



# DIGITAL PHOTOGRAPHY for BEGINNERS

UNDERSTANDING EXPOSURE, LIGHT,  
COMPOSITION, AND USING YOUR DSLR

by **Kat Sloma** of

**Kat Eye Studio**



a publication by  
**PhotographyBB**

# TABLE OF CONTENTS

PREFACE.....	<b>03</b>
INTRODUCTION.....	<b>05</b>
CHAPTER 1: CAPTURING LIGHT.....	<b>07</b>
CHAPTER 2: EXPOSURE.....	<b>16</b>
CHAPTER 3: COMPOSITION AND FOCUS.....	<b>30</b>
CHAPTER 4: APERTURE.....	<b>45</b>
CHAPTER 5: SHUTTER SPEED.....	<b>54</b>
CHAPTER 6: EDITING BEYOND THE BASICS.....	<b>63</b>
NEXT STEPS.....	<b>72</b>
ABOUT THE AUTHOR.....	<b>73</b>

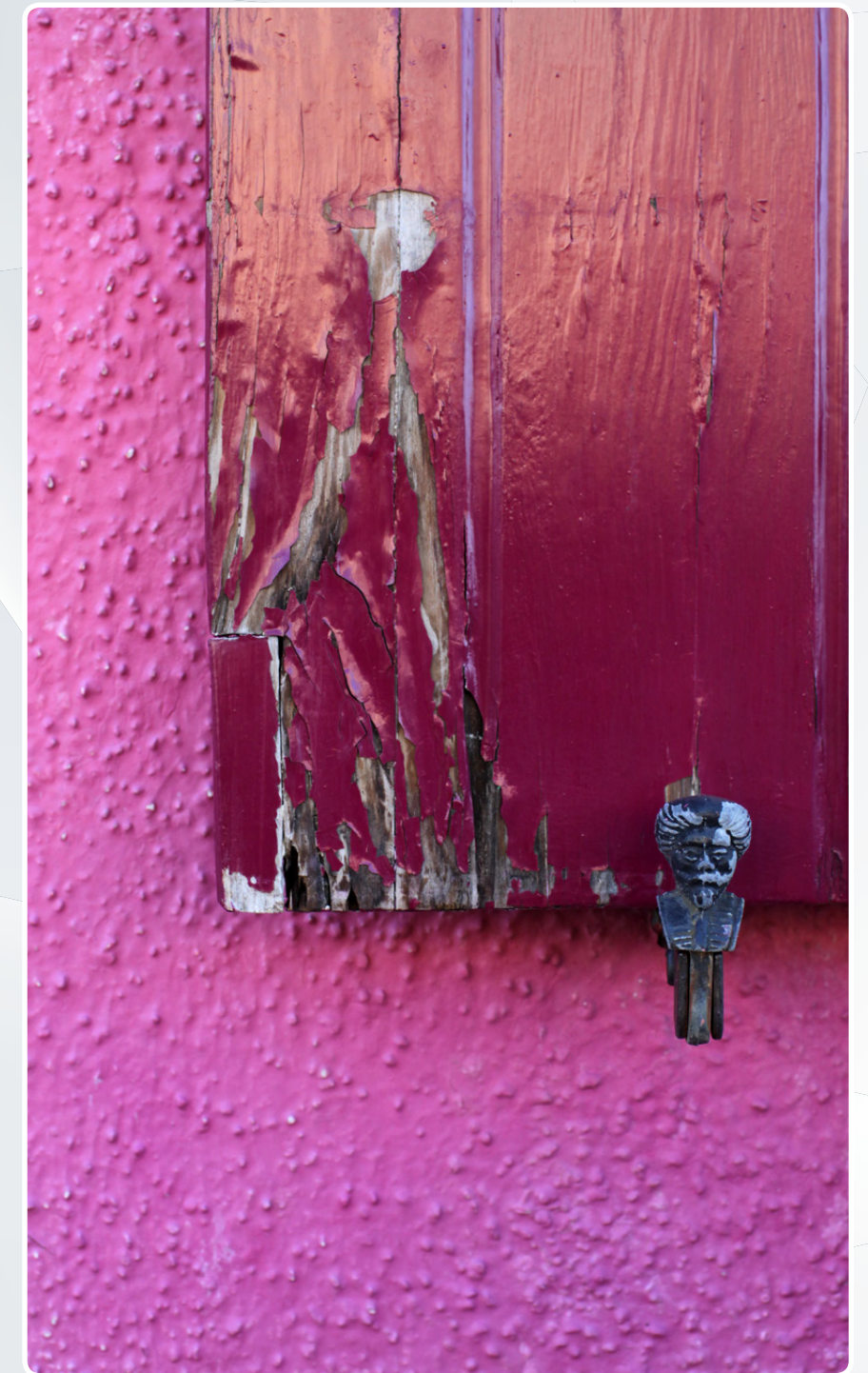
# PREFACE

One day during the summer of 2010, I made an amazing discovery. I found that I was expressing myself through photography to a surprising degree. While I had been growing my photography skills slowly and organically for the previous ten years, I suddenly felt that I reached a new place. What had fundamentally changed? Being a curious and introspective person by nature, I wanted to understand how I got to this point. I looked back at the progression and realized there were some specific steps I took along the way. As I started to retrace my journey step by step, I felt compelled to share it with others and help them discover a similar journey of their own. The idea of my initial e-course, *Find Your Eye: A Photo Course with Heart and Soul*, was born.

When I first created the course, I couldn't separate the creative journey of artistic expression from the technical journey of learning the craft of photography. To capture great images that speak to your heart, you need both technical skill and creative vision. This eBook is the technical component, originally written for the e-course.

Two years later and I'm in a different place on my journey. I've discovered an even deeper love of photography as a form of expression. As I continue to stretch my own skills and understanding, I've found new ways to share that love with others through creative e-courses and workshops. Along the way, I have developed a deeper passion for the creative component. Yet... the technical information is so necessary and fundamental to learn when starting out in photography. I've received great feedback from the students who have used it, so I couldn't just let it sit on my computer. I wrote this eBook to help you explore your full creativity by mastering the fundamentals of digital photography.

