



Northallerton Camera Club

Image Sharpening

Introduction

More pictures have been ruined by bad technique in sharpening than almost any other factor. Quite often you will have to work out for yourself which method or methods and what level of adjustments work best for you, in what circumstances.

There are different methods you can use to sharpen images and the “Experts” tend to have their pet theories and favourite methods. Whilst I would not set myself up as an expert I cannot absolve myself from having preferences; it is unavoidable as one always develops through one’s own experiences.

I have included a number of sharpening methods; there are others that for a number of reasons I have not included, but I hope that the ones included will offer at least one process that works for you.

Common Factors

1. I rarely sharpen the “Background” layer but instead create a duplicate layer for sharpening; indeed some of the methods require a duplicate layer for the concept to function. Generally though this has two main advantages. Firstly if you get it wrong or at a later date decide it needs changing, you can do it by deleting the sharpened layer and creating a new one. Secondly it allows you to use the ‘Opacity’ slide in the ‘Layers’ palette to alter the amount of the sharpening effect if you wish.

TIP:- The easiest way to create a duplicate layer in Photoshop is to use to make activate the top layer in your image’s layer palette; hold down the “Alt” key, then from the ‘Layers’ drop down menu click “Merge Visible”. This will create a composite layer above the layer you high lit. This gives to a separate layer to sharpen but leaves all your building blocks in place below.

2. Remember that you must use different levels of sharpening for different outputs. An A3 print will need different sharpening to an A4 print and even more so with a Digital Projected Image. The amount needed varies with the number of pixels in your image.

3. Ensure that you are able to see the effect of your sharpening on the image. Normally you will find that your image on the screen is much smaller than it will be when printed and therefore it is not possible to see the sharpening effects in proper detail. Many will advise you to set your image at 100%, but to be truthful I would not advise this, unless you are preparing a PDI, when it is advisable. For prints 100%, will be a greater enlargement than your print will ever be. You will find that selecting 25% or 50% is quite sufficient. Do not choose enlargements between these figures as you will find the image is not displayed on your sharply.

4. Be aware that if an image is pin sharp from two feet to infinity it can look unnatural to the human eye. It is a good idea never to sharpen skies. Use a layer mask in one way or another to prevent sharpening of the sky showing through.

5. Use of layer masks to achieve selective sharpening or partial sharpening of parts of the image. This can be done by simply painting black into a layer mask at either 100% to block the effect altogether, or at say 50% opacity to allow only partial sharpening of that portion of the image. Where you have recession elements that you feel may need variable sharpening to look realistic, you can either use a gradient mask with the ‘Gradient Tool’ or create selections using the ‘Polygonal Lasso’ feathered to whatever degree you feel applicable, but generally at least 100 and possibly up to 250 pixels.

***TIP:-** I find it best to put the 'composite' layer (see para 1 above) into a layers folder and apply the 'sky' layers mask to the folder it allows more flexibility with fine tuning your sharpening as it gives you the option to apply a second 'layer mask to the actual 'composite' layer that you are going to sharpen.*

Smart Sharpen Filter (Filter – Sharpen – Smart Sharpen)

This filter could be described as an advanced version of Unsharp Mask and is currently my preferred initial method of sharpening.

In the Basic Mode you can set the "Amount" and "Radius" as in Unsharp Mask. There is no 'Threshold' control. You can now choose to remove 'Gaussian Blur' in the way that Unsharp Mask works, or to remove 'Lens Blur', which provides a more detailed sharpening of the image; or 'Motion Blur' to counter slight movement of the camera or subject. In this last option use 'Angle' control to have the correct effect. In the Advanced Mode you will find the options to vary the sharpening in Highlight and Shadow Areas, which will allow you to fade the sharpening over variable tonal widths and also the radius. For example, a low tonal width in say 'Shadow' will restrict the effect to the darkest areas only, whilst a larger one will spread the effect to lighter shadow areas. Obviously the same principle applies to the 'Highlight' control. You need to experiment and take care not to over use the tools at your disposal.

***TIP:-** The way I use this method is to use the "Sharpen" tab, select "Advanced" and also "More Accurate" and remove "Gaussian Blur". Working on an A3 sized image at 300 dpi I would set the 'amount' at 100 and then choose the radius, probably somewhere between 1.1 and 1.6, depending on the image. I would then create a duplicate of the sharpened layer within the same folder. With one upper of these two layers I would look to use 'Unsharp Mask' to apply a gentle 'Clarity' effect on the image. Set the 'Amount' at around 100 to 150, the 'Radius' at 0.9 and the 'Threshold' at zero. This has the effect of snapping things into focus, but should be tried out as it works better on some images than others, hence the use of a second layer. Additionally with the second layer you can apply another layer mask to soften or remove the effect from selected parts of the image, eg distant hills.*

With a PDI of say 1400 pixels on the longest side the settings for Smart Sharpen would be lower, perhaps 80 or 90 and 0.8 or 0.9, again depending on the image and image size and the same applies to any subsequent 'clarity' effect.

OTHER METHODS OF SHARPENING

Unsharp Mask (Filter – Sharpen – Unsharp Mask)

The name may well confuse many but it derives from an old photographic dark room process where a soft and unsharp negative of a subject was sandwiched with the original positive. This technique tended to increase edge sharpness in the resulting photograph. The digital version seeks out changes in contrast and emphasises them.

When you open the filter you are presented with a palette with a number of options.

1. I suggest you ensure the 'Preview' button is ticked as you will then be able to see the effects of what you are proposing to do.

