Before we get into the fundamentals of Lightroom, it is important to get a grasp on some of the key elements of shooting digital. When you learn maths, it is vital to understand how to add and subtract before you learn how to multiply. This same principle applies to digital. Digital workflow begins even before the camera shutter clicks. In order to truly perfect your digital workflow, you need to understand all the concepts that govern the world of digital.

**Memory Cards**

Memory cards are an overlooked but a very important part of digital workflow. After all, the memory card is the modern day equivalent of your film. In the same way that you didn’t use just any film, even though they were all color or black and white,
all memory cards are not created equal. Some of the important criteria are speed, data verification, technical support, warranty and size. SanDisk, Toshiba and Samsung are among the largest flash memory chip suppliers. Toshiba is actually a partner with SanDisk.

There is also a second component within a memory card known as the controller. SanDisk and Lexar produce the majority of the controllers. Technically, it is the combination of the controller and the flash memory that ultimately determine the efficiency and performance of the card.

If the memory card physically holds data, it is a miniature hard drive. These are known as microdrives, originally perfected by IBM. They are still available from Hitachi and Seagate. While these were very popular early on, they have largely been replaced by compact flash cards or flash memory. Memory cards enable your ones and zeros (digital data) to be stored in a cell known as a memory cell, as opposed to the rotating platter of a hard drive. Flash memory cards are more durable than the older microdrives in part because microdrives contain moving parts and are susceptible to jarring and rough handling.

Memory Card Speed

The speed itself is dependent on more than just the card. The architecture of the camera is also a factor. A card that is superfast in one camera could be slow in another camera. This all depends on how the controller interchanges data with the specific camera.

Choosing the Right Size Memory Card

Flash memory cards have been increasing in size, and are now available up to 32 gigs. D-65 still advocates using 2–8-gig cards. Why? The memory card is likely to be the first place where you can encounter a problem. Any glitch or failure with the memory card can wreck a shoot. For this reason, D-65 chooses to match the memory card to the RAW file size produced by the camera. Don’t fall into the trap of believing that more storage on a card is better. You would never shoot a film-based job on only one really long roll of film just in case the lab ran into problems. For this reason, D-65 recommends using multiple cards per job. You can size the card specifically for a camera. While a 32-gig card may seem like a great convenience, you are putting all of your ‘digital eggs’ in one
basket. The key is not to have too many images on one card in case of failure.

**How Long Will My Memory Card Last?**

All cards have a lifespan, as is the case with all digital products. While the manufacturers are reluctant to post specific numbers, all cards will eventually die, as the cells in the card start to expire. Do not assume that a card will last for 300,000 erase and write cycles. It is a good idea to introduce new cards using your existing cards as backup on regular intervals. D-65 buys new cards generally when the card size jumps to the next level. We don't buy the largest, but we do go up in size.

**Always Format the Memory Card in Your Camera...Every Time**

Whether you choose flash cards or microdrives, you must format these media in the camera. Do not just remove or delete the images using the computer or camera software. This may lead to data loss — why?

All cards and microdrives run with their own operating system and have their own native file structure. These media typically need to be formatted to an FAT16 file structure while many computers use an FAT32 file structure. If you manipulate the images on a card using an FAT32 computer, this information will be written to the card/microdrive. So, you will have an FAT16 device with FAT32 information — not a desired result, and such an easy problem to avoid.

Always format compact flash cards and microdrives in your camera. Also you should reformat the card every time you remove it from the camera. And most importantly, do not take the card out of your camera, check the images on a computer and then put the card back in the camera and continue shooting. You risk data loss.

Also, as a general rule, **never fill a memory card or microdrive**. If there is not enough space to write the last file, the entire card may get corrupted. Leave a few shots (three or four) at the end of each card shots. This greatly reduces the risk of card failure.

**Editing in Camera**

While it is generally safe to delete files as you shoot in the camera, there is an exception to this rule that can lead to data loss. **Do not**...
delete files at the end of the card to create extra space for more shooting. The data is very vulnerable when the cards are close to filled. It is almost a guarantee that you will encounter data loss if you delete files at the end of the card. It is acceptable to do a rough edit while you are shooting, using the LCD on the camera back. Do not be overzealous with your editing; remember the limitations of the LCD display. However, it is a good idea to delete obvious ‘out takes’ from the camera to reduce editing time later.

