The Photographers Guide to Image Sharpening in Lightroom

Professional Image Sharpening & Noise Reduction Techniques using Adobe Lightroom

Includes FREE Video Course



by Robin Whalley

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Contents

Contents

This book was developed exclusively for Kindle devices and does not contain page numbers.

Introduction Who Needs This Book Note to Mac Users Trademarks Disclaimer **IMPORTANT: Before You Start** Further Information The Sharpening Workflow Why We Sharpen The Stages of Sharpening The Importance of Resolution Screen Resolution **Capture Sharpening Creative Sharpening** Output Sharpening for Print or Screen How Sharpening Works The Sharpening Wedge Strength **Radius** Masking Noise Reduction Colour Noise Luminance Noise Lightroom Sharpening Tools **Capture Sharpening** Sharpening Controls Image Assessment Noise Reduction Tools Capture Sharpening in Practice Capture Sharpened Example Selective Sharpening **Refining Gradient and Radial Selections**

Selection Strategies Adjustment Brush Tools Other Selective Adjustments **Output Sharpening Output to Print** Output to Screen Assessing Image Needs Sharpening Architectural Images Sharpening Noisy Images Sharpening Fine Detail and Landscapes Other Image Types Worked Example Worked Example 1 - St Pauls, London **Capture Sharpening Creative Sharpening Output Sharpening** Worked Example 2 – The Hospital **Capture Sharpening** Noise Reduction Sharpening Adjustment Selective Sharpening Wood Grain Issue Selective Noise Reduction Selective Clarity and Sharpening Worked Example 3 – Landscape Sunrise Capture Sharpening Selective Sharpening **Summary** Other books by Robin

Introduction

Welcome to this book and video course about how to sharpen photography in Adobe Lightroom. I should also point out that this includes Noise Reduction as the two go hand in hand. If you don't consider these elements together your results will be sub-optimal. This book contains everything you need to know to be able to sharpen your images with the same skill as a professional re-toucher. And yes, I did say video course. When you buy this book you also get free access to my 1.5 hour video course which demonstrates the key elements. You will find details of how to access this later in the book.

When images aren't sharpened, they appear soft, flat and lifeless. A well sharpened image will literally come to life when displayed on the screen or in print, taking on an almost three-dimensional appearance. Apply too much sharpening and image defects stand out, detracting from the look of the photograph. You have seen images yourself which display lots of sharpening defects. When you understand how to use Lightroom sharpening properly, such problems can easily be avoided.

Below you can see an example of a well-focussed image that has yet to be sharpened.



Figure 1: Example image prior to sharpening

Whilst the image looks fine, it can be improved by the sharpening process outlined in

this book. In the following screenshot, you see a 100% or 1:1 magnification of the foreground from the unsharpened version of the image.



Figure 2: Section of the image prior to sharpening

Notice how soft this is despite being well focussed. Compare this now to the next screenshot where you see the same image section but with an appropriate level of sharpening applied.



Figure 3: Section of the image following sharpening

This sharpened image appears much crisper, with greater detail and a feeling of depth. But it's also very easy to damage the appearance of an image if you sharpen it poorly. Let's look at the same image again, but this time with slightly too much sharpening

applied.



Figure 4: Section of the image with too much sharpening applied

With too much sharpening the image appears to have an unnatural, brittle appearance. The detail has been enhanced so much that the sharpening halos around edges are becoming visible. This is even more noticeable around the hills on the horizon as shown below.



Figure 5: A sharpening halo can be seen around the headland

Sharpening is often viewed as a technical subject which puts many people off. This is a shame as the key skills to master the subject, are relatively easy and quick to learn. All you then need is guidance and a little practice to achieve excellent results. This book

and accompanying video course will distil all the essential information for you. They will provide examples of well sharpened images as well as high resolution images for you to work on.

For some reason, there is a lot of misinformation and partial truths surrounding the subject of sharpening. Many have needlessly overcomplicated the process. This book will dispel these untruths as well as providing you with the essential facts required to produce excellent results with consistency. Mastery of this subject can provide you with a huge advantage in making your images stand out from the competition.

Who Needs This Book

If you are a Photographer or Lightroom user who needs to prepare images for either screen or print display, this book can benefit you. The only exception is if you are already well practiced and highly skilled at sharpening photographs in Lightroom. This means you understand how to use each of the three phases of sharpening that Lightroom supports, as well as how to apply noise reduction as part of this. If you don't know what this sentence means, you will benefit from this book.

Before we start I'm going to make some assumptions about you and what you hope to gain from this book:

- You are a Photographer or need to prepare photographs for print or screen display.
- You are using Lightroom as you tool of choice for RAW processing.
- You are familiar with Lightroom and comfortable with its operation as well as the adjustment tools offered.
- The images you are starting with have been shot in RAW format and you have access to the RAW file. The approach presented here can be applied to TIFF and JPEG images, but to achieve the best results you need to start with a RAW file.

If you recognise yourself in the above description, you will find this book and accompanying course invaluable.

Note to Mac Users

This book has been developed using a Windows PC and software. The Mac and Windows versions of Lightroom are consistent across both platforms although some minor differences may exist. If you are a Mac user, please be assured that this won't prevent you from being able to follow and apply the information in this book. The key areas of difference will be found in the keyboard shortcuts where the Windows Ctrl key should be replaced by the Mac Command key and the Windows Alt key is replaced by the Mac Option key. Should you find other differences I would be pleased to hear from you so that I can revise the book to reflect this.

Trademarks

At times in this book I may mention companies and their products. Many of these names will be registered trademarks and copyrighted. All such trademarks and copyrights are recognised and used in this book in a purely editorial sense. There is no intended breach of either trademark or copyright.

Disclaimer

Whilst I have made every effort to ensure the information in this guide is accurate, up to date and factual, it does represent my views and approach. Some may disagree with the information I present but to the best of my knowledge there are no omissions or errors. If you do find something you believe needs to be corrected, please contact me by email using <u>robin@lenscraft.co.uk</u>. I will then be able to correct this for future versions of the book.

IMPORTANT: Before You Start

To get the most from the book you should start with two actions:

1. Download the accompanying file for this book. This can be found on my Lenscraft website at the following address. You will need membership access but this is provided free. The file you download contains full resolution versions of the images you will find in this book including RAW files in DNG format for you to practice on.

https://lenscraft.co.uk/lightroom-sharpening/

2. Sign up for the accompanying 1.5 hour video course at my online school. This is usually priced at US\$20 but by entering the promotional code 100-OFF-SHARPENING you can access the course for free. You can find the course at the following web address.

http://training.lenscraft.co.uk/

By using the download files in combination with the book and video you can sure to maximise your learning and investment in time.

Further Information

If you would like to contact me, I can be reached by email using <u>robin@lenscraft.co.uk</u>. You can find more of my teaching on the following sites:

Website: https://lenscraft.co.uk

Blog: <u>https://www.thelightweightphotographer.com</u>

You Tube Channel: https://www.youtube.com/c/robinwhalley

Amazon Authors Page: <u>http://www.amazon.com/author/robinwhalley</u>

The Sharpening Workflow

In this chapter, we will look at something called the sharpening workflow and why this is vitally important in achieving excellent results.

Why We Sharpen

When we capture an image using a digital camera there is a slight softening effect on the photograph. This is introduced from several sources including:

- The AA (Anti-Aliasing filter). This filter applies a slight blurring to an image to reduce/remove the effect of the Moiré pattern that can sometimes be seen with Bayer sensor.
- The camera lens.
- Noise reduction.
- Camera shake.

Some of these can be removed but others you might not have any control over. By correctly sharpening your images you will minimise the impact of this softening effect.

When it comes to sharing your images, further softening can occur. For example, we will need to sharpen images that are being printed. The application of ink to paper tends to have much less definition than displaying pixel on a screen. When ink is applied to paper, the paper will soak up the ink and colours can bleed into each other. Good sharpening will counter this effect, rendering a sharp print.

If you don't print, it's likely you will share or view your images on a screen. This will most likely require you to down-sample your images so they can be viewed properly at full resolution. The process of down-sampling can again reduce the apparent sharpness of the image. This can again be corrected by applying good sharpening.

Whilst there is a lot that can be achieved with sharpening, there are limitations. Images that are blurred because of poor focus or severe camera shake can't be effectively corrected with sharpening. It's important you recognise this and start with a good image. Don't waste lots of time trying to fix images that suffer from serious problems.

The Stages of Sharpening

For a long time, the conventional wisdom in photography circles was that you only sharpen an image once. It was often quoted that sharpening an image more than once caused damage that couldn't be reversed. I still regularly come across this advice where people are discussing sharpening and it may even be your current understanding. When I first switched from film to digital photography, this was also my understanding.

I then read a book by the late Bruce Fraser which changed my view completely. Bruce argued that the needs of different images were so varied that they couldn't be addressed with a single pass of sharpening. Rather it was necessary to sharpen the image in three phases, each addressing a specific need of the image. These phases were:

- 1. Capture sharpening to counter the softening effect often introduced at the point the image is captured. Typically, the anti-aliasing filter and lens construction would create this softening effect. Such sharpening needs to be applied across the entire image at relatively low levels to ensure the entire image appears sharp. What we shouldn't try to do at this stage is produce an image that has achieved optimal sharpness. It's necessary to apply noise reduction in this phase to remove any visible noise produced by the capture process. Noise reduction works by blurring the image slightly to hide noise. Such blurring will again soften the image and require correction through capture sharpening.
- 2. Creative or selective sharpening is where elements of the image are selectively sharpened. This helps to emphasise their presence and draw the viewer's attention to them. Given the tools we have at our disposal in Lightroom we can extend this definition to include creative softening or blurring of areas. We can also apply selective noise reduction to areas where heavy noise remains after capture sharpening. This sharpening tends to take place at the end of the editing process to produce a master file.
- 3. Output sharpening is where the image is sharpened to suit the output medium for example the screen, print to gloss paper, print to matt paper etc. This sharpening should be the final step of the editing process and should change depending on the size of the image and output medium. For this reason, it's applied to a copy of the master file.

Lightroom has been designed with tools that support these three distinct phases of sharpening (and noise reduction). Understanding this and how the tools can best be applied is one of the keys to producing excellent results.

The Importance of Resolution

In this chapter, we need to look at one of the issues that can prevent us from making a sound evaluation of image sharpness. Variations in screen size and resolution can affect how we perceive an image, causing us to misjudge the level of sharpening to be applied.

Screen Resolution

When sharpening an image by eye, the only feedback we have available is the computer screen. Unfortunately, this is one of the biggest variables in the entire sharpening process. Consider for example where you have three computers that can be used for sharpening:

- A MacBook Pro with 13-inch retina screen. This has a resolution of 1280 x 800 pixels.
- A Windows PC with a 24-inch screen supporting a resolution of 1920 x 1080 pixels.
- An iMac with 27-inch retina screen supporting a resolution of 5120 x 2880 pixels.

Comparing these from the perspective of pixel density the 27-inch iMac has the greatest density of pixels followed by the MacBook Pro and then finally the PC which has the least pixel density. Pixel density is very important as it affects how we perceive the effects of image sharpening. As a rough guide, the higher the pixel density, the greater the amount of sharpening to be applied for the effect to become visible.

Although strictly not accurate, you can gain an estimation of pixel density by dividing the number of horizontal screen pixels by the screen width. For example, 5120 pixels divides by 27 is 189 pixels. Compare this to the 24-inch PC screen which has 1920 pixels, the density is only 80.

