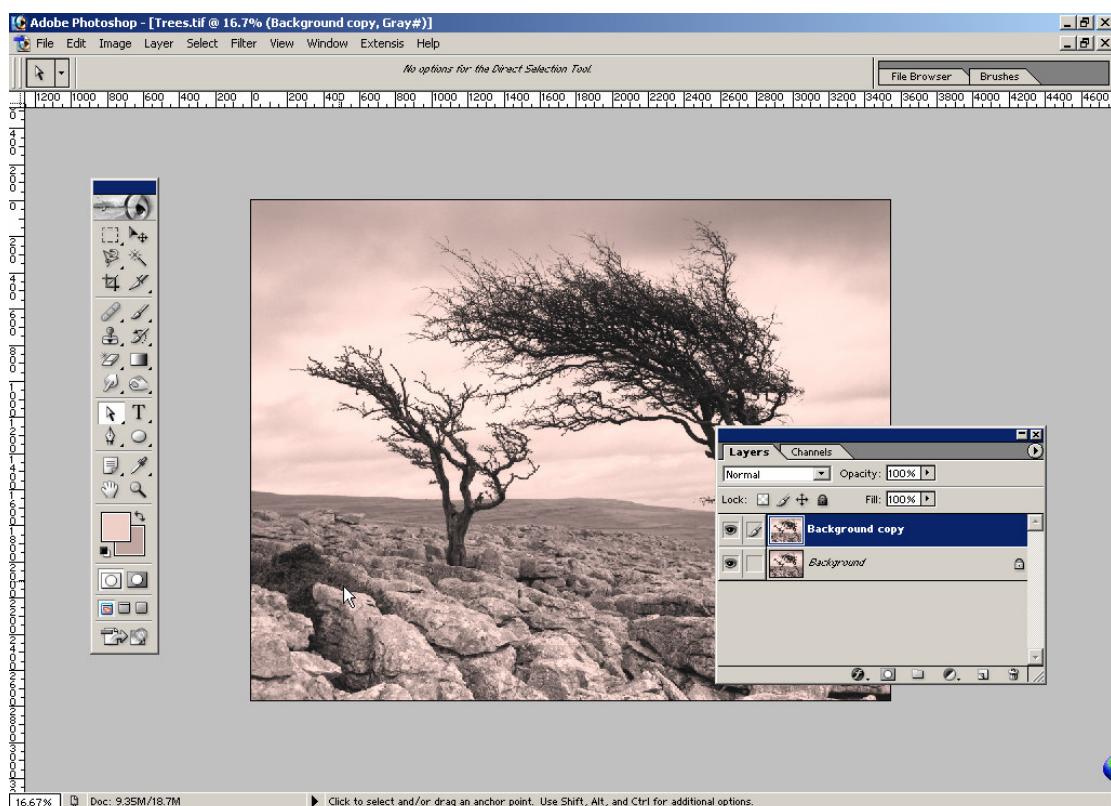
You should also ensure the “Resample Image” option is checked and use “Bicubic” resampling, as this tends to produce the best results. One final tip is watch out for the “Constrain Proportions” option being unchecked as in the above example. This allows you to set the height and width of the image independently, stretching your image in one direction or the other and breaking its proportions.

Layers

Having cropped and resized the image you are almost ready to start making adjustments. A tip here is to work on a copy of the image and not the original. This is easily achieved using the Layers feature available in most software packages.

To create a new layer in Photoshop use the “Layers|Duplicate layers...” menu option. This will create a new layer from your image allowing you to work on the layer whilst retaining the original image unchanged. One slight drawback to using layers is that you will need to save the file in a format that supports layers such as Photoshop and this will increase the file size. Once you are satisfied with your image you can discard any unused layers and “flatten” the image so that the layers are merged together.

If you are wondering what layers are, you can think of each layer as being like a page in a book. You can turn to a certain page (or layer) and then edit it without affecting the rest of the book. When you are working with layers it is helpful to display the Layers window as shown here.



The layers window can be selected from the menu using “Window|Layers”. Once displayed select the layer you want to work on by clicking it with the mouse. This causes a small paintbrush icon to appear to the left of the layer in the dialog.