Shooting at the Optimum ISO

Every digital camera has an optimum ISO setting. The best capture quality will be obtained using that ISO. In fact, the only camera setting that will significantly impact the quality of the RAW capture is the ISO. The nomenclature on the menus of cameras tends to confuse photographers. We all ask the questions, ‘Should I shoot on Adobe RGB, Turn on Noise Reduction? Sharpening?’ The reality is that none of these apply when shooting in RAW mode. The only settings that apply when shooting RAW are shutter speed, f-stop and ISO.

When shooting a film, photographers typically pick a higher ISO when they need speed or when the light is reduced. In the world of digital capture, D-65 suggests shooting at the optimum ISO whenever possible because there is a direct correlation between digital noise and higher ISO. The higher the ISO, the more potential there is to generate noise. Noise is a level of electronic error usually resulting from amplification of the signal from the sensor. While there are various ways to mask noise, the best solution is to try and prevent it before it occurs. Up until recently, D-65 was adamant to try to shoot at the optimum ISO for the camera, the reason being that although camera manufacturers claimed excellent results at higher ISOs, we found that most of the cameras produced less than optimal quality at ISO 400 or above. Recently, because of better insulators in microcomponents and overall better technology, both Nikon and Canon have changed our way of thinking with the high-end cameras. While we still believe that the best quality is at the optimum ISO, we have seen spectacular results at ISOs above 1000. As time goes on, ISO may become less and less of an issue.

There is only one place to eliminate noise, and that is at the sensor level. Reducing noise after capture is a mask or band-aid; it is not truly eliminating the problem. If you do need some noise
Before You Shoot

reduction, D-65 recommends a great product called Noiseware (see http://www.imagenomic.com).

White Balance

The white balance indicates the color of the light in which an image was captured. Our eyes automatically adjust to changes in white balance by making the brightest area of the scene white. As you can recall, a film shot under fluorescent lighting looked green, while to the human eye, it never appeared green. While no camera is capable of the white balancing accomplished in the human brain, digital cameras do an admirable job. Digital cameras have sensors with red, green and blue filters. There are twice as many green filters as red and blue filters in digital cameras because our eyes are most sensitive to green wavelengths. Digital is trying to mimic the way our eyes see.

Unlike film, a digital camera gives you full control over white balance. Obtaining a specific white balance value can be accomplished in many ways. Some cameras allow you to set custom white balance values. While it is true that you can always adjust the white balance of a raw file after the fact, having to do this will slow down your workflow. Achieving the correct white balance in a camera will speed up your workflow.

Many cameras have an AWB mode. In our minds, this stands for average white band, and not average white balance. The photographer should take control and determine the desired color temperature, and not a computer chip. For example, many of us like to shoot at sunrise and sunset. The light at these times, known as golden light or National Geographic light, is exceedingly warm. Setting your camera to AWB at these times will correct this light to look more like light at high noon.

Below we have an example of the same image shot with two different white balance settings. The scene is a vendor selling squid in an outdoor market. It is a cloudy day, and there are fluorescent tubes and a red incandescent light bulb hanging over the squid, along with a green and white awning. It is the type of image that in the days of film, would be nearly impossible to correct. In Figure 1.1, the camera is set to daylight. In Figure 1.2, we have done an in-camera custom white balance to achieve the correct white balance that we wanted.
If custom white balance isn’t an option for you, another way to obtain an accurate white balance is to place an X-Rite ColorChecker in the scene.

To do this, place the X-Rite ColorChecker in the frame and capture the image. When you process the file in Lightroom, use the White Balance tool in the Develop Module and click on the second patch from the left in the bottom row. The white balance will be corrected instantly (Figure 1.3).

To use the custom white balance in the camera, focus on an area of the image that has white with detail (the underbelly of the squid in the upper left-hand corner of the image).

While white with detail will not give exactly the same reading as an X-Rite ColorChecker, it will be very close in most situations.
Color balance is very subjective. We all see color differently. It is technically determined in our brain. No two people see the exact same shade of red in a red ball. If you were shooting clothing for a clothing manufacturer, then we would always recommend using an X-Rite ColorChecker. The manufacturer will want the yellow sweater to look exactly or as close to the real thing as possible. Going to a beach at sunset and shooting a portrait for an editorial piece is another story. You would likely want the warm light on your subject, which is not ‘technically’ white balanced at all. In the days of film, we used an 81A filter on the lens or a sun CTO filter on the strobes to warm up the scene and make it look like afternoon sunlight. Many editors hired us specifically for this look, while other editors didn’t like the look of our warm portraits at all, thinking the skin tones were too orange. Neither look is right or wrong; it is just personal preference.