If we sharpen an image on the 27" we will find we have to apply more aggressive sharpening to notice the effect than if we were sharpening the same image on the PC screen. The greater the pixel density, the less the effect of the sharpening can be seen on the screen. This can sometimes cause us to misjudge the degree of sharpening, applying too much or too little.

A further drawback of a high pixel density is that it can become more difficult to detect sharpening artefacts. Artefacts occur in several ways such as when we sharpen digital noise in the image rather than fine detail. A further example is when we create a sharpening halo around edges in the image. When the pixel density is high, these problems are more difficult to detect.

In the above example, my personal preference is for sharpening on the PC. I have found the HD resolution (1980 x 1020) gives excellent results on a 24" monitor. Here the sharpening can be well judged and problems detected when viewing the image at 100% or 1:1 magnification. When I switch to using a 27" Mac, I tend to sharpen at 200% or

2:1 magnification as this is then like the PC resolution. Let's look at this in a little more detail.

Capture Sharpening

Conventional wisdom suggests the image should be evaluated at 100% magnification or 1:1 zoom in Lightroom when applying Capture Sharpening. As we have seen, the pixel density of the display will affect our perception. A rough rule of thumb for capture sharpening is to use the following magnification levels:

- Below 100 pixels per inch density use 1:1 zoom (100% magnification)
- Above 100 pixels per inch density use 2:1 zoom (200% magnification)

Using a resolution of less than 1:1, for example 50% of 1:2, will cause the sharpening effect to not be correctly displayed. Instead you will most likely be viewing an approximation of the effect. Equally, you are unlikely to gain any real advantage from sharpening at greater levels of magnification than those indicated above.

Creative Sharpening

When applying creative sharpening (and blurring) to change the emphasis of areas within the image, the evaluation should ideally be performed at 100% magnification. This again is affected by the pixel density of the display so you should follow the same guidelines as for Capture Sharpening above.

Output Sharpening for Print or Screen

In the case of images destined for print or screen, Lightroom will automatically apply the correct level of sharpening for you. There is no visual evaluation for you to make and there is no control over the sharpening other than deciding the level of sharpening to be applied (Low, Medium, High). You need only select the sharpening based on the image content and medium then trust Lightroom will get it right.

How Sharpening Works

In this chapter, we will examine how sharpening works. This will then provide a better understanding of the various controls when we explore Lightroom later. To help us understand what is happening when we apply sharpening to a specially prepared image, sometimes called a sharpening wedge. This is a simple image comprising of two gradients and is included in the supporting files you can download for this book. It's recommended you download and import the image to your Lightroom catalogue so you can apply adjustments and see the results on your own computer screen. It can be difficult to see the effect when viewing images in an electronic book.

The Sharpening Wedge

Below you can see the sharpening wedge before any sharpening has been applied.



Figure 6: Sharpening wedge prior to sharpening being applied

Sharpening works by emphasising the edges in a photograph by increasing their contrast.

To illustrate this, imagine a drawing made in pencil but the lines in the drawing are quite faint, making the image difficult to see clearly. If we now take a darker pencil and go over the image a second time, the edges become easier to see. If we then take a black pen and go over the outline a third time the image is now very clear. The darker edges or lines are easier to see against the white paper because they create a greater contrast.

Sharpening is very similar. We use the sharpening tools to identify and emphasise the edges in our images. We only need three controls to help us do this; Strength, Radius and Threshold. These can be seen in the screenshot of Lightroom below (we will ignore the Details slider for this simple example).

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Figure 7: Lightroom sharpening tools found in the Develop module

Strength

When we sharpen an image, our software scans the image looking for edges. Where an edge is found, it's enhanced by increasing the contrast of the pixels along that edge. The Strength slider allows us to control the level of this contrast increase. Move the slider to the right and the contrast in the pixels will increase so that light pixels become lighter and dark pixels become darker. This is just the same as taking a darker pencil and using it to outline a shape. It's this increase in contrast that makes the edges more prominent and the image appear sharper.

In the following image, you can see the effect in Lightroom that Strength slider has on the Sharpening Wedge. The change is subtle (it's much easier to see on your own computer) but the edge where the two gradients meet is now a little more defined.



Figure 8: Applying an increased Strength adjustment in Lightroom

Whilst it can be tempting to sharpen all your images by applying a high strength setting, this isn't a good strategy. This can give rise to something called sharpening artefacts which become visible and distracting for the viewer.

Often image which lack contrast also appear to lack sharpness. It's therefore important to correct your contrast before attempting to evaluate image sharpness. The key controls in Lightroom to help you do this are:

- Tone and Contrast sliders found in the Basic Panel.
- Clarity slider (depending on your version of Lightroom) also found in the Basic Panel
- Tone Curve.
- Dehaze adjustment (depending on your version of Lightroom) located in the Effects panel.
- Many of these sliders are also found in the local adjustment tools.

A further problem when using high value/strong sharpening adjustments is that you will begin to see sharpening problems emerge. Examples of these include:

- Edges where the sharpening has turned pixels to black or white. These are often referred to as Halos.
- Noise which becomes visible.
- Sharpening artefacts such as sensor patterns start to appear.

In the following screenshot, you can see an example of a sharpening Halo becoming visible where the headland is seen against the sky.



Figure 9: Example of a sharpening halo around the headland

Radius

Considering now our example of a faint pencil drawing which we outline with a pen, when we select a wider pen, the effect is more obvious. Increasing the Radius setting is just like selecting a pen with a thicker tip. The thicker the tip, the wider the line we draw. You can see this in the following example using the Sharpening Wedge. This first screenshot uses a Radius setting of 1.0.



Figure 10: The After image was produced using a Radius of 1.0

In this next screenshot the Radius has been increased to 3.0, producing a wider sharpening effect.



Figure 11: The After image was produced by applying sharpening with a Radius of 3.0

If we have an image containing a lot of fine detail, we might want to emphasise this. But if the Radius is too wide we can cause a loss of detail as the fine edges begin to merge together.

A further problem with using a high Radius is that the edges we sharpen can become too obvious and visible. These edges we create through a combination of the Strength and Radius settings are known as Sharpening Halos. Sharpening Halos will always be present but If these become obvious and visible, it's often seen as a sign of poor sharpening. Look at the following example.



Figure 12: Example of a sharpening halo

If you look at the After image on the right, you will see a strong Sharpening Halo where

the two wedges meet. This was achieved by setting the Radius and Amount sliders to their maximum values. The good news is that the strongest settings in Lightroom are quite conservative and will help you to avoid many problems.

Masking

So far, the controls we have examined are concerned with emphasising edges in the image to make them appear more obvious and therefore sharper. The third control "Threshold" is concerned how Lightroom detects an edge.

Lightroom works by comparing adjacent pixels to judge their difference in contrast. For the purposes of sharpening, this indicates an edge. What the Threshold setting does is control how sensitive Lightroom is to these edges. Where Threshold is set to 0 the sensitivity is at the maximum. This means there doesn't need to be much difference in contrast for an edge to be detected. Where Threshold is set to higher levels the contrast difference needs to be much greater to detect an edge. This is restricting the sharpening to the strongest edges in the image.



Figure 13: Sharpened using Amount = 100, Radius = 3 and Threshold = 0

Look at the After image in the above screenshot. This shows a strong sharpening halo along the edge where the gradients meet. Now compare this with the following example.



Figure 14: Sharpened using Amount = 100, Radius = 3 and Threshold = 100

Here the After image on the right has been sharpened with the same settings as before only this time the Threshold has been set to 100.

Noise Reduction

Noise is present in all digital images to some extent. Sometimes it's very noticeable such as when the image is captured at a high ISO setting. At other times, it is barely noticeable at all. When sharpening an image, we must take care that we don't emphasis or sharpen any noise that's present. We also need to take steps to remove the noise that's present so that emphasised by further adjustments. It isn't just sharpening that will cause noise to become visible, most forms of image adjustment can exaggerate noise.

When we come to remove noise from our images using noise reduction, this will have a softening effect. Sometimes, we perceive noise as being fine detail and removing this can make the image appear soft. The processes used to remove noise applies a small amount of blur to an image. Effectively you are blurring away the noise so that it's no longer visible. This blurring will soften the image slightly so it's important you strike a balance of noise reduction and image sharpening.

There are two categories of Noise reduction within Lightroom; Luminance Noise which appears as black and white speckles and Colour Noise which appears as coloured speckles.

Colour Noise

The following image was captured using an Olympus EM5 micro 43 camera. It was captured during the daytime with a long exposure (several seconds) achieved using a 10 stop Neutral Density filter. Although the image was captured with the camera set to ISO200, the long exposure has caused greater noise than might otherwise be found in an ISO200 image in natural light.



Figure 15: Long exposure captured at the base ISO of 200

If we zoom in to the area of rocks and water, just to the left of the central post, we see the following.



Figure 16: Section of image magnified to illustrate colour noise

This is a section of the image magnified to 200% or 2:1. At this level of magnification we start to see the image becoming pixelated but the noise is also easier to pick out. In this case the colour noise is seen in the darker water area and shows up as coloured speckles.

To help you see this more clearly, the following image shows a side by side preview. The image on the left shows the colour noise whilst the right side has the colour noise removed. If you look quickly between the two you should be able to see the difference.



Figure 17: Section of the image showing Color Noise

Colour noise tends to become more severe and noticeable as the ISO of the camera is raised. This image was captured using the base ISO of the Olympus EM5 yet colour noise is still present. It underlines the need to remove such noise as it can easily become amplified in editing.

Luminance Noise

Luminance noise appears as a black and white fine grain in the image. In the following section of the image you see part of the sky viewed at 200% or 2:1 magnification.



Notice how the sky appears almost speckled with a fine grain structure. This is the luminance noise and tends to be most visible in areas of smooth or continuous tone. If you look at the land just below the sky, the noise is still present but it's much less noticeable. If though we were to lighten these shadow areas, we would reveal the noise.

Some people suggest Luminance Noise is like film grain. Whilst there are some similarities, it's still best to remove the noise otherwise sharpening and other adjustment will cause it to become distracting. You can see an example of this in the following image which has only a modest amount of sharpening applied.



Figure 19: The Luminance Noise in this image has been sharpened, making it more noticeable

In the following screenshot, you can see a before and after comparison. The image on the left has no noise reduction whilst the image on the right has both colour and luminance noise reduction applied. The difference is quite noticeable.



Figure 20: Image comparison to illustrate the effect of Noise Reduction

When removing both colour and luminance noise from an image, care must be taken not to soften the image too much. Applying too much colour noise reduction can cause image colours to bleed into each other or become desaturated. Applying too much luminance noise reduction will remove fine detail and structure from an image, making it appear soft or even "false".

It's essential you try to achieve a balance between the noise reduction and sharpening. This will help to ensure fine details are preserved whilst noise is removed. This can seldom be achieved in a single pass of sharpening and its often necessary to combine localised adjustments with global adjustments. In the next chapter, we will look at the different sharpening and noise reduction tools that can help us to achieve this.

Lightroom Sharpening Tools

In this chapter, we will examine the various sharpening and noise reduction tools offered by Lightroom. These will be considered as part of a three-stage sharpening strategy:

- 1. RAW or Capture Sharpening in which we apply global adjustments to compensate for the softening effect of digital capture as well as essential noise reduction.
- 2. Selective or Creative Sharpening where increased sharpening and noise reduction are applied to selected areas of the image. In addition to selected sharpening, we can also apply selected blurring to help de-emphasise elements of the image.
- 3. Output Sharpening where the image is optimised for the output medium, either screen or print.

