



### Lightroom Bitesize: Understanding the histogram

Having a mathematical background, including the development of Statistical Process Control systems, I am more than comfortable with the concept of distribution curves. Hence when histograms appeared on the rear of digital cameras it was a useful tool that I was quite happy with.

What I failed to realise was how many people may not understand it at all – a fact highlighted when I was doing a one-to-one basic photography training session and when I asked them about the histogram they replied that it was showing the silhouette of the trees in front of us against the sky.

Now we were taking some landscape shots at the time so it was probably as good a guess as any – but it did make me wonder how many photographers have no idea what the histogram is or how useful it can be – and in Lightroom it is essential that you understand it and can interpret what it is telling you.

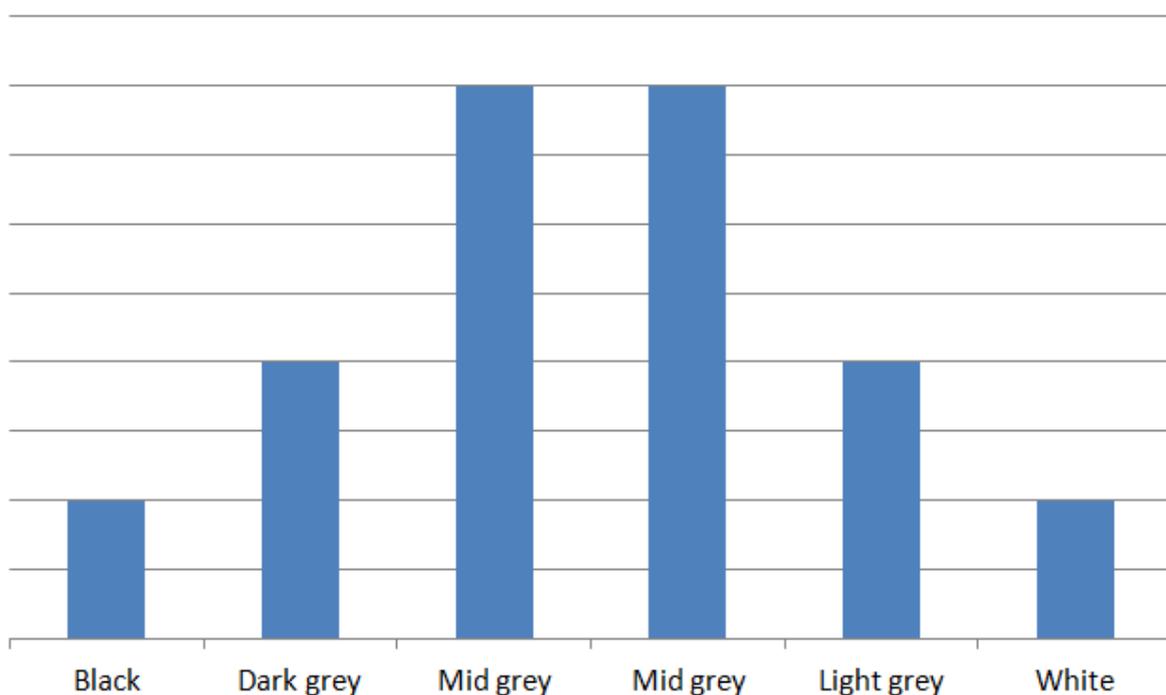


Silhouette of some trees



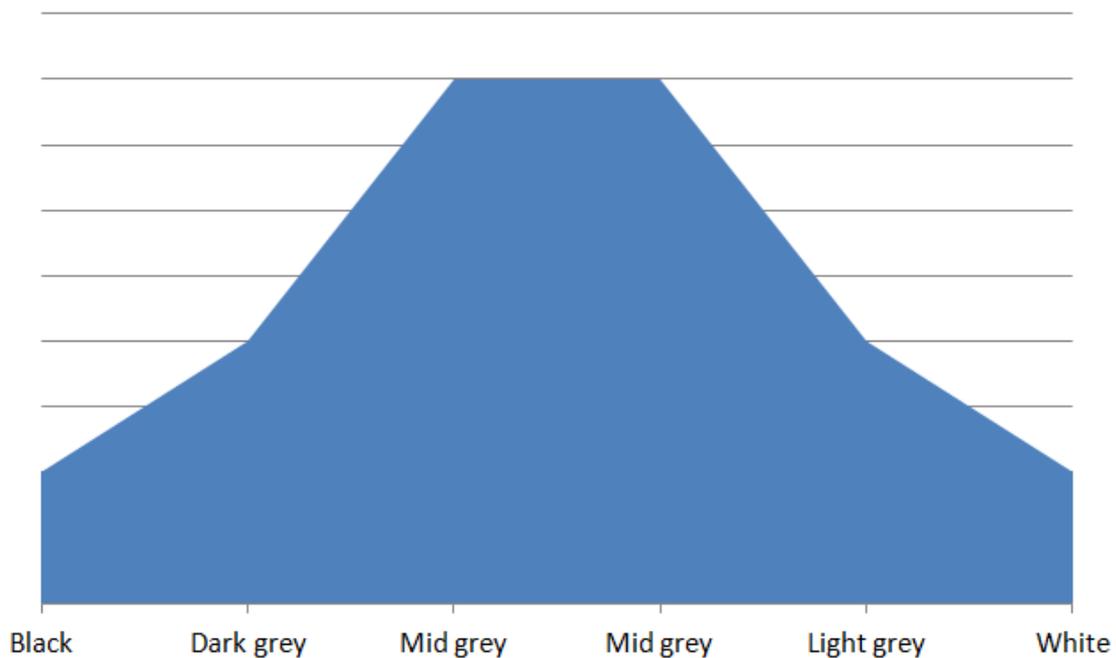
Histogram

First let us look at a very simple histogram in bar-chart form. From an exposure point of view, in most scenes you would expect to see some blacks and some whites – but the majority would be some tone in-between:

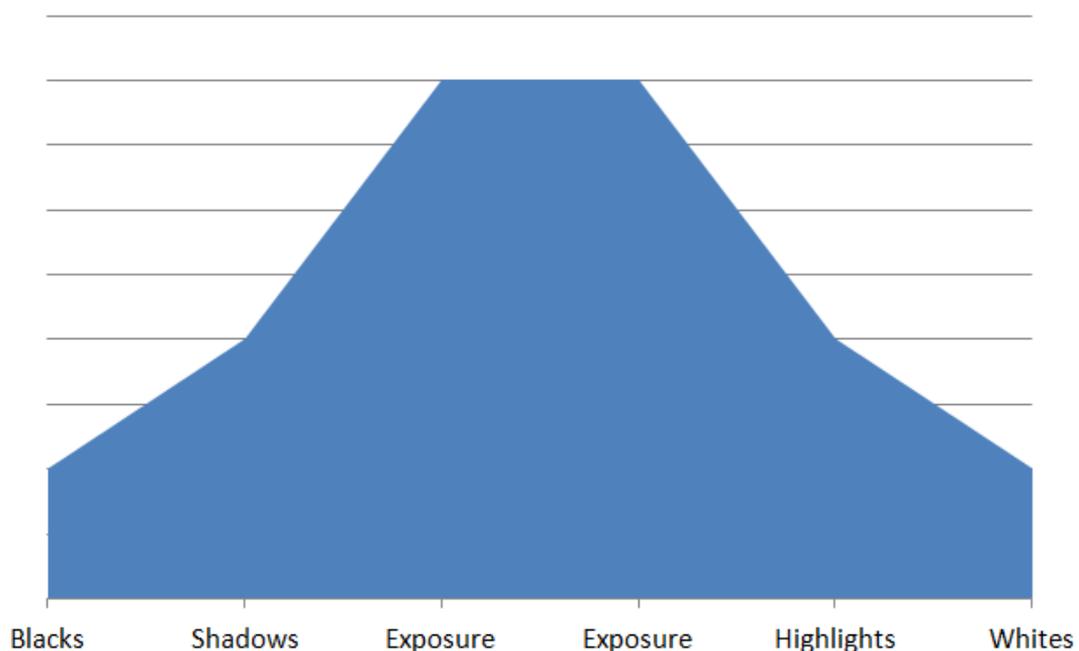




Now let's plot the same data as an area curve – and you can start to see the similarity to the histogram in both Lightroom and on the back of your camera.