You might also notice an eye icon next to each layer. This shows whether the layer is currently visible or not. If you want to hide a layer click on the eye icon so that it disappears. Click again and the layer is made visible again. In case you were wondering why you would want to make some layers invisible its because not all layers cover the entire image and some have areas of transparency allowing the images below to show through. An example is applying a layer of text to the image. Only the text on the text layer would be visible and you

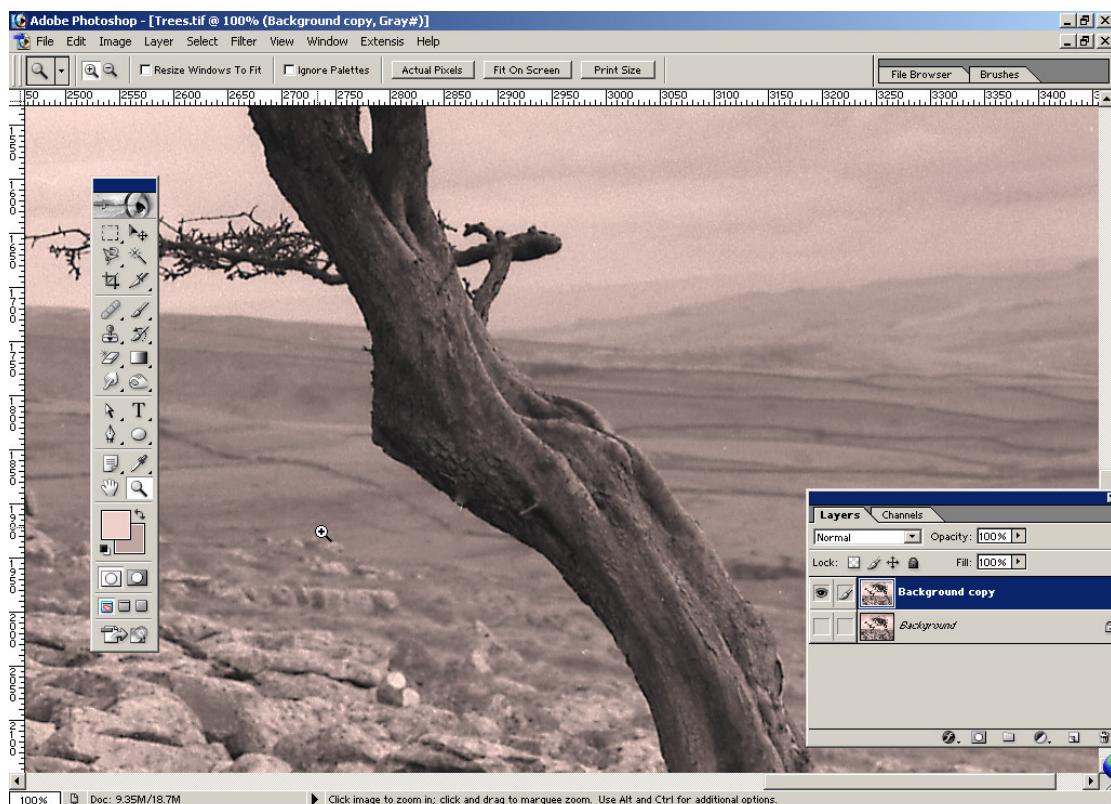
would be able to see the image below the text layer. You could then simply hide the text layer. This can be a really useful feature when producing images and graphics for the Internet.

Layers are also a great way to make adjustments to an image. If you create a new adjustment layer you can hide the layer very quickly to compare the effect with the original image or with a number of other adjustments. Only once you are happy can you merge the selected layers to create the final image.

Image Cleaning

As mentioned previously methods of digitally capturing images also have a tendency to capture dust, hairs and film scratches. The less you have to clean up the image the less damage you will do and the better your results. Some cleaning is however highly likely and possibly inevitable with some methods of capture.

Before you can clean the image you need to enlarge it on the screen to at least 100% as shown here.



Enlarging to 100% (or 200% if you want to be really careful) will enable you to see where the imperfections are and then correct them. You can enlarge the image in a number of ways however I favour using the magnifying glass on the toolbar as it allows you to zoom in and out of selected areas.

Having enlarged the image you will need to work your way across or down the image in strips ensuring complete coverage. Use the scrollbars to move the image slowly and watch for the dust, hairs or scratches passing by. Once you have spotted a problem area you will need to correct it using either the Clone Tool or Healing Brush Tool.