Lightroom provides tools to support the demands of each of these three phases. But before you seek to apply these tools you must first ensure you correct any problems with the image. This means exposure and colour problems which can hide issues with noise. Equally, deficiencies in contrast and clarity can make images appear less sharp. Be sure to correct your image before starting adjustment for sharpening and noise reduction.

For the purposes of this chapter we will illustrate the tools in Lightroom using the image shown below. This image has been included twice in the accompanying download file. Once as a DNG file without any noise reduction or sharpening and once as a JPEG file. The JPEG file has both noise reduction and sharpening applied.



Figure 21: Starting image following adjustment in Lightroom

This image was captured using an Olympus Micro 43 camera (the OMD EM5) and Olympus 12-40mm lens. A 10 stop Neutral Density filter was used to produce the long exposure. If you have download the accompanying files for this book you will find this image as a full resolution DNG file (DNG files are RAW files using the Adobe DNG format). Basic corrections have been applied to the image but no noise or sharpening corrections have yet been made. You will therefore be able to load this image into your Lightroom catalogue to follow the adjustments presented.

Capture Sharpening

Capture sharpening (also referred to as RAW sharpening) is applied to counter the softening effect introduced by the capture process. This softening often occurs as many cameras are fitted with an anti-aliasing (AA) filter which introduces a soft blur to avoid problems with Moiré pattern in areas of fine detail. Lens imperfections are also introduced during image capture which can cause further distortion and softening.

The objective of Capture Sharpening is to remove any apparent softening of the image whilst at the same time removing obvious noise. You should not attempt to make the image appear super sharp in this stage. This risks introducing artefacts that could become visible in later processing. Think of capture sharpening as more of a balancing act where you can't quite achieve perfection in either noise reduction or sharpening. The aim is to optimise the two together.

Sharpening Controls

The tools we will use during Capture Sharpening are in the Detail panel of the Lightroom Develop module. You can see an example of this in the screenshot below.



Figure 22: Screenshot of the Detail panel in the Lightroom Develop module

To the centre of this panel you see a preview taken from a small area of the image. This is displayed at 100% magnification (also referred to as 1:1 in Lightroom) to help you judge the effect of your sharpening and noise reduction changes.

To the top left of the preview you will see a small square icon with a line on all 4 edges. Click this to activate the selection tool. You can then click on any point in the main image to select the new preview area. This is a useful option but the small size of the preview can be quite limiting.

In addition to using this preview option I would suggest zooming your main preview to at least 1:1 (100%) magnification. If you are using a large Mac with retina screen (or better) I would consider zooming the image to 1:2 (200%) magnification. These very high resolution screens can often hide problems that you might ordinarily expect to be visible at 1:1 magnification. You should consider a 1:1 magnification to be the minimum for sharpening on a screen with HD levels of resolution.

The sharpening controls available in the Detail panel are:

- Amount
- Radius
- Detail
- Threshold

The Amount slider controls the level of contrast adjustment applied to the edges in the image to enhance them. Remember, it's this increase in the contrast along edges that makes them appear sharper. The higher the value of the Amount slider, the greater the level of contrast adjustment applied.

Tip: You will often hear photographers talk about sharpening halos in a very negative way and say that they are to be avoided. In fact, sharpening halos are the basis of how sharpening works. The only way to avoid a halo is to not sharpen the image. What you do need to do is avoid the halos becoming visible so that the image appears false or the halos are distracting.

The other means of controlling the sharpening halo is to adjust the Radius. The Radius slider controls how wide the halo is with a 1 pixel Radius being the default. This tends to be a good starting point for most images, especially those with lots of fine detail, but don't be afraid to change the settings.

The Detail slider is like the Amount slider except that it targets sharpening on the very finest details in the image (sometimes referred to as high frequency detail). Care should be taken when using this slider as it can easily emphasise noise in the image.

When you find noise is becoming emphasised by your sharpening, you can use the Masking slider to reduce the effect. The Masking slider will limit the sharpening to better defined edges. When the slider is set to 0, no masking is applied and sharpening is applied across the entire image. As you move the slider to the right, the edges in the image must be increasingly well defined before they are sharpened. By the time the slider is all the way to the right, only the very strongest/most defined edges are sharpened.

Image Assessment

With your default sharpening settings applied, you should make an initial assessment of the image in different areas. Typically, you should be looking for:

- Areas that require more sharpening.
- Areas that require less sharpening.
- Areas where noise is becoming evident (this tends to be in the shadow areas, especially those that have been lightened). Noise can also become visible in areas of continuous tone such as the sky and clouds.
- Areas where sharpening halos are becoming too obvious.

This assessment is carried out at 100% (1:1 magnification) or greater. You should be assessing if more, or less sharpening is required as well as how much noise reduction (covered shortly) to apply across the entire image. Remember, the goal at this stage is to address any image softness and not to produce exceptional sharpness.

As part of your assessment, experiment by increasing and decreasing both the Amount and Detail sliders. If you find noise is becoming a problem, you may need to increase the levels of noise reduction and/or increase the Threshold slider. By adjusting these two sliders you will begin to understand how the image is responding and what other adjustments may be necessary.

Remember, when applying these changes, you don't need to achieve a perfect result. Some problems are best addressed in the Creative/Selective Sharpening phase where adjustments can be targeted on specific areas. For example, you might see areas of noise in the sky which can only be removed during Capture Sharpening by losing fine detail. In such circumstances, it may be best to address the noise in the sky using localised noise reduction.

Sometimes it may be difficult to judge the levels of sharpness in an image. Lightroom provides some features that you might find helpful if this is a problem. By holding down

the Alt key on your keyboard (Option key on the Mac) whilst adjusting the sliders, the display can be temporarily changed.

In the following screenshot, you see the effect on the image preview from holding down the Alt key whilst adjusting the Strength slider.



Figure 23: Effect of the Amount slider when used with the Alt key

Here the display is changed to a black and white preview. By removing the colour, it can become easier to judge sharpness. In this example a Before and After preview has been selected to show the difference in the sharpness. The image on the left is unsharpened whilst the image on the right reflects the adjustment. The difference in sharpness is much easier to perceive when displayed in black and white.

This same approach of holding down the Alt key can also be used when adjusting the Radius slider. Here the display changes to show the sharpening halo produced around the edges in the image. You can see an example of this in the screenshot below.



Figure 24: Effect of the Radius slider when used with the Alt key

Above, you see the original image on the left together with one showing the sharpening halo on the right. As you move the Radius slider you will see the preview change.

When the Alt key is used in combination with the Detail slider you also see sharpening

halos being created as shown below.



Figure 25: Effect of the Detail slider when used with the Alt key

These halos are at a lesser strength and tend to emphasis finer (higher frequency) detail. As you move the slider left and right you will see the amplification of these details changing.

When the Alt key is used in combination with the Masking slider you see the sharpening mask that's created. An example of this is shown below.



Figure 26: Effect of the Masking slider when used with the Alt key

To make sense of the screen here you need to understand that the sharpening is only applied to the white areas of the image. When the Threshold slider is to the very left with a value of 0, you will see a completely white image. This indicates the sharpening is applied across the entire image equally. As you move the slider to the right you will see the display start to change as the edges are highlighted in white. The further to the right you move the slider, the stronger this effect is. By the time the Threshold slider is over to the far right only the most defined edges are being sharpened.

The temptation when using these tools is to try to perfect your sharpening. This is a mistake as you will never achieve "perfection" in a single pass of sharpening. Good capture sharpening shouldn't strive for perfection but rather strike a balance with noise

reduction. You can then progress with confidence to the Selective or Creative Sharpening phase. This is where you can perfect your image noise reduction and sharpening.

Noise Reduction Tools

The noise reduction tools in Lightroom are an important component of the Capture Sharpening phase. If you don't minimise noise it will be sharpened, leading to artefacts becoming visible in later processing. Try to remove too much noise and you could damage image sharpness, colour/vibrancy and potentially even make your images appear false.

The noise reduction tools are found in the Detail panel under the Lightroom Develop module. You can see the tools highlighted in the following screenshot.

8		Detail
÷		
	Sharpening	
Amount	<u></u>	25
Radius		- 1.0
Detail		- 25
Masking	•	→ 0
	Noise Reduction	
Luminance		-
Detail	÷	⇒ 50
Contrast	<u>e</u>	
Color	•	— o
Detail		- 50
Smoothness	<u> </u>	⇒ 50

Figure 27: Noise reduction tools in Lightroom for Capture Sharpening

In Lightroom, noise reduction is divided into two types. There is Luminance noise which looks a little like grit or grain in the image. There is also colour noise which appears as coloured speckles in the image, often visible in shadow areas. Both types of noise will become more prevalent as the ISO setting is increased. Shooting long exposures can also lead to noise increasing (even when shot at low ISO settings) due to the camera sensor heating up. Many cameras have a long exposure noise reduction setting to address just this problem.

To assess the levels of noise and apply effective adjustments, you must view the image magnified to at least 100% or 1:1. Where the magnification is less than this, it's unlikely

that you will be able to identify problems. In the following screenshot, you can see a section of an image magnified to 200%. This allows the luminance noise to be clearly seen in the shadows.



Figure 28: Example of an image showing Luminance Noise

The Luminance noise reduction is controlled by three sliders:

- Luminance controls the strength of the noise reduction applied to the image. The higher this value the greater the level of the noise reduction. The noise reduction works by blurring detail that Lightroom identifies as noise, but valuable fine detail can also be mistaken for noise. The finer the detail, the greater the chance it will be mistaken for noise and removed. It's this loss of fine detail that can give rise to the false, "plastic effect" in images.
- Detail only becomes active once the Luminance slider is set to a greater value than 0. This works in a similar way to the Masking slider discussed earlier, controlling a threshold value for the Luminance slider. At higher levels the noise reduction is only applied to the strongest noise, so helping retain fine details in the image. At lower levels, the noise reduction will be applied only to weaker noise which can be mistaken for and cause the loss of fine detail.
- Contrast only becomes available when the Luminance slider is set to a value above 0. Aggressive luminance noise reduction can cause the image contrast to suffer. If you find this is a problem, you can increase the Contrast slider to counter the effect. The higher values increase the protection of contrast but can sometimes result in a strange mottling effect. At lower values the results will be slightly smoother but could lack contrast.

In the following image, we have the same section of a photograph magnified to 200%. This time the image is showing the colour noise in the shadow areas.



Figure 29: Example of an image showing Color Noise

The colour noise reduction is controlled by three sliders:

- Color controls the strength of the noise reduction to be applied. The higher the value the greater the strength of the reduction.
- Detail works similarly to the luminance Details slider described above. At higher levels, colour in fine areas/edges will be preserved but at the expense of some colour noise speckles appearing in other areas. At lower values the colour speckles are removed but it can cause "colour bleeding".
- Smoothness can help in smoothing out areas with stubborn colour speckles. At 0 it has no effect and at 100 it is at is maximum strength. The problem you might find is that when used at higher values it can result in a loss of colour. This can cause the image to look a little less vibrant in some instances.

As mentioned, noise reduction and sharpening need to be carefully balanced during the Capture Sharpening phase. If we don't take care with this, we risk removing fine details or sharpening noise. Take a moment to examine the following side by side image comparison. The colour has been removed so you can see the effect more clearly. The image on the left has limited noise reduction whilst the image on the right has too much. Despite the image on the Right also being sharpened, the loss of the fine detail isn't correctable and the image appears softer.



Figure 30: Noise reduction and Sharpening comparison

You need to understand that you will never achieve perfection in this stage of the sharpening process. You will most likely need to accept some fine Luminance noise remaining as well as a very slight softness to your image. This is perfectly acceptable as remaining "problems" can be addressed within the Selective Sharpening stage.