2. "Amount" - This slider affects the intensity or amount of sharpening that is to be applied. So, set at '0%' there is no effect and set at 500% the effect can be very substantial and, without other controls not in Unsharp Mask, diabolical in its effects. You will have to assess the correct figure, but there are a number of factors that will influence your choice, including file size, resolution, print size etc, which can all have a bearing. That being said for A3 prints with a resolution of say 300 I find myself using a figure somewhere between 100 and 175.

3. "Radius" - This controls the width of the sharpening effect. By all means experiment and you will see the potential effects. Adobe used to recommend setting this slider at 1.6 as a starting point and I have found this to be a good guide, but subject to variation from 1.0 to 2.0 in some cases.

4. "Threshold" - This is slightly more complicated and many shy away from using it and recommend setting it at '0' on a permanent basis. However the lower the setting the more pixels are sharpened, because this control decides which shall be sharpened by the amount of difference in tonal brightness. Set at a very low level sharpening will even occur where you would normally expect to see a smooth continuous tone, eg in the sky or in skin tones. I normally leave it a '0' unless portraits are involved when you may find it beneficial to set it at between 4 and 10. As mentioned above I mask of skies so this is not relevant to me for skies.

High Pass Filter (Filter – Other – High Pass)

1. You will need to create a duplicate of the Background layer for this process. Once you have done this go to your 'Layers' palette and change the "Blending Mode" from Normal to either Hard Light or Soft Light (more about this choice later).

2. With the duplicate layer active open the High Pass Filter. There is only one control, a radius slider. As a starting point try it at about 4.0 pixels, although again image and print size etc may affect your choice here. Overdoing it will produce a bad result.

3. If you now change the blending mode of the sharpened layer between Hard Light and Soft Light you will see that the Soft Light mode offers a softer more subtle effect than the Hard Light mode. The subject matter may well dictate your choice.

Channel Masks

This method of sharpening can be useful as it allows a natural sharpening effect and, rarely if ever creating those dreaded halos. The downside is that it is the most complicated. This process is based on Unsharp Mask controlled by a specific type of layer mask, created from one of the colour channels, called a 'Channel Mask'. It provides an infinitely variable mask, reflecting the content of the image through which sharpening can be applied. It does involve a learning curve, but you will find that experimentation and perseverance will produce good results.

1. Create a duplicate of the Background Layer.

2. If you have a sky in the image then create a selection of the sky, if one does not already exist. If one does exist open it. Invert the selection and leave it active (with the marching ants showing). Create a Layer Set and, with the Layer Set active, click the New Layer Mask Icon in the Layers Palette. This will put a layer mask on the Layer Set, blocking off the sky. Now drag the duplicate of the Background Layer into the Layer Set. (if you have no sky ignore this paragraph and go to the next)

3. Open the "Channels Palette". This reveals, along with the RGB Channel a Red, a Green and a Blue Channel, as well as any selections you have saved. You will now need to experiment; un-tick two of the colour channels and observe the resulting monochrome image displayed. You are looking for a balance between black, white and grey that most nearly matches those areas most in need of sharpening. The lightest areas will let through most sharpening effect whilst black or darker areas will let none or less sharpening effect show through. If you have gone through the process at 2 above ignore the sky area, it is already blocked off. Additionally do not forget to think in terms of an

inverted channel. By this I mean you can choose a channel where the Darker areas match those you want sharpening and the lighter ones where you do not want sharpening.

4. Decide on which channel offers you the best choice, tick the RGB channel to return to a colour image. Open the 'Calculations' palette (Image – Calculations) and a new palette will appear. In both the 'Source 1' and 'Source 2' boxes select the colour of channel you have chosen. If you need the choice of inverting (as above) tick both the 'Invert' boxes as well.

5. Go to the 'Blending' drop down menu. You will now have to experiment, remembering to create a layer mask that will control which areas will be sharpened and by how much. The blending modes I find most useful are Normal, Darken, Multiply, Overlay and Soft Light. Select the mode that most suits your needs.

6. Ensure that the Result panel shows 'New Channel' and click 'OK'. A new channel will appear in the Channels palette, probably called 'Alpha'.

7. In the Layers Palette, ensure that the duplicate layer is now active.

8. Go to the 'Channels' palette, place the cursor on the image thumbnail of the new channel and click 'Control'. This will place the channel selection on the main image (with the marching ants). Now go to the 'Layers' palette and click the "New Layer Mask Icon" and this will place the channel selection in the new Layer Mask on the Duplicate of the Background Layer.

9. Make the actual layer active (not the layer mask) and then open Unsharp Mask.

10. You will find that you can now apply Unsharp Mask without many of the problems that can normally be encountered. As a starting point set Radius at 1.6 and Threshold at 0. You will find that depending on the nature of the 'Channel Mask' you will be able to move the 'Amount' slider from anywhere about 150 up to 300 or more with no ill effects, but creating a very naturally sharpened image. I generally find I am using values around 200 to 300 (but on occasions higher still), as I say depending on the density and nature of the 'Channel Mask'

And Finally

There are other methods such as using Lab Colour Mode and only sharpening particular Colour Channels that you may wish to explore but I have not included them here. There are also other sharpening tools in the 'Sharpen' Filter box.

There is however another method of sharpening that I have used in the past. This is a proprietary piece of software that acts as a plug in to the Photoshop, accessed via the Filters drop down menu. This is **Nik Sharpener Pro**.

Its dialog box is explanatory and it has slides to specify, print size, printer resolution, print quality, extent of sharpening etc. It will then advise you as to whether there are enough pixels and warn you if you are asking too much of your file before you apply the filter.

Dave Coates ARPS ESFIAP ESFIAP/p APSA EPSA MPAGB HonPAGB