Understanding Histograms

One similarity between film and digital is that whether you are shooting with a digital camera or on film, getting correct exposure is essential for getting great results. Your creativity and composition may be great, but unless it is exposed correctly you have nothing at all. With film it is pretty easy to simply look at transparency and judge whether it was exposed correctly or not. Some photographers and photoeditors assume that exposure is not a problem with digital, because you see your results immediately. Although this is a great advantage, it doesn’t actually solve all the problems. Once you start looking at and understanding the technical merits of a digital file, the world that you thought you knew changes very quickly.
Figure 1.4 below contains only pure black and pure white. The histogram for this image looks like a pair of goalposts.

While many folks would complain that the histogram above is a ‘poor’ histogram, it is actually a perfect histogram for this particular image. This is a very important concept to understand. **There is no such thing as a ‘perfect’ histogram.** An image cannot be judged on its histogram alone, as illustrated above.

Every image has a histogram that represents the tonal values in that particular image. Judging an image solely on the histogram is a mistake that many people, photoeditors and stock agencies make. You must evaluate the image and its histogram together.

Figure 1.5 contains values from black (0) to white (255) and the histogram below it clearly shows that. However, the histogram shown below is not technically superior to the histogram shown
above. They each represent the tonal values of their associated image.

In Lightroom, the left side of the histogram represents 0% luminance while the right side represents 100% luminance.

Now that you’ve grasped these concepts, things start getting more complicated!

We will try and keep this simple and in ENGLISH. There is a conflict of sorts with digital and it is based on whether you come from a school of photography based on aesthetics or technical value. Let us explain. We grew up shooting transparency film, and when we wanted certain colors to saturate, we underexposed them. Our mentor was and still is Jay Maisel, who typically hit an electric shade of red known for its vibrancy that was about...
two stops underexposed. Many of Jay’s strong saturated colors were achieved with underexposure as much as two or even three stops. He shot for years on a film that many came to love known as Kodachrome. Today, with a digital camera one can still underexpose and the color will look similar to that of film but the quality of the file will be poor. WHY?

The basic digital camera of today has a dynamic range of about six stops. The majority of cameras offer capture in 12 bits, meaning technically that they can capture $2^{12}$ power or 4096 tonal values. If you divided the 4096 tonal values among the potentials of six stops and if each stop is looked at as a zone, it would be logical to assume that each stop has an equal amount of data. That logical assumption is wrong and accounts for one of the biggest misunderstandings when it comes to exposing for digital.

Most digital cameras today use a sensor that simply counts photons. They produce a charge that’s directly proportional to the amount of light that strikes them. The cameras for the most part use a series of array filters. The red-filtered elements produce a grayscale value proportional to the amount of red light reaching the sensor, the green-filtered elements produce a grayscale value proportional to the amount of green light reaching the sensor and the blue-filtered elements produce a grayscale value proportional to the amount of blue light reaching the sensor.

A raw digital file is truly a linear file and, ironically, the capture of data is very much the same way as traditional f-stop work with film. F 2.8 allows twice the light, as F 4.0 and 4.0 is twice 5.6 and so on. So without getting too geeky here, one half of the data of a 12-bit capture (4096 levels) or 2048 levels is in the brightest stop (highlights), 1024 in the next stop, 512 in the next stop and so on until one gets to the shadows that contain only 64 levels. The darkest stop of the digital file has the least amount of data and thus shows the greatest amount of digital problems, mainly noise that looks static on a television screen (Figure 1.6).

Since most of the information in a digital capture is in the first brightest stop, the very act of underexposure reduces the quality of a digital file. From a pure technical position you should expose digital capture so that most of the data is present. As a general rule, this means that a properly exposed digital file is slightly overexposed. Then bring down the exposure during processing.
Let’s think about film for a moment. When shooting transparencies, we typically underexpose to increase saturation and color. The problem here is that if we simply underexpose in camera, we will lose valuable data in our RAW files. Essentially, digital exposure is exactly the opposite of transparency film. In digital we need to make a judgment call on the overexposure, rather than the underexposure. It is during processing that we can achieve rich, saturated color, rather than during exposure where we would sacrifice the quality of the file.

D-65 does not recommend to *always* slightly overexpose in digital. With film, the ‘correct exposure' is the correct exposure. However, many times ‘correct exposure' is a slight underexposure in order to achieve the desired saturation and color. We don’t however always underexpose film. Similarly, we don’t always overexpose digital files.