Capture Sharpening in Practice

Capture sharpening should be carried out following basic global image adjustment. Make an initial assessment of the image at 100% (1:1) magnification. If you are using a Mac with a large high resolution retina screen, you might find it's difficult to see the sharpening effect. I personally find that when using a Mac with a 5K display, I need to use a 200% (1:2) magnification. If I don't, I find it easy to apply too much sharpening and noise tends to become exaggerated. This becomes obvious when I transfer the image to my PC (with a 1920 x1080 display).

When you are ready to start Capture Sharpening, set the sliders to 0 so that no sharpening or noise reduction is applied. Find an area with good focus that you can use as a point of reference. Concentrate on this area as you adjust the sharpening then check around the image for problems becoming evident. If you find any, look to correct these but always keep in mind the correction doesn't need to be perfect at this stage.

Move now to adjust the noise reduction. Again, seek to remove sufficient Luminance and Color noise so that it isn't obvious. Avoid trying to perfect the noise reduction or removing fine detail that might be important to the image.

Having adjusted the noise reduction, you might find that the image requires additional sharpening. Return to the sharpening sliders and adjust these as/if required. You can continue to iterate between the sharpening and noise reduction as required until you are satisfied a good balance has been achieved.

One final point to address is the question of how much sharpening to apply to an image.
At this stage, it's easy to worry that you aren't applying sufficient. Don't. Your goal is to produce an image that appears crisp but which doesn't have any obvious sharpening issues:

- Obvious halos around edges, especially high contrast edges.
- Noise becoming visible.
- Image taking on a brittle appearance rather than having depth.

If you can avoid these problems and achieve a crisp image, the next phase of sharpening and noise reduction will allow you to perfect the image.

You will find sharpened versions of the example images included in the download file for this book. These can be compared with your own sharpened images to better judge the level of sharpening to apply.

Capture Sharpened Example

Below you can see a side by side before and after screenshot. This shows part of the image magnified to 100% (1:1) on my PC screen.



Figure 31: Before and after image illustrating the effect of Capture Sharpening

Notice the sharpened image on the right is much crisper than the image on the left, especially in the fine rock detail. The sharper image also has a greater feeling of depth. This is particularly evident when you look at the rock in the top half of the frame. You no longer feel that you are looking at a two-dimensional photograph.

In the following screenshot, you can see the effect of sharpening on more distant objects.



Figure 32: Before and after comparison showing the effect of Capture Sharpening on distant objects

Notice how much sharper the rocks in the lower part of the frame appear. The boat on the horizon and the clouds also appear clearer and better defined. Finally, notice that the colours in the scene appear a little stronger. This effect is created by the contrast increasing effect of the sharpening. Whilst this is often desirable, it can also lead to colour shifts in some instances (an effect you may not want).

The final comparison for this image is take from the sky.



Figure 33: Effect of Capture Sharpening on an area of the sky

It's recommended when sharpening to check areas along the horizon. Edges where the land or see meets the sky can often suffer from sharpening halos becoming obvious as well as noise being revealed in the sky. In this example, the headland is sharp, clearer

and more detailed. Most importantly, there is no obvious halo. There is though an element of fine Luminance Noise starting to become visible in the sky. At this level, the noise isn't a problem as it can be easily corrected with a Selective Sharpening adjustment.

Selective Sharpening

If you are familiar with Lightroom for RAW conversion/image enhancement, you will most likely have used the selective adjustment tools. The currently available tools are:

- Gradient Filter
- Radial Filter
- Adjustment Brush

You will find the adjustment tools located in the "Develop" module of Lightroom, just below the histogram. You can see these indicated in the following screenshot.

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				L.
Library Develop	Map Boo	k Slide	show Prin	it Web
			Histo	gram 🔻
	ISO 200	13 mm	f/8.0	8.0 sec
	🔲 Original Photo			
			0	-
	·		i.	Basic 🚿
			Tone C	urve 🚿
	-	HSL	/ Color / I	3&W ≪

Figure 34: Selection tools in the Develop module

When you click on one of the tool icons, a new panel opens to reveal a series of adjustment sliders. The changes you make with these sliders are only applied to the area you have selected. Each of the selection tools has the same adjustment sliders available, it's only the tools that differ, each tool favouring a different selection shape.

1. The Gradient allows you to drag out a graduated selection. When selected, you can click on a point in your image, drag the mouse and then release your click. Between the point where you clicked and then released the mouse is a feathered selection area. To one side of the gradient the selection is at full strength and to the other side there is no selection. This tool is well designed for selecting large areas where there is a clear, straight transition. For example, the sky in a

landscape image.

- 2. The Radial tool allows you to drag out a circular or oval shaped selection where the edges of the selection are feathered. You have control over the feathering as well as the selection being inside or outside the circle/oval. This is useful for creating a vignette like effect where you can sharpen the centre of the image or blur the edges.
- 3. The Adjustment Brush tool is best for making irregular shaped adjustments or adjustments to areas that are not continuous. You have control over how hard or soft the brush is as well as the opacity. It's possible to configure the brush so that multiple strokes need to be applied to build up the selection. This creates a natural blend with the image when adjustments are applied.

With these three adjustment tools, you can apply selective adjustments to any image. The Selective adjustment tools all share the same adjustment controls. You can see indicated in the screenshot below by the outer of the two red rectangles.

	•	0		
Mask :			New	Edit
Effect :	Custom ¢			
Temp		<u> </u>		
Tint		<u> </u>		0
Exposure		<u> </u>		0.00
Contrast	(—	_		
Highlights				
Shadows		<u> </u>		
Whites		é		
Blacks		•		
Clarity				
Dehaze	<u> </u>	_		0
Saturation		•		
Sharpness	e	۵		0
Noise	<u> </u>	<u> </u>		0
Moiré	<u></u>	_		0
Defringe		•		
Color			X	
Brush :	A B		Erase	V
Size				8.0
Feather	<u> </u>	•		66
Flow	Auto Maste	•		65
Density				100
			Reset	Close

Figure 35: Adjustment controls found in the Selection Tools

Amongst the various adjustments, you will find sliders for Sharpness and Noise as

indicated by the inner rectangle. When adjusted, these sliders apply adjustments to the areas that have been selected. These two sliders apply a further adjustment to the noise and sharpness settings applied during Capture Sharpening.

The default position of the two sliders is 0 where they have no effect. As you move the sliders to the right you apply a stronger adjustment to the selected area. The noise reduction or sharpening effect you apply is based on the settings you have applied in the Detail panel.

The Sharpness slider operates slightly differently to the Noise slider. When you move the Sharpness slider to the left you are removing the sharpning effect applied in the Detail panel. If you reduce the Sharpness slider beyond -50 you begin to introduce a blur to the selected area. You can see an example of this in the following screenshot where an area of the post has been selected and the Sharpness slider set to -100.



Figure 36: An area of blur has been applied to the image using negative sharpening

If you wish to apply additional sharpening or blurring and Noise reduction beyond the limits of the slider you can duplicate your selection. In the following screenshot, you can see a blurring brush adjustment which has then been duplicated twice. Notice how the selected area is much more blurred than when a single selection is used.



Figure 37: Applying multiple selections for additional blurring

Refining Gradient and Radial Selections

With more recent versions of Lightroom (released in 2016), both the Gradient and Radial filter include a new Brush tool. This allows for further irregular adjustments to the selected area. You can see the screenshot of the new brush tool below in this case, on the gradient filter.

	•	\bigcirc	0	
Mask :			New Edit	Brush
Effect :	Custom ¢			V
Temp	÷			0
Tint				0
Exposure	<u> </u>	-	<u> </u>	0.00
Contrast		<u> </u>	<u>a) 74 - 17 - 21 - 11</u>	0
Highlights	<u></u>			0
Shadows				0
Whites				0
Blacks		<u> </u>		0
Clarity	<u>, 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</u>	-	<u> </u>	0
Dehaze			inila	0
Saturation	<u>e</u>	۵	*****	0
Sharpness	et 1 1 1	-		0
Noise	<u>, 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</u>			0
Moiré	<u>el 11 11 11 11 11 11 11 11 11 11 11 11 11</u>	-	-1115	0
Defringe	<u>, an in an an</u>	<u> </u>	<u> </u>	0
Color			×	
Brush :	A B		Erase	
Size	<- ≜			6.0
Feather	e		•	66
Flow				85
■ Density	Auto Mask		•	100
			Reset	Close

Figure 38: Brush tool highlighted within the Gradient Filter

Having applied a selection with either the Gradient or Radial filters, you can further refine the selection. By clicking on the Brush link as indicated above, the Brush Tool panel will open. This looks and works in the same way as the Adjustment Brush tool.

This panel provides access to three brushes that can be configured. These are the A, B and Erase. When you use either brush A or B you can add to the selection that's been made. When you use the Erase brush you can remove areas of the selection. Consider the example of using the Gradient tool to select an area of sky in an image. If the horizon was uneven and featured something above the horizon that you didn't want to adjust, you could use the Erase brush to remove that part of the selection. We will look at a specific example of this shortly.

By introducing a Brush tool into the Gradient and Radial filters, Adobe has created a very effective selection tool. It's now often much quicker to create large irregularly shaped selections rather than trying to do this using just the Adjustment Brush.

Selection Strategies

When deciding how to create a selection, try to break the image down into areas that you want to adjust. Think of dividing the image up into different zones and then which of the tools helps you select that zone.

The following example demonstrates this concept with our image. For example, if you want to select the sky use the Gradient tool. This creates a selection that covers the sky but unfortunately also coves the distant hills. Any adjustments we then apply will be applied both to the sky and the hills, which we don't want.



Figure 39: Selecting the sky with the Gradient Filter tool

In the above screenshot, you should notice the option to the bottom left of the screen has been selected to "Show Selected Mask Overlay". This causes the selected area to be displayed with a red overlay, which can be very helpful in understanding the area that will be affected by your adjustments.

We can now use the Brush tool (at the top right of the Gradient tool panel) to remove the selection from the distant hills so that we don't affect them when we adjust the sky. You can see an illustration of this below.



Figure 40: Notice how the sky is selected but the selection has been removed from the hills using the Erase brush

In the following screenshot, you can see a side by side comparison of the adjustments. Notice how the residual noise has been removed from the sky and at the same time the Capture Sharpening applied to the hills is unaffected.



Figure 41: Before and after comparison for a small area of the image

In this example, the sharpening of the land is the RAW Capture sharpening that was applied in the previous section. Further adjustment of this was then avoided by removing the land from the Graduated selection using the Erase brush. By combining the capture sharpening of the land with the "smoothing" of the surrounding area the improvement becomes even more noticeable (but remain natural). Notice also that the land that has been sharpened now appears to have greater contrast than in the starting image.

Having selected the sky, a localised adjustment can be applied to the area to increase the level of noise reduction whilst also removing the sharpening. The increased noise reduction was necessary as it was not possible to achieve sufficient noise reduction in the Capture Sharpening phase.

The Capture Sharpening that was applied to the sky was also removed from this selection as we want to avoid sharpening clouds which can lead to noticeable artefacts. Having made these changes to the selection we can also safely increase the Clarity in the sky. This helps to better define the clouds. Had we applied additional clarity without removing the sharpening and noise from the area, we would have accentuated the noise that was present.

In the following screenshot, you can see a before and after comparison of the adjustments.