This book is intended for those who are just beginning their journey with photography. It takes the interested learner from "full auto" through the basic creative controls of the digital camera and post-processing. It's not intended to be a comprehensive tome on digital photography, but an introduction that doesn't overwhelm. From here, the individual photographer can choose their own "next steps" to learn more about this wonderful art form.





Photography continues to be an amazing gift, allowing me to express my personal experience of the world around me. Creating photographs has resulted in a deeper understanding of myself and my journey through life. If even one person uses this material to start on the path of discovering photography as a similar gift, then the effort that went into its creation was worth it.

If you are just starting your journey with photography, I hope you can learn from this eBook. If you are already past this material, I hope you will share it with someone who wants to learn. We all benefit by having art in our lives, and photography is one of the most accessible art forms available today. Enjoy!

☺ Kat.

**KAT SLOMA** - *Kat Eye Studio, LLC*  
November 17, 2012

# INTRODUCTION

Photography is art. And like any other art, your photographs are an expression of your heart and soul. To capture great images that speak to your heart, you need both technical skill and creative vision. In digital photography, the camera and computer are the technical tools for creation. Learning to use these tools effectively will make a difference in how well you can express yourself through your images.

As with any new endeavor, what you will get out of this material will depend on what you put into it. The chapters and exercises are designed to help you learn to use the tools of digital photography, and will only work if you actually practice. There is no magic bullet to short-cut the process of personal investment and introspection that learning entails. It will be a journey that takes the investment of your time and energy, but hopefully it will be a fun and profitable investment.



## BOOK FORMAT

The material in this book was originally created as a six-week e-course, so the content is divided into six distinct chapters. Each chapter covers a specific technical topic and includes exercises at the end to help you learn and integrate the material. If you want to approach this material as an introductory course, complete one chapter per week as originally intended. Alternately, you can use this book as a reference, reading straight through or skipping to topics of interest. Do what works best for you.