**Warning: Using the Histogram Displayed on the Back of Your Camera**

Not to further confuse the issue, but there is also a lesson here for the photographer. Many cameras have a histogram display on the back of the LCD on the cameras that warn when a highlight is about to be blown out and many photographers adhere strictly to the histogram, but the LCD preview and the histogram on the back of the camera do not represent any real information regarding how your raw capture will look. The camera does an ‘on the fly’ conversion to sRGB. The histogram is a luminance histogram of the sRGB preview, not a true representation of your file; most importantly, as a general rule for some of the most widely used professional cameras, the overexposure warning is off by at least one stop.
This prevents you from blowing out the highlight, but it typically eliminates the brightest stop with the most information. The camera manufacturers set the threshold for this display too low, which will lead you to underexposure of your image. If you look at Figure 1.8, and realize that the histogram on the back of the camera is blinking at level 1024 instead of 2048 (one stop early), and if you are like most photographers, you are worried by the blinking histogram. So you back off one more stop. You are now at level 512. You have successfully eliminated two-thirds of the information in this image. The blinking light is useful in that it really means you have at least one stop to the right before you are blowing out any highlights. One amazing quality about Lightroom is the ability to recover almost two stops of blown-out highlight detail captured by the sensor, but not visible in the camera LCD. Beware of the camera’s histogram!

**Exposing for Digital**

Determining exposure for digital capture is quite different than exposing for film. Digital camera sensors have a wider dynamic range than many films and are much more sensitive to light than many films. You can use less created or strobe light with digital than you would with film. Lighting digital capture the same way you would light a film will generally result in an image that looks overly lit.

Another common exposure problem is that people will base their exposure on a gray card and as a result shoot at that ambient light value. A light meter reading taken off of a subject of known reflectance like an 18% gray surface is only giving you a base exposure. With digital it is vital to actually expose for the color as well as the ambient light. Colors change and vibrate depending on the exposure. Our best suggestion is to shoot at the same ISO value so that your brain gets used to the colors produced under similar light conditions. Ideally, shoot on manual so that you learn the light instead of letting the camera make the decision for you. D-65 determines what color in a scene we want to accentuate. Our exposure is based on that particular color. For example, an image with bright, vibrant yellow and very dark blue will have a different exposure value depending on whether you are accentuating the yellow or the blue, regardless of the ambient light that is constant throughout the frame.

The key to getting a digital file that is technically good is essentially to shoot in a RAW mode and overexpose slightly and then bring it
down during the processing phase. In the end you can still end up with a red that looks like the Jay Maisel red, and in fact with a good raw processor, you can actually achieve a better quality image with more detail and even more vibrant colors and saturation, but getting there is essentially the opposite of what we did when exposing film.

One thing that a photoeditor must keep in mind is that if a photographer delivers a raw file and it is exposed correctly for the greatest amount of data, the file will most likely be overexposed. A photoeditor may naturally think that the photographer should learn how to expose if his own knowledge is based on working with film, but the slightly overexposed digital file is actually the best one.

### 16 vs. 8: Is There a Bit of Difference?

Understanding the difference between 8 and 16 bits is a critical part of digital. Lightroom and Photoshop are all about 16-bit corrections and yet printing is all about 8 bit. Why do you need to care about bits especially if you are ending printing in 8 bit and know that 16-bit images are twice as big as 8-bit ones?

Let’s start with some basics:

**In digital imaging, the number zero is the complete absence of color while the number 255 represents the maximum level of a color.** 8-bit RGB images use 0–255 to represent each channel of red, green and blue.

**So, (255,0,0) is equal to red and (0,255,0) is equal to pure green, while (0,0,0) equals black and (255,255,255) equals white.** Numbers 0–255 give 256 total distinct values that each of these three channels can have, and $256 \times 256 \times 256$ gives 16.7 million different combinations for an 8-bit image.

**Now with 16-bit images, we get 65,536 values for each channel instead of only 256. So $65,536 \times 65,536 \times 65,536$ gives us 281 trillion total possible colors.** It's confusing if we make it so technical huh…

So let’s put all this in simple English and use fruits to describe 8 to 16 bits. Fruits and Lightroom go hand in hand and will actually make total sense.

Before we explain it is important to understand that altering pixel data is a destructive process. Quite simply, everything we
do in Photoshop hurts the pixels. In fact, the best way of using Photoshop is the method that produces the least amount of destruction.