Figure 42: Before and after comparison of adjusting the sky

Notice in the above screenshot how the sky in the adjusted image appears sharper and better defined even though we have removed the sharpening. This is the result of the Clarity adjustment.

The next adjustment in the Creative Sharpening phase for this image is to address the foreground detail. We will make the selection using a Gradient filter again. This allows a large portion of the selection to be made easily as can be seen in the following screenshot.



Figure 43: Selecting the foreground using the Gradient filter

Here we have selected most of the foreground detail but it's not been possible to select the two posts which extend into the sea. These can be added to the selection using the Brush tool on the Gradient filter as indicated in the following screenshot.

	0000		
Mask :		New Edit	Brush
Effect :	Custom ¢		V
Temp	<u></u>	<u></u>	0
Tint	······································	<u></u>	0
Exposure	<u></u>	<u></u>	0.00
Contrast	<u></u>	<u>, , , , , , , , , , , , , , , , , , , </u>	2
Highlights		<u>a a t</u> ig	- 20
Shadows	<u> </u>	<u>18 - 62 - 61 - 76</u>	0
Whites	<u></u>	<u></u>	- 7
Blacks	<u>,</u>		0
Clarity	<u></u>		10
Dehaze	<u></u>	<u>, , , , , , , , , , , , , , , , , , , </u>	4
Saturation	<u> </u>	<u></u>	0
Sharpness	<u>,</u>	<u> </u>	15
Noise			23
Moiré		<u> </u>	0
Defringe	<u> </u>	<u> </u>	0
Color		M	
Brush :	A B	Erase	
Size	· · · · · · · · · · · · · · · · · · ·	*	22.0
Feather		````	66
Flow	Auto Mask	- •	75
Density		۵	100
E		Reset	Close

Figure 44: Using the Brush Tool to refine the Gradient selection

The screenshot shows that the Gradient tool has been selected and the Brush tool within this activated. When the Brush tool is selected within the Gradient filter a Brush settings panel opens just below the adjustment sliders. Here we have selected Brush A.

With Brush A selected you can set the Size, Feather, Flow and Density to paint in the additional selection. This will add the new selection made with the Brush to the selection made with the Gradient filter. In this following screenshot, you can see where the posts have been selected.



Figure 45: Additional selection applied to the Gradient Filter selection

If you find you paint over the sea in error, you can correct this with the Erase brush. Sometimes it can be quite difficult to make an accurate selection in which case the "Auto Mask" option can be selected.

My own personal preference is not to use the Auto Mask option unless there is a clear reason for doing so. When the Auto Mask option is active, the software will sample the colour and tone of the pixels below the very centre of the brush and then use this information to select other pixels within the circumference of the brush. This can lead to gaps in the selection which require many brush strokes to fill. If you find this a problem, consider only using the Auto Mask feature along edges where you need a precise selection. The rest of the selection can then be made with this option turned off.

In the following screenshot, you can see a before and after comparison at 1:2 or 50% magnification.



Figure 46: Before and after comparison of the local adjustments

Here we have applied additional Sharpening, limited Noise Reduction, Clarity and Dehaze to better define the posts. As it's been possible to make a relatively precise selection the sharpening makes the posts stand out against the smooth sea, creating a feeling of depth in the image.

Next, we will explore the Adjustment Brush selection tools and how this can be used to select an irregular area such as the sea.

Adjustment Brush Tools

The brush tools we have examined so far have been attached to the Gradient and Radial filters. The good news is that the standard Adjustment Brush looks and works in the same way.

The great benefit of the Adjustment Brush is that it allows you to make irregular selections to which adjustments can then be applied. The following screenshot highlights the Adjustment Brush tool and the brush settings at the bottom of the panel. It should appear quite familiar.

) •–	_	
Mask :			New	Edit
Effect :	Custom ¢			
Temp		•		0
Tint		•		0
Exposure	-	- •		0.00
Contrast		- •		0
Highlights				0
Shadows		- <u>.</u>		0
Whites		_ _		0
Blacks	* <u>************************************</u>	•		0
Clarity	. <u> </u>			0
Dehaze	ć	- 		0
Saturation	(<u>)</u>	•	x	0
Sharpness		- 		0
Noise	-	- 6		0
Moiré	<u>, 11 - 14 - 11 - 1</u>	_ _		0
Defringe		•		0
Color			M	
Brush :	A B		Erase	V
Size				8.0
Feather		•		66
Flow	-			75
	Auto Mask			
Density			•	100
Ξ			Reset	Close

Figure 47: The Adjustment Brush tool

There are three brushes that can be selected within this panel, A, B and Erase. The A and B brushes allow you to select areas whilst the Erase brush is to remove areas selected in error or correct overspill. A good strategy is to configure the A and B brushes separately so that one is a large soft brush for quickly selecting large areas and the other is a smaller hard edged brush for more detailed, precise work.

The Size slider is used to increase or decrease the brush diameter. When you move the mouse cursor over the image with the Brush selected you will see that it changes to be two circles, one inside the other with a small cross in the centre. The inner circle is the size of the brush. In addition to controlling this with the slider you can use the [and] keys on your keyboard. The [key reduces the size of the brush and the] increases it. This can often be easier than using the sliders as you can position your brush next to the area to be selected whilst you change the size.

The Feather setting defines how soft the edge of the brush is. Hard brushes are better for precise work but are often difficult to blend selections seamlessly with the image. Soft brushes blend adjustments into the image easily but are more difficult to use for

precision work. When you select a brush, then move your mouse over the image, you will see the cursor change to represent the brush. You will see that the brush has two circles, an inner and an outer and there is a small cross or point in the centre. The space between the inner and outer circle of the brush represents the feathering applied to the edge of the brush. The larger the gap between the circles, the softer the brush.

Flow defines how much "paint" is applied by each brush stroke. A value of less than 100 means you will need to apply multiple brush strokes to the same area to reach the maximum Density of selection. Setting the Flow to less than 100 is a good idea if you want to blend changes seamlessly with your image. When you need to apply multiple brush strokes to create a selection, each brush stroke will follow a slightly different path, helping any adjustments blend more naturally with the image.

The Density slider allows you to adjust how strong the selection is at maximum strength. You can think of it as an opacity slider for the selection. The maximum Density value is 100.

The other tool you have available is the Auto Mask option. When checked, the software checks the area of the image below the centre of your brush to determine what to select. For example, you might be painting over a rock to create a selection but if the edges of your brush strays outside the rock, only the rock will be selected.

There are though limitations to be aware of when using the Auto Mask option. The option only works if the object being selected is easily discernible from its surroundings. If for example a rock is surrounded by other rocks, you might find these are also selected. A second possible problem is when there is a high degree of variation in tone and colour within the area being selected. Here you might find you need to go over the area many times to create full selection with no gaps. This can make selecting quite large area slow and challenging with this option selected. You would be advised to only use the Auto Mask option where you need to.

In the following screenshot, you can see a red mask indicating the area of sea that's been selected using the Brush tool. We are then able to apply adjustments selectively to this area.



Figure 48: Selecting he sea with the Adjustment Brush

As this image is a long exposure the sea should be smooth but this also tends to make noise more visible. By selecting the sea, we can reduce the sharpening, possibly apply a little blurring, as well as increase the noise reduction. In the following screenshot, you can see a section of the image magnified to 100%.



Figure 49: Selecting and smoothing the sea

By applying an increased level of noise reduction and negative sharpness we have ensured a very smooth appearance on the surface of the water.

Other Selective Adjustments

For the purposes of this book we are interested in those adjustments that will allow us to sharpen up fine details, blur areas and apply additional noise reduction. The key adjustments available to us in Lightroom are indicated in the following screenshot.

	• • •	0
Mask :		New Edit Brush
Effect :	Custom ¢	
Temp		0
Tint		0
Exposure		0.00
Contrast		0
Highlights	••	0
Shadows		0
Whites	·	0
Blacks	6	0
Clarity		0
Dehaze		0
Saturation		0
Sharpness	è	0
Noise		0
Moiré	•	0
Defringe		0
Color		X
8		Reset Close

Figure 50: Key sharpening and noise reduction adjustments available in the selective tools

In the above screenshot, you can see the Sharpness, Noise, Clarity and Dehaze sliders highlighted. The Clarity and Dehaze sliders are relatively new to Lightroom so it's possible you may only have the Clarity slider or neither. If you do have access to these, they can be very useful in enhancing your images as they provide a micro contrast adjustments. Micro contrast adjustment is important to us as too little can give the impression that an image lacks sharpness. By increasing the Clarity and Dehaze sliders in selected areas, you can create a three-dimensional appearance with greater depth to the image.

The downside with both adjustments is that they can also emphasise noise in the image. You might therefore need to use additional noise reduction in these areas. Additionally, as they increase the contrast, they can cause areas to become darker and possibly even lose shadow detail.

In the following screenshot, you can see the post where additional Clarity and Dehaze

has been added. To counter the problem with the shadows blocking the Black and Shadows sliders were also adjusted.



Figure 51: Before and After comparison of the effects of the Clarity and Dehaze sliders when used with selective sharpening

Despite these negatives, if you have these sliders you should consider using them. An interesting technique that you might like to try is to select or outline larger objects in your image with the Adjustment Brush then apply additional Clarity and Dehaze. This can add a real feeling of depth to the image.

You can see this technique having been applied to the foreground rocks in the comparison below. Notice how the image on the right has a greater feeling of depth to it whilst the image on the left is rather flat in comparison.



In case you were wondering, here is the side by side of the foreground at 100% (1:1) magnification.



Figure 53: Effect of selective Clarity and Dehaze adjustment at 100% magnification

Having applied all your Capture and Selective sharpening you can consider this image to be a complete, Master File. In the next section, we will look at the final phase of sharpening which can be applied to a copy of your Master File.

Output Sharpening

Output Sharpening is the final stage of the sharpening process and should take place once all other adjustments have been applied to the image. Typically, you will apply Output Sharpening to a copy of your Master File, something that Lightroom will support automatically. For the purposes of this book we will consider Output Sharpening to be either Print or Screen. Each time you produce a new output image, you would apply Output Sharpening based on the type of output. For example, an image destined for screen display will be sharpened differently to one that will be printed on glossy paper.

Output to Print

When it comes to producing a printed image, Lightroom is a great tool to use. In addition to offering colour management and soft proofing, it incorporates a very good and simple to use sharpening option. You can see this indicated in the screenshot below of the Print module.



Figure 54: Screenshot of the Lightroom Print module indicating the print sharpening options

When you switch to using the Print module in Lightroom, the currently selected image will be displayed ready for printing. The options to control the printing are displayed in the panels on the right side of the screen. Scroll down to the bottom of this section and you will find the "Print Job" panel. This is where the Output Sharpening options are located.

In the following screenshot, you can see the Print Sharpening options being selected.



Figure 55: Selecting the Print Sharpening options

Notice there are three levels of sharpening which can be selected from a dropdown list. These are simply Low, Medium or High. You should select the level of sharpening to be applied that you feel is appropriate to your print content. For example, if you have a portrait with lots of soft skin you might select Low whilst for a Landscape with lots of fine detail you might select High.

In addition to selecting the level of Print Sharpening you should also select the Media Type. You can see this indicated in the following screenshot.



Figure 56: Selecting the Media type for the print sharpening

Two options are currently available under the Media Type dropdown list; Matte or Glossy. Selecting these causes an appropriate level of sharpening to be applied based on the type of surface you will be printing to.

People who are not used to printing from Lightroom often complain that they can't see the level of sharpness being applied and that they have little control over this. This is true however the levels of sharpening applied is determined by your two selections discussed above. You should trust that the Adobe engineers have programmed this correctly based on the selections you have made.