## THE DIGITAL TOOLS

When expressing your vision, the actual camera you use is of less importance than you might think. What matters most is your understanding of how to use what you have to the greatest effect. Cameras and software are just tools. The tools don't create the art, the photographer does – that's you! It's no different than the art of painting, where the brushes and paints are tools. It is the artist who wields the brush and blends the paints to get the end result.

This book does not contain in-depth technical tutorials for any specific camera model or photo editing software. Instead, the material is designed to cover the basics: how the tools of the camera and the software work together to create the final image.



Let's look at the digital tools themselves, before exploring how to use them:

### DIGITAL CAMERA

This book is written for use with either a point-and-shoot (P&S) or digital single lens reflex (dSLR) camera. You will need to find your owner's manual, because you will need it to become familiar with the features. With a P&S camera, you may find that your camera capabilities will limit your application of some of the material in this book. Don't worry, you don't need to run out and buy a new camera! Just focus on the concepts of the chapter, learn how to apply them to the extent of your camera's capabilities, and look for examples of the concepts in other photographer's work. As you work through this book, you might find your current camera is more capable than you realize. If you have a dSLR, you are in great shape! The next step is ensuring you understand the basics, in order to make the camera work for you.

### PHOTO EDITING SOFTWARE

For photo editing software, there are many possibilities to choose from, and this book does not cover any specific software package. It instead focuses on the basic photo editing steps which help you get good end results and express yourself more effectively. On your own, you can find additional tutorials on the techniques for your specific software. For more information on your chosen software, look in the help menu, invest in an instructional book or search the internet. You can search a phrase such as, "color correction SoftwareName," and see what information is available. Once you know what to search for, you will find there is a wealth of information on photographic topics available online. If you don't have photo editing software of your choice yet, and you're not sure

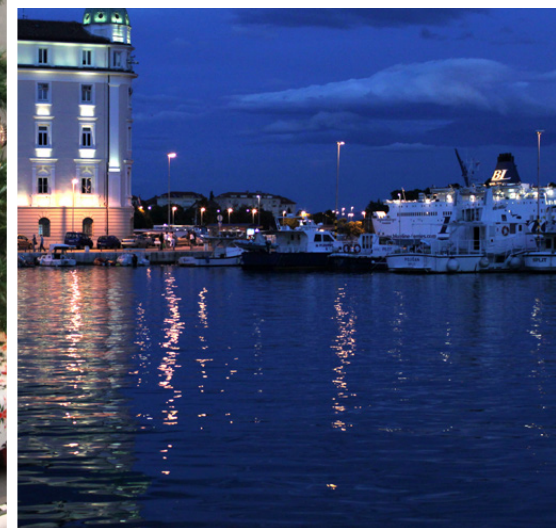
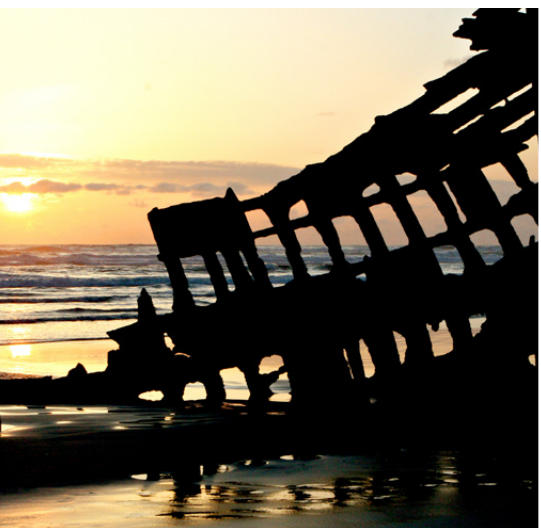
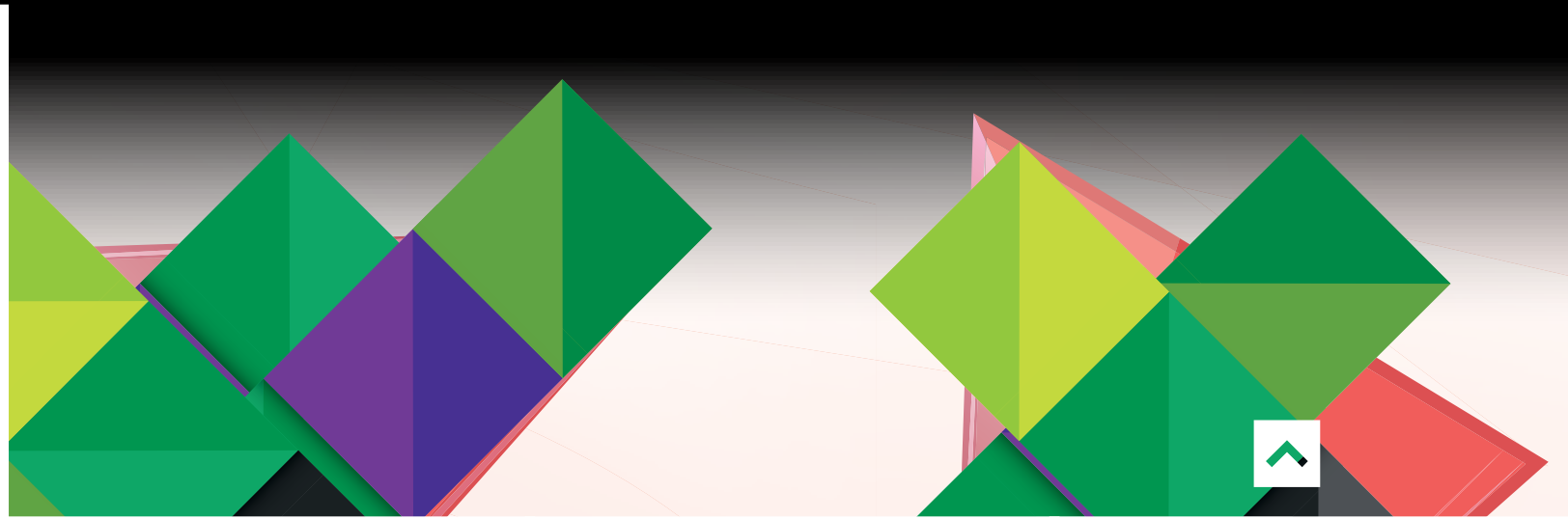