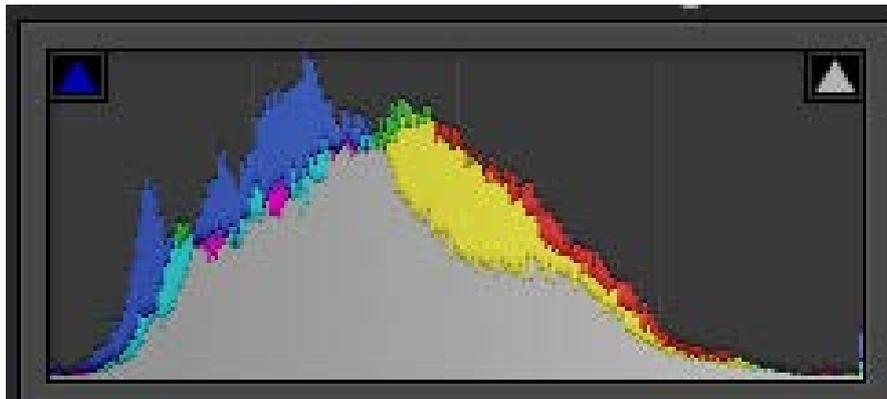


Let us now change the names to reflect the names of Lightroom's adjustment sliders. Let's rename 'dark grey' to 'shadows', 'light grey' to 'highlights' and both 'mid-greys' to 'exposure'.





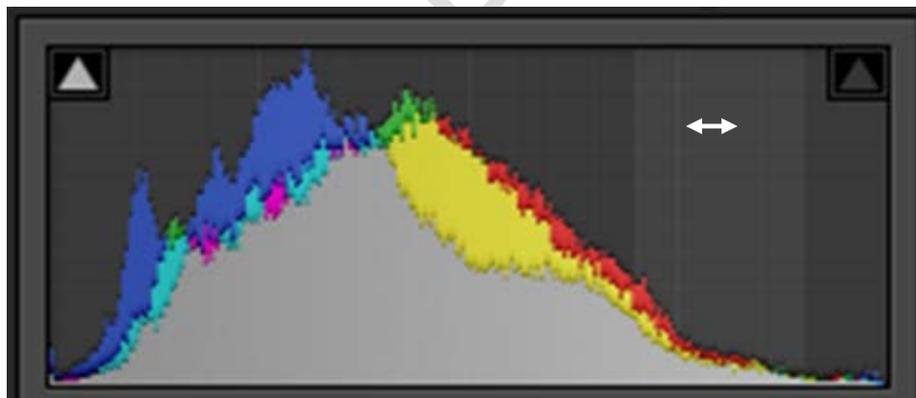
Hopefully you can see where I'm going with this. Let's look at an actual histogram from Lightroom.



The split of black, shadows, exposure, highlights and whites is exactly the same. Dark tones on the left, light tones on the right.

Open up an image in Lightroom – preferably one with even tones throughout the image.

Hover your cursor over the histogram (whilst in the Develop module). As you do so you will see the active sections will become a lighter grey and the cursor will turn onto a two-headed arrow..



There are five sections, each representing the areas of blacks, shadows, exposure, highlights and whites.

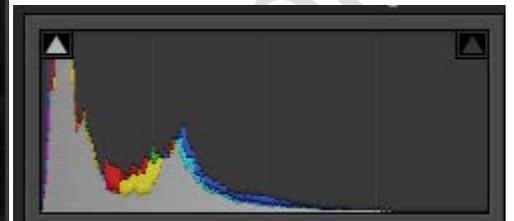
Click and hold the left mouse button whilst the cursor is in the highlights area (i.e. to the right, about a quarter the way in) and drag to the right. Notice how that section of the histogram is also dragged to the right and that the Highlights slider moves to the right also.