This approach is probably a good one. Most people when sharpening for print will tend to under sharpen the image if they can see the results on a screen. It's most likely that if you look at a well sharpened image destined for print, you would think it was over sharpened.

Output to Screen

Whilst the above has focussed on the image being output for print, it's equally possible to output the image for screen display. This can be applied when exporting an image. The following screenshot shows the Export File dialog where the output sharpening option has been highlighted.

Export To:	Hard Drive 🗸	
eset:	Export One File	
▼ Lightroom Presets ^	▶ Export Location	D:/Working Area/Images to Process/Untitled Export
Burn Full-Sized JPEGs	▶ File Naming	RWhalley_EM5_2014_118090534-Editof
Export to DNG	▶ Video	
For Email	▶ File Settings	TIFF / AdobeRGB (1998) / 16 bit
For Email (Hard Drive)	▶ Image Sizing	300 ppi / Resize Long Edge to 6000 pixels
HDR Efex Pro 2	▼ Output Sharpening	
 HDR projects 4 professio Helicon Focus 	Streen V	mount: Standard
Photomatix	▶ Metadata	All Metadata, Remove Location Info, Remove Person Info
SHARPEN projects profe	▶ Watermarking	No watermark
X-Rite Presets	▼ Post-Processing	
ColorChecker Passport User Presets	After Export: Open in Adobe Photoshop CC 2015.5	~
A4 FibaPrint Byrata eBay Microstock Export v	Application: Choose an application	✓ Choose
Add Remove		

Figure 57: Sharpening options when generating an image file

Here you can select to sharpen the image for Screen, Matte or Glossy. You can see this in the screenshot below.

Export Location				D:	Working Area Ima	ges to Process\Untitled E	xport
File Naming					RWhalley_E	M5_2014_11B090534-E	Edit.tif
Video							
File Settings					1	NFF / AdobeRGB (1998) /	16 bit
Image Sizing					300 ppi / R	lesize Long Edge to 6000	pixels
V Output Sharpenii	ng						1
Sharpen For:	Scre	en	~	Amount:	Standard	~	
Metadata	~	Screen		All Meta	adata, Remove Loca	ition Info, Remove Perso	n Info
Watermarking		Glossy Paper				No water	mark
Post-Processing	-						
After Export:	Oper	n in Adobe Photoshop	CC 201	15.5			~
Application:	Choo	se an application				▼ Choose	

Figure 58: Selecting the destination for the image

When selecting the Screen option, your image file will be optimised for screen viewing. Given the resolution of most digital cameras today, it's likely you will also need to reduce the image size to view the image effectively on a screen. If you will be reducing the image size be sure to do it either before the export or within the Export dialog, using the Image Sizing section.

The other two options are Matte and Glossy. Here the image file produced will be sharpened as if it were going to be sent for printing on either Matte or Glossy paper. This is very useful if you are going to be sending the files to someone for printing. Just be sure to check with whoever will be printing your image that they don't apply additional print sharpening.

The other option you have control over in this dialog is the Amount. This controls the level of sharpening applied to the image. The available options are High, Standard or Low. You can see this indicated in the screenshot below.

Export Location		D:^	Worki	ing Area\Images to F	Process\Untitled Export
File Naming				RWhalley_EM5_20	14_11B090534-Edit.tif
▶ Video					
File Settings				TIFF / Ad	dobeRGB (1998) / 16 bit
Image Sizing				300 ppi / Resize Lo	ong Edge to 6000 pixels
Output Sharpenin	g				
Sharpen For:	Screen ~	Amount:	Stan	dard	~
Metadata		All Meta		Low	nove Person Info
Watermarking			*	High	No watermark
Post-Processing			-		
After Export:	Open in Adobe Photoshop CC 2	015.5			~
Application:	Choose an application				▼ Choose

Figure 59: Selecting the level of sharpening to apply

Output Sharpening is largely automated for you in Lightroom. Its purpose is to either counter the softening effect of the print process or to provide the best rendition of the image on a screen. You are given limited control over sharpening decisions to ensure the image is correctly sharpened based on the key variables. The greatest control you have over sharpening is in the Capture Sharpening and Creative Sharpening stages. It's also these stages that will provide the maximum benefit for your work, although this is not to play down the importance of Output Sharpening.

In the next chapter, we will consider some specific image examples and how you might choose to address the sharpening of these.

Assessing Image Needs

Not all images have the same sharpening needs and for this reason I am against providing default settings and recommendations. A much better approach is to evaluate each image to determine its needs. You may well have seen requests and recommendations for sharpening settings on various photography forums and even in books. I hope by this point you understand that the variable involved are so great that this "sharpening by numbers" approach is not a good one to adopt.

This chapter looks at some of the important differences to be aware of when assessing the sharpening needs of individual images. This is achieved by considering several broad image categories after which I'm sure you will be able to apply the logic to other image types. The images discussed will then be taken forward as "Worked Examples" in the next chapter allowing you to practice your skills.

Despite this broad approach, it's important though that you don't try to treat all images of a certain type the same. For example, some architectural images may feature fine details that need to be enhanced to convey the roughness of stone. Others may feature lots of glass and straight lines, which will require a different treatment. It's the characteristics of the individual image that are important in determining how you will process it.

Sharpening Architectural Images

When we sharpen architectural images, we should seek to emphasise the structure of the building. The architectural image will typically have lots of edges that will benefit from some degree of sharpening. It's also quite likely that there will be shadow areas that contain noise which we should try to remove and avoid inadvertently sharpening.

In the example below we see a typical architectural image featuring St Paul's Cathedral in London.



Figure 60: St Pauls Cathedral in London, prior to any sharpening

The image was captured using an Olympus EM5 Micro 43 camera at ISO 400. As the Micro 43 format is a relatively small sensor it's likely to exhibit more noise than a Full Frame sensor. Although this example was captured at ISO 400, this is above the base ISO for this camera meaning that levels of noise in the image will be elevated. Our Capture Sharpening should take this into account to ensure any noise is removed (to a reasonable degree) and we avoid sharpening any that's remaining.

The building features lots of lines and edges but relatively little fine detail that would benefit from sharpening. Our sharpening should therefore concentrate on sharpening the edges. There is no point attempting to sharpen fine textures in the stonework as this is likely to be noise rather than detail the camera has resolved. We should therefore ensure we use the Masking slider during Capture Sharpening to restrict the effect to well defined edges.



Figure 61: Magnified section of the building viewed at 100% to show the detail

Given the nature of the image, it's unlikely additional selective sharpening will have much effect. Selective Contrast and Clarity adjustment however could be used to enhance the structure of the building to give it more of a three-dimensional appearance.

If you have downloaded the example files accompanying this book and review the DNG version, you will find the sky has been adjusted. These adjustments were intended to darken the sky and prevent a loss of detail in the clouds. A side effect of the adjustments used is that noise will possibly become more evident in the clouds.



Figure 62: Section of the sky from the image at 100% magnification showing the noise that's present

To ensure we avoid noise becoming visible in the sky we should consider applying increased selective noise reduction and possibly reduce the sharpening of this areas.

Sharpening Noisy Images

Shown below you can see the example photo that will most likely suffer from image noise. The image was captured using the Olympus EM5 Micro 43 camera. This was taken inside a stately home in the UK that had once been used as a hospital during the First World War.



Figure 63: Example image shot at a high ISO with lots of shadow areas

The situation is low light, shooting into bright high contrast window light. It was therefore necessary to open the shadow areas in post processing to reveal the details which were otherwise too dark. In doing this sensor noise was revealed. As it was not possible to use a tripod for the image, a setting of ISO800 was used to ensure a sufficiently fast shutter speed could be achieved for hand holding the camera.

If we take a closer look at some of these shadow areas, we can see quite significant noise. Shown below is one such area of the image which has been magnified to 100% or 1:1 resolution.



Figure 64: Magnified section of the image showing sensor noise

If you look closely at the jug, you can see the outline is very clear and well defined. The surface of the jug however displays considerable noise which is easily seen against the smooth tones.

Looking further down the image into the darker areas, the noise is even heavier as can be seen below.



Figure 65: Dark area of the image displaying high levels of noise

Here the image is suffering from Luminance and Colour noise. This will need to be removed as part of the Capture Sharpening otherwise it will become visible during later post processing.

In addition to the noise reduction, there are several strong edges that would benefit from

being emphasised. This image works because of the light and the strong graphical elements. These elements need to be sharpened so that their edges are clearly defined. We can achieve this by concentrating our sharpening onto these edges whilst avoiding the image noise. In addition to the edge sharpening, we can also use the approach of brushing a Clarity adjustment onto the strongest graphical elements in the scene to help produce a feeling of greater depth.

Sharpening Fine Detail and Landscapes

Landscape images will often feature lots of fine detail which will benefit greatly from sharpening and contrast enhancement. Such images are also likely to feature clouds and shadow areas which could contain increased levels of noise.

A further aspect of the Landscape Image that we need to consider is that they often feature distance. For example, the scene below contains a near foreground as well as distant objects. All of which will require sharpening but probably not to the same degree. It's likely that some elements (usually in the foreground) will benefit from additional sharpening to help the illusion of depth.



Figure 66: Example landscape image

In this image, we will need to pay attention to the sky and clouds which have been darkened slightly in post processing. Such processing in Lightroom will often result in noise becoming more visible. Such noise would be further emphasised by sharpening if we didn't treat it through noise reduction or even avoid sharpening the area.

In the following screenshot, you can see a section of the clouds at 1:1 magnification. Noise is already visible in the clouds, even prior to sharpening.



Figure 67: Section of cloud magnified to 100% showing signs of image noise

Looking more closely at the shadows of the distant hills, we find these also exhibit noise that will need to be treated.



Figure 68: Distant hills showing signs of noise

A further problem in this image is the lens flare on the right of the screen caused by the sun coming into the frame. You can see this section of the image below at 1:1 magnification.



Figure 69: Magnified section of the image which appears soft due to the lens flare

Notice the area has some noise but more importantly that the fine detail and tree are soft. This area will need to be sharpened up and the contrast increased slightly.

Other Image Types

There are many other image types that you might work on including macro, portraits, night and underwater. Each will have its own general characteristics that you will need to consider when applying sharpening and noise reduction. Be sure to consider these when developing your sharpening strategy and do this whilst reviewing the image. It's not sufficient to apply general guidelines if you want to produce top quality results. You must consider the characteristics of the specific image you are working on.

Take for example a night image. This is likely to be dark and may contain a lot of noise depending on how the image was captured. Was it shot at a high ISO? Was it a long exposure? Was long exposure noise reduction applied?

Another example is the portrait. Typically, you might want to avoid emphasising skin blemishes so a softening effect might be applied selectively to problem areas such as wrinkles. At the same time, you might want to apply additional sharpening to areas such as the eyes, hair and mouth to emphasise these.

Now consider a gritty black and white portrait of an old man. It's unlikely that you will want to process this in the same way as a colour image of a young woman. Here you might want to emphasise the rough texture of skin and the hair. This highlights the need for you to develop a vision of your finished image and then apply a sharpening strategy that's appropriate to that.

In short, take time to assess your image. What needs to be fixed and what enhancements could be applied to better achieve your vision? If you answer these questions before

sharpening an image, your results will be improved.

Worked Example

In this chapter, we will take the three images we assessed earlier and implement the sharpening approaches. This section of the book is supported by the original DNG image files that can be downloaded from my website (<u>https://lenscraft.co.uk/members-area/useful-downloads-books/</u>).