where you want to invest your money, there are several free options. Take a look at [PicMonkey.com](https://www.picmonkey.com), [Pixlr.com](https://www.pixlr.com) or [Aviary.com](https://www.aviary.com) for online editing options. Some photo sharing sites, such as [Google+](https://www.google.com/picasa/) (Picasa) and [Photobucket](https://www.photobucket.com), also have editing software integrated with their services. Another option is a 30-day free trial download from [Adobe](https://www.adobe.com) for Lightroom or Photoshop Elements.

Once you have your digital camera in hand and software picked out, you are ready to start learning the digital photography basics.



CHAPTER 1:  
**CAPTURING LIGHT**



**P**hotography is the art of capturing light reflected by or emitted from a subject, but light is not always immediately obvious to the beginning photographer. You may start by seeing photography as mainly about subject and composition. While those are important elements of creating a good photograph, another key element is the illumination of the subject and how it is captured by the camera. The quality of light is a detail that takes a photo with an interesting subject and composition from good to great.



It can take time, along with a lot of images and experimentation, to get used to noticing light and to predict how it will look in your images.

### TYPES OF LIGHT

There is significant variation in the light you see every day. Each different type of light has unique qualities, and the camera records each differently. The difference between what you see in a scene and what the camera captures can be hard to recognize without practice, since the way the camera records light is not the same way our eyes see light. The human eye and brain work together in amazing ways to enable you to see. You can perceive subtleties in color and gradations from light to dark that are not possible to capture faithfully with a camera.

Every type of light has a “color temperature,” which means that each light source will produce a slightly different color of light, depending on the source and—in the case of the sun - time of day. This is important to begin to notice and keep in mind for creating photographs.



You can adjust your images for the effects of color temperature by using the white balance setting in the camera or during post-processing in your software. You may prefer to keep your camera on Auto White Balance (AWB) and make adjustments later, so you don't have to worry about changing the mode back and forth while in the moment of creating photos. There can be many settings to pay attention to as you photograph, and staying on AWB means one less thing to remember.