Try it again in other areas of the histogram. Now move one of the sliders instead and see what happens to the histogram.

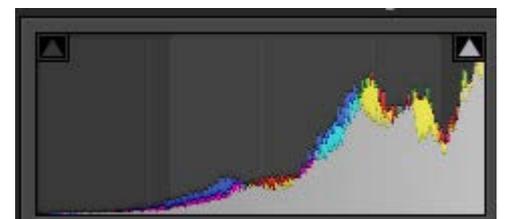
Hopefully you can see that the sliders each affect the corresponding area of the histogram – and hence the applicable tones in the image. In fact, some people prefer to click-and-drag in the histogram rather than using the sliders because they find it more intuitive.



So, in most cases, you should be looking at a hill-shaped curve that is pretty central. Skewed too far to the left may indicate an under-exposed image.....

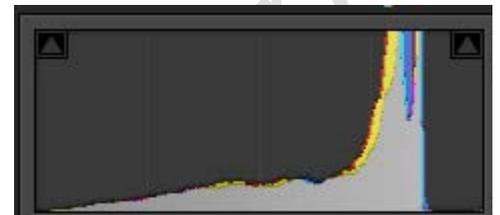


..... whilst too far to the right may indicate an over-exposed one. ....

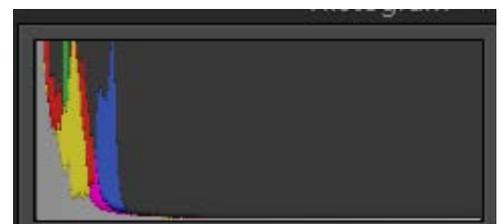




However, if only life was so simple. If there is a lot of snow, for instance, then the histogram will be skewed to the right because there is a lot of white snow in the scene - even though the image is actually 'correctly' exposed. This is to be expected.



Likewise, a low-light shot will be skewed to the left because there will be a lot of shadows. Again, this is to be expected.



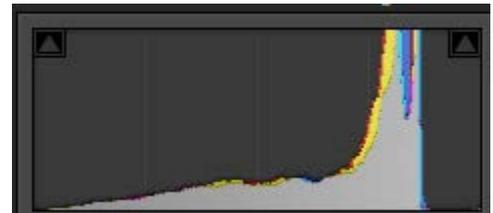
So, there is no 'perfect' histogram. But you should try to understand what shape histogram is to be expected based on the image in front of you. Then you will know when you need to make some exposure adjustments.



But there are some other little tools that may assist.

Can you see two little triangles at the top corners of the histogram?

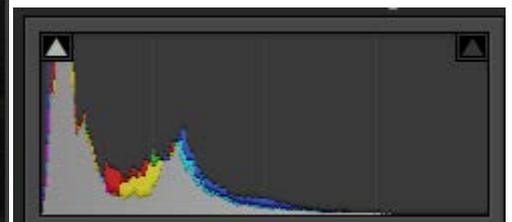
These are the Exposure Warning triangles.



By default they are greyed out, but if they turn white it means that the histogram is running off the edge of the scale (known as 'clipping'). This causes loss of data in the image resulting in patches of pure black or white with no tonality.

If the left-hand triangle is white then you are clipping the shadows and you need to increase the exposure. If the right-hand triangle is white then you are clipping the highlights and you need to decrease the exposure.

As an example, let's look again at the darker image of Grasmere.



The histogram is heavily bunched to the left and the left-hand warning triangle is white. It seems obviously dark but how much of it is actually 'clipped', i.e. pure black without any tonality?



Hover the cursor over the white warning triangle:



You will see all of the areas with clipped highlights glow blue on the image.

Likewise, if you do the same thing with the lighter image and hover the cursor over the warning triangle showing white for clipped highlights, you will see them glow red on the image:





If you want to see the glowing clipping area whilst you work to remove them, then instead of hovering over the warning triangles, just click on them.