Worked Example 1 – St Pauls, London

In the following screenshot, you can see the starting image of St Pauls Cathedral in London. This image was captured in RAW format using an Olympus EM5 Micro 43 camera and already has basic exposure adjustments applied. If you download the files accompanying this book, you will find this image in DNG format (which is the equivalent of a RAW file) and includes the adjustments mentioned.



Figure 70: Starting image to be processed

Capture Sharpening

We will start the Capture Sharpening process by applying noise reduction to the image. The image is a little noisy, especially in the sky where a lot of highlight recovery has taken place. If you are following along with the sample file, select an area of the sky and zoom to a 1:1 magnification. You should be able to see the noise quite clearly. A screenshot of an area of cloud showing the noise is included below.



Figure 71: Screenshot showing noise in the clouds

Initially, both the sharpening and the noise reduction sliders are set to 0 to allow an assessment of the image. Move around the image with the magnification set to 1:1 to assess where noise is appearing together with the type. Check the detail in the building and look for noise in the shadows and in the clouds.

We will start by addressing the luminance noise. Position the image at 1:1 magnification so that you can see a section of the cloud which shows luminance noise. Leave the Detail slider set to the default value of 50 whilst you gradually increase the Luminance slider until the noise has been minimised. This appears to happen at a setting of around 20 on my screen.

Next, check in the shadow areas of the building where you will find traces of faint colour noise. Again, leave the Detail and Smoothness sliders set to their default values. Gradually increase the Color slider from 0 until the point where the noise has been removed or is difficult to detect. This also appears to be at around a setting of 20 on my screen.

You can see a section of the image magnified to 1:1, following the adjustments described above.


Figure 72: This section of the image was suffering from noise but is now clean following adjustment

We can now progress to adjust the capture sharpening settings in the Detail panel. Start by returning these to their default value by double clicking on the "Sharpening" heading as indicated in the screenshot below.



Figure 73: You can reset the sliders to their default values by double clicking headings in Lightroom

Now position the image in the preview window so that you are viewing an area with plenty of detail, at a 1:1 magnification. You will monitor this area as you adjust the

sharpening settings, which will help you achieve the correct sharpening level.

For general images such as this, a Radius of 1 is a good starting point whilst determining the other slider levels. Start by gradually increasing the Amount slider from its default value until any remaining noise starts to become visible. This appears to happen at around a value of 50 on my screen.

As the image also has some fine detail in the stonework, it may benefit using the Detail slider but this is unclear. In circumstances such as this, it's best to check. Gradually increase this slider until you see either noise becoming sharpened or the fine edges in the image begin to look unnatural. This has happened at a setting of around 45 for the Detail slider on my screen and the image does appear to benefit from using the slider.

With the noise reduction and sharpening adjustments selected, review the image at 1:1 magnification to identify any areas of noise. I can see evidence of noise becoming visible in the clouds, probably because the Dehaze slider was used to help recover the sky prior to starting the sharpening. Whilst the Dehaze slider can be very effective it also tends to emphasise noise. To reduce this effect, increase the Masking slider gradually from 0 until the noise is hidden. This appears to happen at a setting of around 18 on my screen.

Having achieved a good balance of noise reduction and sharpening, we can progress to the Creative or Selective Sharpening phase.

Creative Sharpening

Examining the image, it appears we have achieved a good balance of noise reduction and sharpening. The building itself appears to be well sharpened and won't benefit much from additional sharpening. Instead, we can enhance the feeling of depth in the image by applying a clarity adjustment to the dominant shapes in the building.

Select the Adjustment Brush tool and set one of the brushes to have a large soft edge. Next set the Flow to somewhere around 50 so that you need to apply multiple brush strokes to build up a selection. Set the option to display the selection mask and paint around the edges of the building as well as the main areas of detail that you want to enhance.

In the following screenshot, you can see the selection being made.



Figure 74: Selecting the outline of the building to enhance

Having made your selection, uncheck the selection mask so that the effect of the adjustments can be seen clearly. Zoom in to a magnification of 1:1 on an area of high detail that has been selected. Gradually increase the Clarity slider for the selection to enhance the image to a point where the detail starts to take on a 3D effect. This appears to happen at a setting of around 30 for this image.

You can see an area of the image magnified at 1:1 in the screenshot below. Notice how this appears to have a depth to it as the result of the additional clarity.



Figure 75: Magnified section of the building showing the effect of the Clarity adjustment

Once you have applied the Clarity adjustment, you can also try applying additional sharpness. My personal view is that the additional sharpening isn't required and doesn't achieve much with this image. You may however come to a different conclusion so it's worth trying.

At this point, no further selective adjustments for sharpness and noise reduction are required allowing us to progress to the Output Sharpening stage.

Output Sharpening

For this example, we will produce a full resolution JPEG image which has been sharpened for screen viewing. You wouldn't ordinarily create a full resolution image for screen viewing as its too large for most screens. When viewing an image on a screen, we need the image to be sized so that it can be seen in its entirety when viewed at 1:1 magnification. When you need to zoom out to see the image the sharpening effect is lost. Therefore, when sharpening for screen output you will typically also downsize the image.

You can see the selected sharpening and JPEG settings used in the screenshot below.

Export To:	Hard Drive	~				
eset:	Export One File					
▼ Lightroom Presets	► Export Location	Mt/11 Photography B	usiness\e8k	ooks\Lightroom Sharpening (Guide\Downloads\Untitled Export	
Burn Full-Sized JPEGs	File Naming RWhalley_EM5_2014_04_4260502.jpg					
Export to DNG	▶ Video					
For Email (Hard Drive)	▼ File Settings					
Google HDR Efex Pro 2	Image Format:	JPEG	~	Quality:	100	
HDR projects 4 professio Helicon Focus	Color Space:	AdobeRGB (1998)	~	Limit File Size To:	100 K	
Photomatix SUADDEN exclusion exclusion	► Image Sizing				300 ppi	
X-Rite Presets	V Output Sharpenin	9				
ColorChecker Passport	Sharpen For:	Screen	~	Amount: Low	~	
	▶ Hetadata			All Metadata. Remove Location Info. Remove Person Info		
eBay	▶ Watermarking				No watermark	
Microstock Export v	▶ Post-Processing				Do nothing	
Add Remove						

Figure 76: The Export dialog in Lightroom showing the sharpening settings

The full resolution screen sharpened JPEG is included as part of the download for this book. This is to allow you to open this image and compare it to the image you have created by following this worked example.

In the next example, we will look at processing an image which has been shot at a higher ISO setting in poor lighting.

Worked Example 2 – The Hospital

This example utilises the image "Worked Example 2.DNG" which can be downloaded from my Lenscraft website (<u>https://lenscraft.co.uk/members-area/useful-downloads-books/</u>).

The image below was captured using an Olympus EM5 Micro 43 camera. It was not possible to use a tripod in this location so hand holding the camera was the only option. To ensure the shot was sharp it was necessary to set the camera sensitivity was set to ISO800. This allowed an acceptable shutter speed to be used which would minimise camera shake.



Figure 77: Starting image following image adjustments but prior to sharpening and noise reduction

The image has already been processed slightly at this point to correct the exposure problems and open the shadow areas slightly. This has revealed a lot of noise in the shadows which we will need to address during the sharpening process. If you have downloaded the DNG file for this example, you will find the basic adjustments have been applied to the file.

Capture Sharpening

The first task we will perform during Capture Sharpening is to address the problem of noise in the image. In the following screenshot, you can see a Lightroom preview zoom to 1:1 magnification.



Figure 78: Image section magnified to 100% showing noise in the shadows

The preview area has been placed over an area of high noise. You can see the selected area by looking at the Navigator window in the top left of the screenshot as indicated by the red box.

Noise Reduction

To address the noise, we will leave the Sharpening sliders at their default values. This isn't strictly necessary but sometimes an element of sharpening can help you to identify noise more easily.

Start by setting the Luminance and Color noise sliders to 0 whilst leaving the other noise sliders set to their default value of 50. Gradually increase the value of the Color noise slider until you see the noise has been removed or is difficult to see. When I attempted this I found the Color slider needed to be set at its maximum value to remove the noise. Even then, traces of smudged colour noise remained.

Next adjust the Detail slider to see if this can help to the address the colour noise problem. I found that reducing the Detail setting to 25 improved the colour noise and allowed me to lower the Color strength to 25. I would recommend trying to avoid using a maximum strength adjustment with the noise sliders if possible. You can sometimes find very strong adjustments have unintended side effects.

In the following screenshot, you can see the image preview in Lightroom with the selected settings applied.



Figure 79: Magnified section of the image with the Color noise reduction applied

The next adjustment to make is to address the Luminance noise in the image.

Start with the Detail and Contrast sliders set at their default values. The Luminance slider should already be set to 0 from the previous step so begin to increase the slider strength until the noise is removed or is very difficult to see.

Next, assess if your image detail is still sharp. If not, increase the Detail slider until you see the details sharpen up. You need to do this without emphasising any remaining noise in the image although you have yet to fine tune the sharpening at this stage. The sharpening settings are only currently the default settings.

Leave the Contrast slider at its default (0) setting unless you notice a problem with Contrast being removed.

When I was processing the example, I found a good setting was Luminance = 40 and the Detail = 50. You can see a screenshot of the settings and resulting preview below.



Figure 80: Effect of the Luminance noise reduction applied

The area of the image we have been working on now appears clean and free from noise. Be sure though to check other areas of the image as they may be suffering from a loss of sharpness or colour bleed. If they are, consider if you need to adjust your settings, but remain mindful that additional noise reduction can be applied later.

Sharpening Adjustment

When sharpening a noisy image, it can be helpful to increase the Radius slider rather than using the default setting of 1. Although this creates a slightly larger sharpening halo it may mean you don't need the Halo to be as strong. We can also restrict the sharpening to the main edges of the image using the Masking slider. Restricting the Detail and Strength sliders will help avoid the problem of sharpening the noise. For this example, I selected a Radius of 1.5 as a starting point for the sharpening. This can be checked again once the other sharpening sliders have been adjusted.

With this image, we find that there is little fine detail present. We can therefore set the Detail slider to 0 and restrict our sharpening using the other sliders. This should also help us avoid sharpening any noise remaining in the image.

With the Detail slider set to 0, increase the Amount slider until you see residual image noise becoming visible. I find this gives me an Amount setting of 70 on my screen.

Now we can adjust the Threshold slider, increasing it until the noise that previously became visible, is no longer seen. An alternative and equally acceptable approach is to hold down the Alt key as you adjust the Threshold slider. This causes the mask that's being created to be displayed, as shown in the screenshot below.



Figure 81: Sharpening mask created in Lightroom

As you can see, the mask is now picking out the most defined edges in white. The sharpening is then applied to the white areas but supressed from the black. Applying this approach gave a Threshold setting of 44 on my screen.

Once you have amended the Threshold setting, return to double check your Radius and Amount sliders. When I did this, I found that increasing the Amount slider to 80 gave a small improvement but the Radius setting was probably optimal. You can see the resulting 1:1 image preview in the screenshot below.



Figure 82: Screenshot showing the sharpening settings and their effect on the image

Examining the resulting preview, we can see that we now have a sharp and clean image. Whilst we have focussed on a single area with identified problems, we must also take care to check other areas.

Checking around the image at full magnification, there are some areas of fine detail that are being destroyed. One such area is the wood panel at the side of the window where we find the fine wood grain has been destroyed. In other areas, we find some additional noise reduction and sharpening is required. Despite this, overall the balance of noise reduction and sharpening for the Capture Sharpening phase is good.