Let's start by exploring the types of light available; both natural and artificial.

### NATURAL LIGHT



*Example of midday sun*

**Direct Sunlight** – This is bright sunlight, which casts dark, defined shadows. Direct sunlight can be harsh in the midday when the sun is high in the sky, but the light creates natural, vivid colors. There is high contrast, light to dark. The time of year can also have an impact on the qualities of direct sunlight, as the angle of the sun changes in the sky.

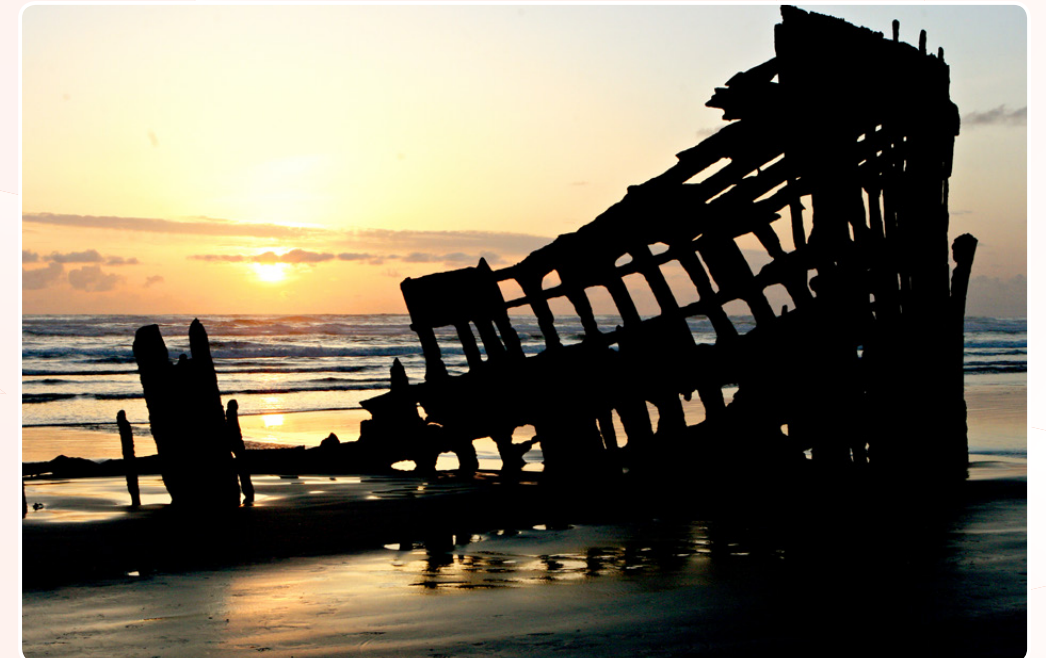


*Example of midday sun*



*Examples of Evening sun*

At the start and end of a day, sunlight becomes more gold or red. The “golden hour,” the hour just after dawn or just before sunset, provides beautiful red-gold light. Shadows are elongated and softened by the angle of the sun. Many photographers consider this the best light for photographs.



*Examples of Evening sun*

**Indirect Sunlight** – There are many ways to get indirect natural light. Shade, clouds, reflections, and windows all provide sources of indirect light. Indirect sunlight is softer; shadow edges are fuzzier and less defined. With indirect light, both intensity and color will vary dramatically with location and with the ambient direct light

available. For example, the quality of light in the shade is very different if the sky is sunny or cloudy. The light coming in through a window will be different depending on if it is a north or south facing window. Reflection of light from water or rainy pavement can provide beautiful sources of indirect light.



*Left and Top: Indirect light in shade on a sunny day*

*Right and Bottom: Indirect light on an overcast/cloudy day*

**Evening Light** – The “blue hour” is the hour just before dawn and just after sunset, where there is natural, indirect light available from the sun behind the earth. This time of day can create deep blue skies in your images, which are interesting alone, or in conjunction with warm, yellow city lights.

**Moonlight** – There is also natural light at night available from the moon, depending on the time of the month. It provides a monotone, silvery light that is very different from the sun.