To make this easy, we are going to use the concept of 256 (8 bits) and 65,536 (16 bits). Imagine that instead of pixels we had fruit deriving the images in Figures 1.7 and 1.8. Apples represent 8-bit, and strawberries represent 16-bit. Conceptually, we are making rows of fruits instead of pixels; so we have 256 apples making up the image in the 8-bit model and 65,536 strawberries making up the 16-bit model. Knowing that Photoshop is destructive if we went ahead and did a levels adjustment on the 8-bit model, we would have a hole, or in pixel terms a gap in data, in the image the size of one apple. Making the same adjustment on the 16-bit model, we would have a hole, or gap in data, the size of one strawberry. We could do many more adjustments on the 16-bit model, with each adjustment causing another strawberry-sized hole before we had a hole the size of one apple.
So as we edit in 16-bit mode, we will still lose data, but much less than we would in 8-bit mode. (It takes a lot of strawberries to make a hole the size of one apple.)

Can you see the difference between 16 and 8 bit? Yes and No. First, let’s look at the histogram of the image with no changes (Figure 1.9).

In the histograms below, choosing Auto Contrast, Auto Levels and a Curves adjustment on both a 16-bit (Figure 1.10) and an 8-bit (Figure 1.11) file will show a drastically different histogram. The histogram with the 8-bit file clearly shows gaps of data (apples vs. strawberries).

However, if someone were to show you a printed image, it may be very tough to decide whether it was 16 or 8 bits. There is one good example that is many times a telltale sign. In places like Miami where we have a nice blue sky, the sky in a print should go from a nice light blue to a much darker blue at higher altitude. In a print...
you may notice that the sky goes from light blue and then there is a line or what looks like banding going to a darker blue. Typically what you are seeing is an image that the adjustments were done in 8 bits instead of 16. The stripes or banding are missing gradations of tone, so instead of a nice even light to dark blue it appears as light blue and then a much darker blue.

So the bottom line is to work in 16 bits whenever possible.

Filters

While many photographers used all kinds of filters with film-based cameras, it is generally not a good idea to use them with digital. Why?

The glass in a lens is not flat and the lens is composed of many different elements and element groups. This glass has a meniscus curve. A meniscus curve is similar to the shape of a kneecap.
The idea of using glass with a meniscus curve is that light will pass through the lens and hit the sensor and then bounce straight out through the lens. Putting a filter, like a skylight filter that is generally a screw mount, can wreak havoc. The glass on the filter is most likely not a meniscus curve and light will pass through the filter, hit the sensor and then reflect back on the sensor instead of passing through the filter. Skylight and UV filters are also altering the wavelength of light that hits your sensor. The conversion of photons to pixels by the sensor is based on calculations from pure, natural light. In simple English, changing the light with a UV filter will affect contrast in the final image because the sensor has no way of knowing there is a UV filter on top of the lens. A polarizing filter is the only filter that is acceptable for digital, because
achieving the effects of a polarizer in Lightroom or Photoshop is nearly impossible.

So how do you protect your lens? Use the lens cap! Jay Maisel uses Velcro strips to keep the lens cap attached to each lens. Otherwise, you may find them in your washing machine after they fall out of your back pocket 😂

**Your Physical Work Environment**

The room that houses your computer is an important part of digital workflow that is frequently overlooked. Your physical working environment must be considered part of your color management...
system. Following are some suggestions for maximizing the impact of your workspace.

- Control ambient light when correcting color: While many people will only work in totally dark rooms when correcting colors, it is difficult to work in total darkness for long time periods. In reality, total darkness isn’t practical and too much ambient light competes with the light emitted from the monitor. So you will need to find a balance that works for you in your environment.

- Use a monitor hood: Shield the monitor from ambient light by using a hood on its top and sides. These two areas should be shielded to a distance of $12\text{ in}$. The inside of the monitor hood should be of matt black color. These hoods can be purchased from stores catering to the graphics design trade or made using directions found on the internet.

- Configure a neutral computer desktop: Your desktop should be as neutral a color as possible. A solid gray is optimum. Your desktop should not be configured to display an image of your child or favorite travel destination.

- Neutral walls reduce color cast: The visible walls around your monitor should be a neutral color; gray is ideal.

- Keep CPUs and monitors away from sources of direct heat or cold.

**Working Backups**

The most popular means of storing data is on hard drives. It is not a matter of if they die or fail. It is only a matter of when they will die. All data must be backed up regularly. For workflow, D-65 suggests a secondary hard drive to be used as a backup, and performing backups of what you’re working on a regular basis.