If you are familiar with filters you might be wondering why I have not suggested using the "Dust & Scratches..." filter. This is because the filter is indiscriminate in its effect. If your image has a lot of fine detail it can become very blurred or lost completely. It's probably worth doing this with a test layer if you really must use this filter but there are much better ways.

The Clone Tool is the fifth icon down on the left size of the Photoshop toolbar and looks like a rubber stamp. It enables you to copy a small area of an image and then stamp it or clone it over another area. This can be useful to completely hide damaged areas of an image replacing it with similar detail from another area of the image. For example if you found a hair on the sky you could select a piece of the sky slightly to one side of the hair, copy it and then clone it over the hair to hide it.

To use the clone tool select it from the toolbar. You can then set the brush shape and size (area that you will affect/copy) from the toolbar just below the menu. Holding down the Alt key on your keyboard you will notice that the mouse pointer changes, probably to a target with a cross hair. This shows you the area that you will be copying with the tool. To select an area to copy place the target over it and then click with the mouse. Release the Alt key and the mouse pointer will change to a circle. Your brush is now loaded with image pixels that you can paint over another area of the image by clicking on it.

Once you have clicked the mouse to paint on the image you also set a relationship between the copy area and the paint area. If you move to another part of the image and click the mouse again you will find that it does not paint the same area that you previously selected. This time it will copy from the area relative to where you are. If you copy from an area 50 pixels to your left then wherever you paint on the image you will always be copying from the point 50 pixels to the left of your current position. You therefore need to take care when using this tool and continually reset your selection area. With a little practice this can be a great tool for fixing damage and with some effort, removing unwanted people, cars, branches etc from your pictures.

The Healing Brush is very similar to the Clone Tool in the way that you use it. It can be found as the fourth icon down on the left in the toolbar and looks like a plaster. It works differently to the Clone tool in that it copies an area over another area but then blends to the two together to hide problems. For simple dust and scratch removal it can be much more effective than the Clone tool however it does have a limitation that you need to be aware of. Where you have sharp edges or contrasting colours it will make these blurred and look as if the image is smudged. In such instances it is probably better to use the Clone tool.

Overall, you will have much more success learning to use these tools that relying on any dust filters.

Colour & Contrast Correction

Before attempting to make any correction to an images colour you should ensure the contrast is correctly set. Poor contrast can make an image appear washed out or too dark. The natural reaction of most people is to adjust the colour, often with poor results.

As you might expect Photoshop provides a number of tools with which Contrast can be adjusted and you are likely to see the same or similar tools in other image editing software. Such tools include a rather crude but effective Contrast slider, Curves and Levels. The illustration below shows how the "Levels" dialog in Photoshop can be used to correct a low contrast image. Notice how the histogram does not extend fully to the triangles at either end

of the scale. At the left end of the scale the black triangle represents the black point i.e. where a colour appears as pure black. At the opposite end is a white triangle representing the amount of white. In the centre of the histogram is a grey triangle representing the grey point of the image also referred to as the mid tone. The histogram shows the amount of each shade present in the image. In this instance as the histogram does not extend to the triangles the