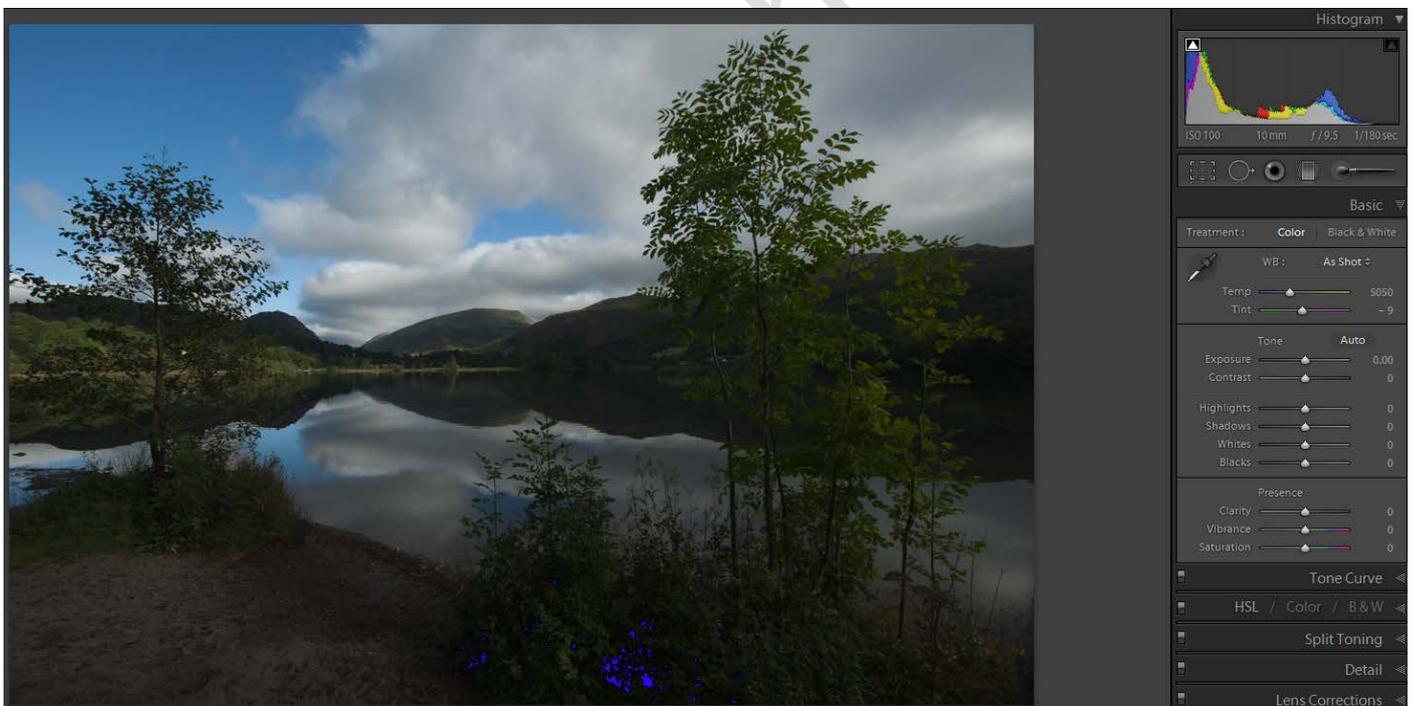
### Top Tip

If you want to see both clipped shadows and highlights - or want to use the keyboard instead of the mouse - just press the letter 'J' key.

Now to begin with you may not know what to do to rectify the clipping - but there is a little button which may help you. It doesn't give a perfect result (if I use it I generally have to do a little bit more work afterwards to fine-tune it) but it certainly gets you to a better place.

Let's look another image. Notice how the 'clipped shadows' warning triangle is white but all of the 'tone' sliders are in their central position. This indicates that the image was under-exposed in-camera rather than by any subsequent post-processing.

Also notice the glowing blue areas showing where those clipped shadows are.