**Tip for Canon Camera Users**

Some camera manufacturers allow you to put information into a metadata field called ‘Owners Name’. By placing the proper copyright information into this field, you are embedding your name and copyright into all files created by that camera (Figure 1.12).

For Canon cameras: connect the camera to the computer with a Firewire or USB cable. Using the Canon software you can add and store your copyright information in the camera. This is an incredible asset and saves you a step during file processing.
Summary

- Not all memory cards are created equal, and bigger isn’t necessarily better. Choose the correct memory card for your camera and for your needs. Don’t forget to format your memory card every time you take it out of the camera.
- Only edit in camera when your memory card is not close to being full.
- The best image quality will be obtained when shooting at the optimum ISO for your camera. Noise is inherent at higher ISOs.
- The only filter acceptable for digital is a polarizer.
- Achieving the correct white balance may be subjective.
- X-Rite ColorCheckers can give a photographer the technically correct white balance.
- Your work environment is a critical component to your overall workflow and image quality.
- The histogram of an image shows the range of tone within an image. There is no such thing as a good or bad histogram. It simply reflects the tonal range of the image.
- Digital is linear capture, meaning we are capturing degrees of brightness. Twice the light or brightness equals twice the data or information.
- With digital capture, it is better to make a judgment call to overexpose, rather than underexpose.
- The histogram on the back of the camera is an sRGB histogram representing luminance only, and is typically off by one stop.
- It is essential to have a backup for digital imaging.

Discussion Questions

(1) Q. You have a job that requires you to shoot 500 images. Should you go out and buy a 16-gig card?
A. No, it is far better off to split the job among multiple cards. The greatest risk of data loss during the entire workflow process is with the cards themselves. Although there is recovery software available, it doesn’t always work. Duplicating the data from the card multiple times and using multiple cards reduces the risk of loss.

(2) Q. Why do you want to try to shoot at the optimum ISO for your camera?
A. Grain and noise are two different things. While grain was desirable as an aesthetic quality in film, noise is
always seen as a defect in digital. As ISO increases, noise becomes an inherent problem in digital capture. While it can be masked using software after the fact, it can only be eliminated at the sensor level upon capture. Shooting at the optimum ISO for your camera reduces the noise and increases the overall image quality.

(3) Q. Should I use a skylight or UV filter to keep my lens protected?
   A. No, the glass element in your lens has a meniscus curve. This curve allows light to hit the sensor and bounce out through the glass. The filters do have a meniscus curve, and allow light to reflect off the sensor, back to the filter, and then back on the sensor, creating undesirable halos and ghost-like effects on the image.

(4) Q. Shouldn’t I underexpose my digital files, just like I did with film to make the colors 'pop'? I love the look of Velvia.
   A. No, digital is linear capture. Twice the amount of light is equal to twice the amount of information. Half of all the information in your digital file occurs in the first brightest stop and decreases by half with each additional stop. The reason noise occurs in the shadows of an image is that the shadows contain 1/64th of the information than the highlights. When exposing for digital, you will achieve a better quality file by exposing to the right (overexposing a bit) and bringing the image down in processing. Underexposing in camera, while it may achieve your desired effect, will increase noise and block up shadow detail.

(5) Q. Since I can always change the white balance of my digital file with software, does it really matter what I shoot it at?
   A. It is critical to understand white balance so that you, and not the camera, can decide on the color and characteristics of the image. You may want to warm up or cool down an image, and all of that is achievable in camera. While you can make corrections after the fact, those corrections will reduce your efficiency and increase your time spent during processing. It makes more sense to get it right in camera to start.

(6) Q. When shooting RAW, is it a good idea to judge exposure of an image by looking at the histogram on the back of the camera?
A. The histogram on the back of the camera is in the sRGB color space only, and shows a very small gamut. It is also a luminance histogram only, and not representative of the raw data you are shooting. Additionally, the camera manufacturers generally tweak the histogram so that it is off by at least one stop. This is done to keep photographers from blowing out highlights, which was thought to be non-recoverable information in a file. With Lightroom and other imaging software, up to two or three stops of highlight detail can be recovered. Also, one half of all your digital data for the file is in the first brightest stop.

Author Queries

{AUQ1} Please check and confirm whether the edits to the following sentence are acceptable: 'As you can recall, a film…'

{AUQ2} Please check and confirm the edits in the following sentence for correctness: 'D-65 does not recommend…'