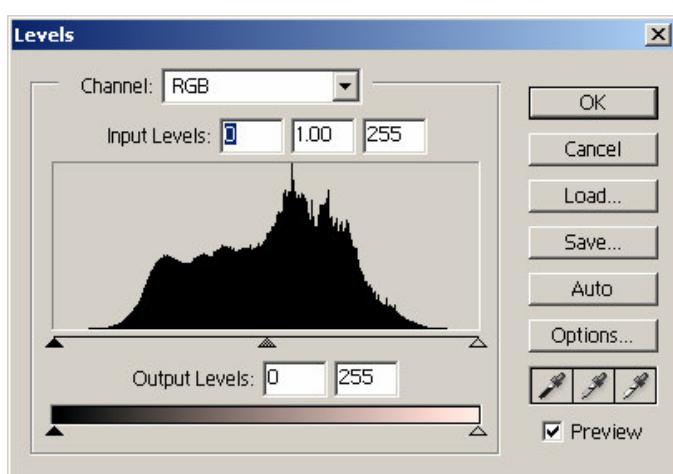
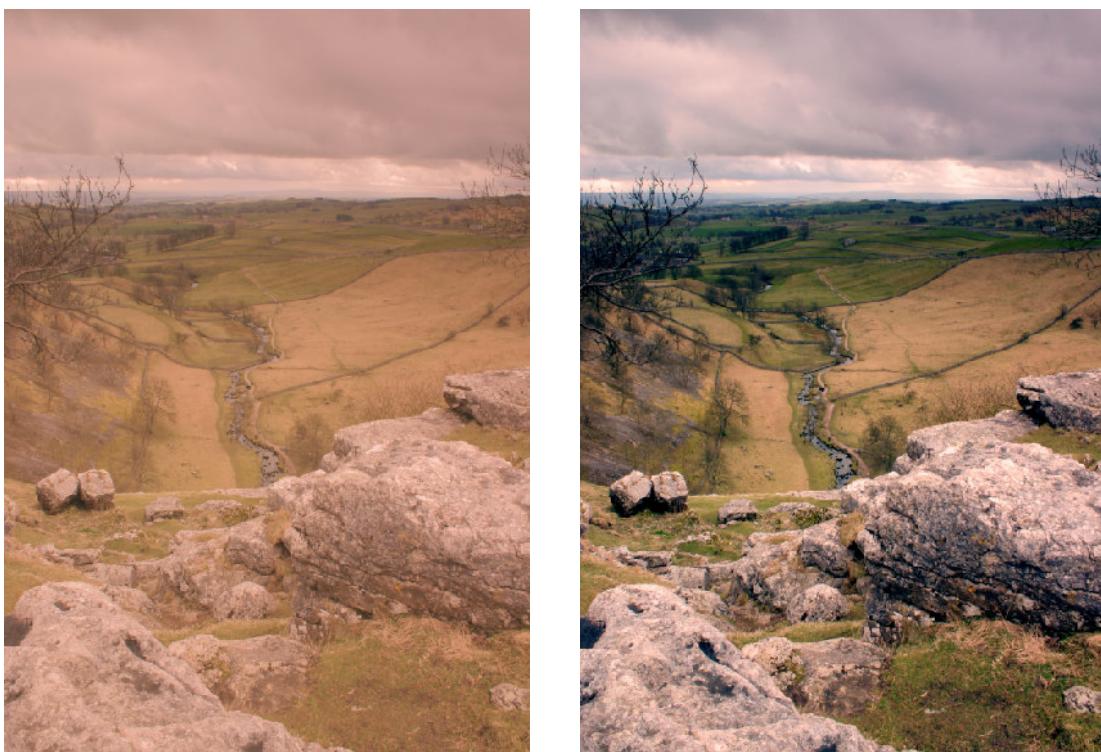


image contains no pure black or white areas. It is therefore said to be low in contrast.

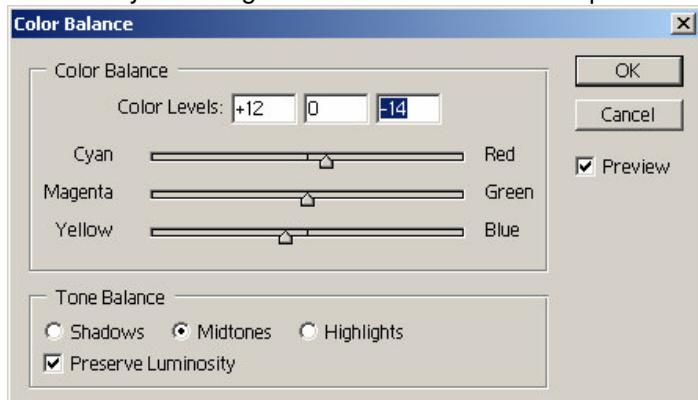
The first task is to set better black and white points for the image so that both black and white can be seen. To do this open the levels dialog for your image (Image|Adjustments|Levels... in the Photoshop menu) and then slide the triangles in towards the middle so that the histogram extends to each side. Once you have done this you can move the mid tone triangle left or right to adjust how bright the image appears. Once you have created the required contrast click OK to make the adjustment. If you return to the levels dialog you will notice that the histogram is now spread across the entire scale.