*Examples: Early evening vs. late evening light.*

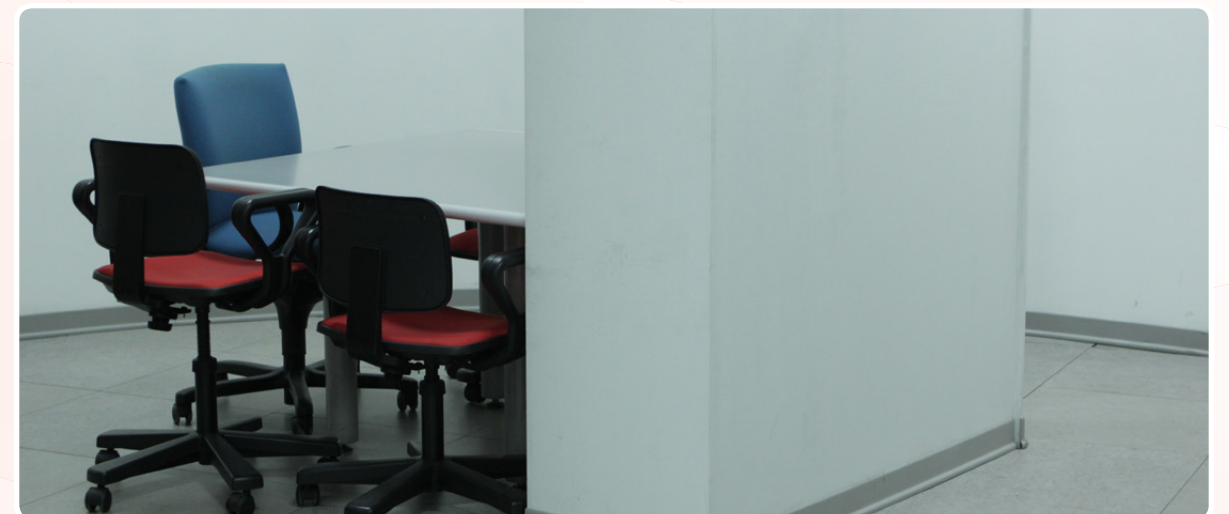


## ARTIFICIAL LIGHT

**Incandescent** – These were once the most common light bulbs, before transitioning to more energy efficient alternatives. Incandescent lights provide the typical yellowish light equated with indoor photographs without flash. These are a soft, warm light source. Example, below.



**Incandescent** – This is the typical office light, and it can result in a blue-green cast to images. There are a range of fluorescent lights available, each providing slightly different color tones. Example, below.



**Camera Flash** – For neutral impact on colors, flash units are typically set to provide light that is similar in color temperature to midday sunlight. If used directly, light from a flash can be very flat, meaning everything is illuminated equally and there can be strong, defined shadows on surfaces behind the subject. This effect can be reduced by using a diffuser or bouncing the flash off of another surface.



*On-camera flash*



*External flash, bounced off ceiling*

**Candles and Fire** – A flame provides warm, yellow to red light.



## HOW THE CAMERA SEES LIGHT

Now that you're thinking about light and how the human eye perceives light, let's discuss how the camera sees light. The digital camera uses a sensor to record light. The sensor is made up of millions of individual sensor elements, or pixels, which take light energy and record it digitally. What the sensor records is based on both the light's color and intensity and how long the sensor is exposed to the light. Exposure will be discussed in more detail in the next chapter.

Without knowing all of the technical details of how the sensor works, the most important thing to remember is that both color and gradation of light looks different to the camera than what you see with your eye. This can be a source of frustration to the beginning photographer. It is important to internalize this point: the light and shadow, as captured in your camera, will not look the same as what you see with your naked eye. Once you understand this fundamental point, the next step is to learn how to use the digital tools to best express what you saw. This takes both learning the camera controls as well as how to use photo editing software, since there is much that can be done with image processing software after image capture to make adjustments.

## POST-PROCESSING FOR COLOR CORRECTION

As discussed earlier, light looks different to the eye and the camera in different situations. Digital cameras, with their sensors and digital image processors, use white balance to adjust for the changes in color of light. Even as cameras advance and the Auto White Balance performance continues to improve, sometimes the camera will get it wrong. There are multiple technical reasons for this, but don't worry, you can usually recover in software by correcting the color or white balance.