Selective Sharpening

At the end of the Capture Sharpening stage we identified a couple of areas requiring additional work. We will now address these in the Selective Sharpening stage.

Wood Grain Issue

First, we will address the loss of fine detail in the wooden side panel where the noise reduction has also removed fine wood grain. We will achieve this by selecting the problem area using the Brush tool, to which we will then apply corrective adjustments.

In the following screenshot, you can see the selected section of the wooden panel.



Figure 83: Selecting the wood panelling for adjustment

Here you can see the selected area is indicated by the red mask. Once you have made your selection turn off the mask so that you can see the adjustments you apply.

The first adjustment to try is reducing the Noise slider to -50 as it's possible the detail is being destroyed by the noise reduction. This adjustment appears to recover a lot of the lost details but still limit noise in the area to an acceptable level.

Next, experiment with the Sharpness slider to see if this can make an improvement. My personal assessment is that the slider doesn't improve the detail so it's left unchanged at 0.

Finally, try increasing the Clarity and Dehaze sliders if you have them available. On my screen this seems to bring the wood panelling to life based a value of 10 for both. You can see a comparison of the before and after image below.



Selective Noise Reduction

If you now look closely at the panel behind the sink you will notice that it's still suffering from noise. We can address this by selecting the area and applying additional noise reduction. Given the shape and location of the area to be selected, the Adjustment Brush tool is the best option. In the following screenshot, you can see the selection has been made using the Adjustment Brush.



Figure 85: Selection applied with the Adjustment Brush

When making this selection, a large soft brush was used with settings that required multiple brush strokes to build up the selection. The more detailed areas (such as around the taps and the dishes) were selected using the same brush but with the "Auto Mask" option ticked. With your selection made, apply the additional noise reduction until you see the problem areas smooth out. In this example a setting of 50 was used.

As can be seen in the screenshot below the image appears sharp, clean and natural. As this image is intended for print output we can emphasise some of the areas still further.



Figure 86: Image following selective adjustments

Selective Clarity and Sharpening

This image is a good candidate to have some of the key components highlighted with the addition of selective Clarity and Sharpening adjustment. These enhancements will be applied using the Adjustment Brush.

Open the Adjustment Brush and set your brush to a small Radius with limited Feathering. This will be used to outline the areas and objects that we want to emphasise. Often when using a smaller brush to do more precise selection work, it's a good idea to zoom in to the image and then set the brush size relative to your level of magnification.

In the next screenshot, you can see the selection that's been made. It's usually helpful when making irregular selections such as this, to use the red selection mask.



Figure 87: Selection applied with the Adjustment Brush

Having made your selection, turn off the red mask and apply the adjustments. Settings of Contrast = +30, Clarity = +50 and Sharpness + 26 appear to create a nice enhancement. You can see these settings together with the Brush configuration in the following screenshot.



Figure 88: Image following selective enhancements

An alternative approach to selecting areas then applying the adjustment settings is to start with very strong adjustment settings. You can then set a low Flow for the brush, causing you to build up the selection with multiple brush strokes. This makes for a natural selection with each brush stroke also building up the strength of the effect. Which option you use is your choice. The finished image following all these adjustments can be seen in the following screenshots.



Figure 89: Image following all adjustments

Notice how the image has a three-dimensional feeling of depth. The objects and areas that have been outlined seem to stand out from the image. To help you assess the levels of sharpening, a JPEG of the full resolution image has been included as part of the download for this book.

This finished image can now be thought of as you sharpened master file. Should you choose to print or save the image for screen viewing the appropriate levels of sharpening can be applied through Lightroom at that time.

Worked Example 3 – Landscape Sunrise

This example utilises the image "Worked Example 3.DNG" which can be downloaded from my Lenscraft website (<u>https://lenscraft.co.uk/members-area/useful-downloads-books/</u>). This is a typical landscape image featuring lots of fine detail to be enhanced. The image also suffers from the softening effect of flare in the grass and rocks around the small tree on the right, which we will also address.

The photo is three images which have been merged to create an HDR image. The three images used were captured on an Olympus OMD EM5 with 12-40mm Olympus lens. The camera ISO setting was 200 which is the base ISO for this camera but the HDR process may have caused an increase in noise levels.

The images were captured at 1 stop intervals giving exposures of -1EV (one stop underexposed), 0EV (correct exposure) and +1EV (one stop overexposed). The images were then combined into an HDR image using the Lightroom Merge to HDR feature. The resulting DNG file is provided in the download for this book.

Capture Sharpening

The starting image following HDR blending and initial adjustments can be seen in the screenshot below.



Figure 90: Starting image with all adjustments in the Detail panel set to 0

The sharpening and noise reduction have been disabled in the image to allow easier assessment of the image needs. Before starting with this example, take a moment to look over the image to determine how you might approach the sharpening.

Sharpness is the most important aspect of processing this image. We need to ensure the fine details in the rocks are emphasised but without over sharpening. It can be very easy to apply too much sharpness to areas of fine detail. This will cause them to take on an unnatural, gritty/crunchy appearance as the sharpening halo becomes visible.

For landscape images, a good starting place is to use a Radius of between 0.7 and 1.0.

Using a small Radius such as this often allows for stronger sharpening effect to be applied without worrying about halos becoming visible. The other setting that can be applied immediately is to use an increase in the Detail slider. How much will depend on the type of camera but for this image you could go as high as 70. Once you have adjusted the other sliders you can return to the Radius and Detail to make further adjustments.

As you increase the Amount slider you should see the detail in the image gradually come into focus. In the following screenshot, you can see a side by side preview.



Figure 91: Side by side preview showing the effects of the Detail panel sharpening

The preview on the left is the starting position for the image prior to sharpening adjustments. The image on the right shows the same area but with Capture Sharpening adjustments applied. The adjustments can be seen to the right of the preview indicated by the red box. The final adjustments selected for this example are Amount = 40, Radius = 0.8 and Detail = 70.

Having identified good adjustments for the detail areas, check around the image to see the effect on other areas. This shows that our adjustments have caused the noise in the dark, distant hills to become exaggerated. To minimise this effect was can try increasing the Masking setting. Increasing this to a value of 10 appears to correct much of the problem.

When using the Masking slider to prevent noise being exaggerate, don't try to remove all the noise. At this stage the noise reduction sliders are both set to zero where they have no effect.

Once you are happy with the sharpening settings, progress to look at the noise reduction. In the following screenshot, you can see the previously identified problem area with suitable noise reduction applied.



Figure 92: Before and after comparison showing the effect of sharpening and noise reduction

The image on the left is prior to sharpening and noise reduction whilst the image on the right has both sharpening and noise reduction. Notice how the waves on the sea are better defined whilst the hills show less noise. The noise reduction settings applied are shown to the right of the previews, surrounded by the red box.

To arrive at these settings, the colour noise reduction sliders (Detail and Smoothness) were left at the default whilst the Color slider was set to zero. The Color slider was then gradually increased to a point where the colour noise couldn't be seen. This occurred at around a value of 20.

In the Luminance noise reduction section the Amount slider was gradually increased from 0 whilst the other sliders in this section remained at their default level. By the time the Amount slider was at 20, the noise appeared to have been removed from the image. This causes some of the fine details in the image to be lost. The Detail slider was then gradually increased until the details were recovered but without a significant increase to the Luminance noise. This occurred at a Detail setting of 80.

With these settings, it was possible to achieve a good balance between sharpness and noise reduction.

Selective Sharpening

The priority for the image in terms of selective sharpening is to repair any areas that are soft as well as enhance areas which could withstand additional sharpening. The first area identified is the softness in the detail around the sun flare. You can see a close-up of this area in the screenshot below.



Figure 93: Area affected by sun flare is being selected

In this screenshot, you can see that a selection has been made using the Brush tool. The selected area is lacking in contrast and fine detail. The noise reduction applied in the Capture Sharpening appears to be destroying the fine detail in the area.

When making this selection with the Brush tool, be sure to use the Auto Mask option along the edge which meets the sea. Also, use this option on the small tree. Don't worry about small amounts of overspill but do try to limit this as the corrective adjustment will be quite extreme.

Having made your selection, the following settings are to be applied to the area.

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Tint	·····	<u> </u>	0
Exposure		<u> </u>	0.00
Contrast	<u> </u>	<u> </u>	20
Highlights	<u></u>	<u> </u>	0
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Dehaze		<u> </u>	0
Saturation	·····	<u> </u>	0
Sharpness	<u></u>	<u></u>	30
Noise	<u> </u>		- 50
Moiré		1	0
Defringe	<u> </u>		0
Color			

Figure 94: Selective adjustments applied to correct sun flare softening

Notice there's an increase in both Contrast and Clarity to help emphasise the "structures" that have been selected. Additional Sharpness has been applied to enhance the fine details whilst a lower level of Noise reduction has been applied. This will help preserve the fine details.

In the following screenshot, you can see a before and after comparison of the area. Notice how the fine details are preserved and clearly visible in the adjusted image.



Figure 95: Before and after comparison of the affected area

Checking around the image, the other areas such as clouds appear free from noise and are sufficiently sharp/detailed. The only area that might benefit from additional sharpening would be the foreground rock on the left of the image. Whilst this could be selected using the Adjustment Brush, it's also possible to make the selection quickly and easily using the Radial filter. You can see this indicated in the following screenshot.



Figure 96: Selection being applied using the Radial filter

The following screenshot shows the adjustments that are applied to the selection.

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Moiré	-				-	8. S.	14	<u> </u>	
Defringe	-				۲			<u> </u>	
Color							ļ	×	

Figure 97: Adjustments to be applied to the selected section of rock

These adjustments are designed to enhance the sharpness and fine detail of the rock. Small increases to Contrast, Clarity and Dehaze have all been used together with a moderate increase in Sharpness. These settings were applied first after which the Noise slider was reduced to see if additional fine detail could be retained.

In the following screenshot, you can see a small area of the rock at full magnification. The image on the left shows the "Before" position whilst the image on the right reflects the changes "After" selective sharpening.



Figure 98: Before and after preview showing the effect of the selective sharpening adjustments

Notice how the image section on the right has a three-dimensional appearance. You can see the finished image in the following screenshot.



Figure 99: Image following all sharpening adjustments

To help you better appreciate the finished image, a full resolution JPEG has been included as part of the download to this book. This was exported from Lightroom with a "low" level of "Screen Sharpening" applied.

This finished image can now be thought of as your sharpened master file. Should you choose to print or save the image for screen viewing the appropriate levels of sharpening can be applied through Lightroom at that time.

Summary

You have now reached the end of the Worked Examples in this book. All the tools required to produce sharp images which retain excellent detail with minimal noise, have been covered. You now have all the knowledge required to sharpen photography like the professionals do. All that remains is practice because as with any skill, knowledge alone is not enough.

Be sure to spend time practicing your knowledge with your own image files. Also, be sure to watch the accompanying videos course on my online school to ensure you have understood the techniques (<u>http://lenscraft.teachable.com</u>). If following this you have questions, please feel free to email me using <u>robin@lenscraft.co.uk</u> and I will do my best to help you.

I hope you have enjoyed and benefited from this book. If you have found the material presented to have been valuable I would greatly appreciate you leaving a review on Amazon.

Thank you

Robin Whalley

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THE SE	the potential to produce exceptional image quality when used
100 March	correctly. This book explains how to achieve the best image
	quality with this camera. Whilst the book is aimed at the
and the second sec	LAS user the same principles can also be used with other
And the second sec	high quality compact cameras.
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