Another very effective method of using the levels dialog is to make use of the three eyedropper tools seen in the bottom right of the dialog. The left eyedropper sets the black point for the image, the right tool set the white point and the middle one sets the grey or mid tone. Click on the black point eyedropper to select it and then find a point on your image that you would like to appear as black, clicking on it. Repeat this using the white point eyedropper to select the images white point. You can also set the grey point using the centre tool but this is quite tricky with colour images (where a colour shift can occur). I find it best used with black and white shots.

Shown below are the before and after comparisons for the image.



I am sure you will agree there is a substantial improvement with the image on the right. The



only adjustment was made using the Levels dialog to set the black and white point but this has also improved the tone of the colour so that it looks far more realistic. Had I attempted to adjust the colour the image would not be as successful.

The next problem that needs to be tackled is that the image has a slight colour cast to it. This could have been caused by the

clouds making the light appear cold however the original image was shot using an 81C filter to counteract this and the problem might be down to the digital capture method. Using the Colour Balance dialog (select **Image|Adjustment|Color Balance...** from the Photoshop menu) shown on the left it is possible to adjust the level of a given colour in the image. Here the level of blue has been reduced whilst red has been increased. It is possible to make such adjustment to the Shadows, Midtones and Highlights of the image separately to achieve the balance that you want.



Shown to the left is the finished image having had both its contrast and colour balance modified.

Image Focus

The final step before printing your finished image is to work on the images focus. This is necessary as virtually all methods of digitally capturing images will soften the image causing it to lose focus slightly. To correct this we use a process known as sharpening.

Photoshop provides a number of tools or filters to help you sharpen an image. A common mistake is to go directly for the "Sharpen" filter or even "Sharpen More". The best filter is the "Unsharp Mask" as this provides the greatest level of control over how the process will affect the image.

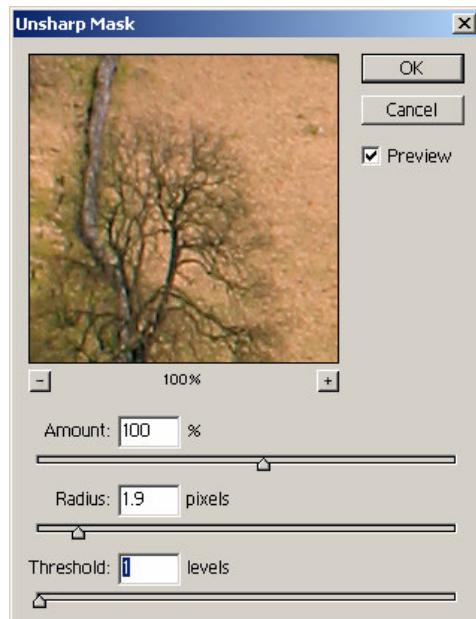
Before using the unsharp mask it is a good idea to zoom in to 100% on an area of your image containing a lot of detail such as the branches of a tree. This will help you judge when the image achieves its best focus and

ensure you do not apply too much sharpening. Select the unsharp mask using the "Filters|Sharpen|Unsharp Mask" menu option in Photoshop. This will cause the dialog shown here to be displayed. Having the Preview option checked will enable you to see the results of your changes on the picture immediately rather than having to rely on the small image displayed in the dialog box.

The threshold setting determines how many pixels in the image are sharpened. Setting too low a value here can result in the introduction of noise to an image and so reduce its quality. I personally tend to use values of between 4 and 20 depending on the image.

The Radius setting determines the size of the sharpening effect i.e. how many pixels surround a given pixels will be affected by the change. The lower the value the less the effect. If however you set too high a value you will cause the image to lose detail. A value of between 1 and 2 is a good starting point.

Finally you can use the Amount slider to adjust the strength of the effect. Values of between 100% and 200% are usually good starting points.



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My personal preference for using this filter is to set a Threshold value in the range of 4 to 20. I then set the radius of between 1.5 and 3. Finally I set the amount to around 100%. I then adjust each of the settings in turn until I achieve the desired effect. This becomes much easier with practice. Another equally effective approach is to set the Amount value at around 150% and then adjust the other settings. All this takes practice but the results are well worth the effort.

Shown below are two areas of an image magnified to 100%. The image on the left has not been sharpened but the image on the right has.



Having made all the necessary adjustments you are ready to make your print.