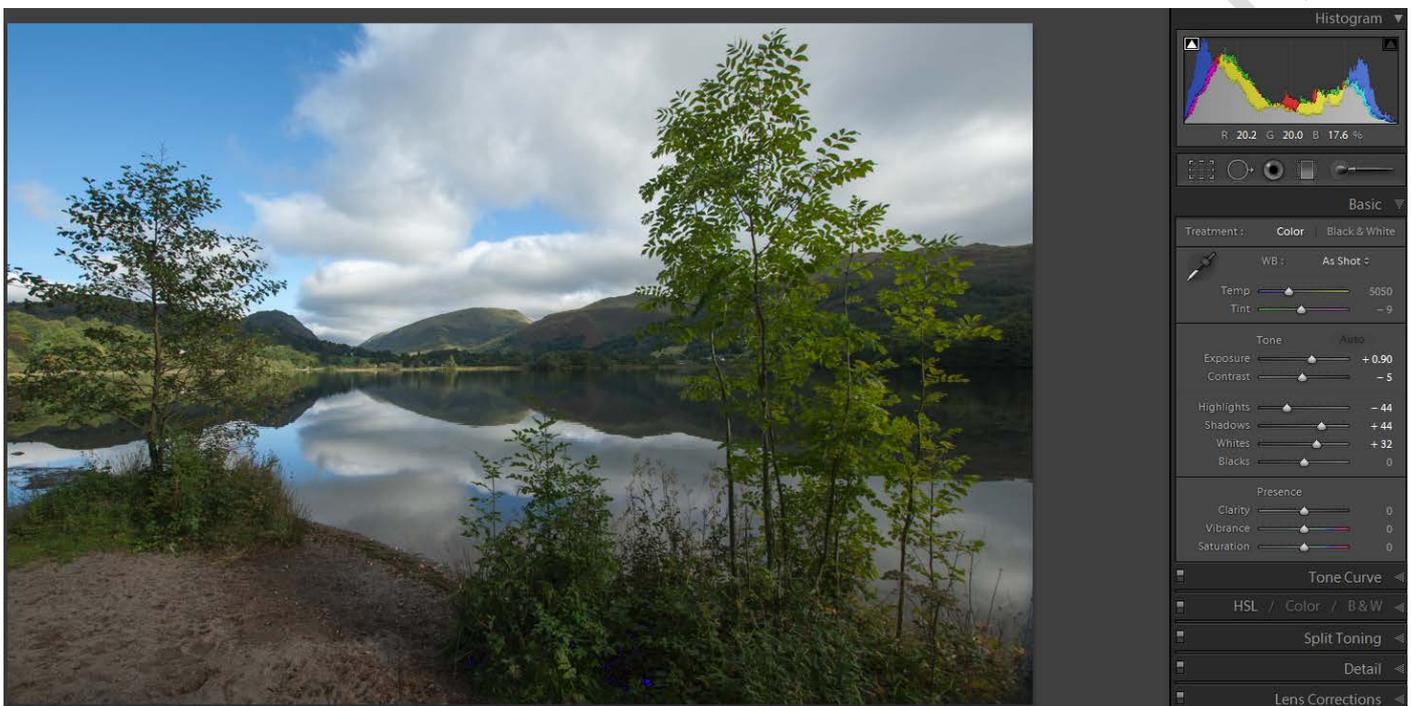
So which sliders would you use to start with? Well you could start adjusting the exposure, shadows and black sliders to begin with and see where it leads. Or.....



....you could press the little button at the top-right of the tone panel called 'auto'.



Let's see what happens to my image when I press this button.



Wow - a much better exposure. There are still a few clipped shadows and strangely the Blacks slider has been left at zero but a quick tweak to the right will soon cure those (I did say it wasn't perfect) but it's got me very quickly to a position where I just need to fine-tune the settings.

Finally, the more astute may notice that the histogram in Lightroom (and on many camera LCD panels) doesn't just show one histogram but numerous coloured ones superimposed on the screen.

Each coloured histogram show the relative tonal amount of that specific colour (or combinations of colours). In the most part it is the shape of the histogram overall that matters but in the Lightroom Bitesize tutorial 'Achieving the correct white Balance' I'll show a great tip which uses these coloured histograms to great effect.

In the meantime, here's that fine-tuned image.....

# Lightroom Bitesize

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