Color correction is often needed when shooting indoors, due to the color cast of artificial lights. The photo below was taken indoors with the Auto White Balance setting. The camera captured the light with a very yellow tone. After correcting the color in software, the image is closer to what was observed with the eye.

Night images may often require color correction. As with any edit, you have to be careful in software color correction to avoid overcompensating with the correction. This example (right) shows an image as captured by the camera on left, with a natural looking edit in the center, and an over-corrected edit on the right.



*As captured in camera*



*After color correction in post-processing*



To better help the camera capture the color accurately, you can change the white balance settings in camera for the type of light you are using, which can save you time in post-processing. The downside with changing from the Auto White Balance setting is you have to remember to change back, when your lighting situation changes.

Practice time! Grab your camera, find some light, and observe the effect on your images.

### EXERCISE - SEEING LIGHT AND CORRECTING COLOR

**1. Review your camera manual for the following functions, and learn how to set them if they are available.** If you can't find your manual, most manufacturers have the manuals available on their websites as PDF files you can download to your computer.

- a. Automatic and Manual Modes
- b. Flash Setting – turning on/off
- c. White Balance Setting
- d. ISO Setting
- e. Setting File Type - Unless you have some prior familiarity with RAW processing, set your camera file type to high resolution JPG with a Neutral picture mode. RAW processing is beyond the scope of this material.

**2. Adjust your camera to following settings:**

<b>Camera Mode</b>	Automatic mode without flash. For a dSLR this will typically be Program mode ("P" on the dial). For a point-and-shoot you may have a Program mode or you can use auto mode with flash off.
<b>White Balance</b>	Set to Auto White Balance (AWB). This would be the default setting if you've never changed it.
<b>ISO</b>	If you can, set the ISO setting to Auto. This will allow the camera more freedom in finding a good exposure. If you need to set the ISO setting, try 400 as a general-purpose setting. (If you find you are getting blurry images in the exercise in lower-light situations, increase the ISO setting to 800 or higher.)

**3. Take photos of the same subject in six to eight different lighting situations.**

Use an inanimate object that can be easily moved around. For best results, make it an object you like and are interested in photographing.

- a. Use the same location but different times of day for three images using a natural light source.
- b. Use different types of light for the remaining images – direct, indirect (multiple sources), indoors, out of doors, artificial, flash.
- c. Make note of the time of day and location for each set of photos.
- d. Note: This exercise doesn't have to take all day. Spend five minutes with each location/light source and take a few photos with different points of view relative to the light source (shadow vs. illuminated side, etc.), then move on.

#### 4. Download and review on the computer.

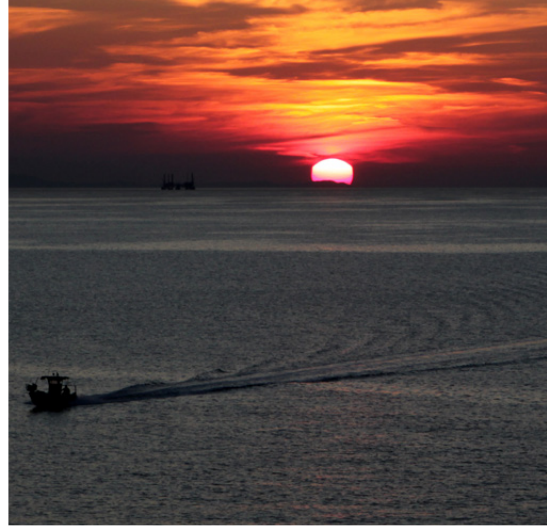
- a. Notice the differences in the light in each situation, the effect on the appearance of the subject (color, shadows, details), how your camera is focusing, how it is exposing the images, which compositions are more interesting to you.
- b. Learn how to view the camera's settings for each photo. In Windows: Right-click on the image file, select Properties and then click the Summary or Details tab. In this tab, you will see the camera settings listed. This is helpful when you want to compare the settings between images.

#### 5. Pick two or three of your best images, the ones that you really like.

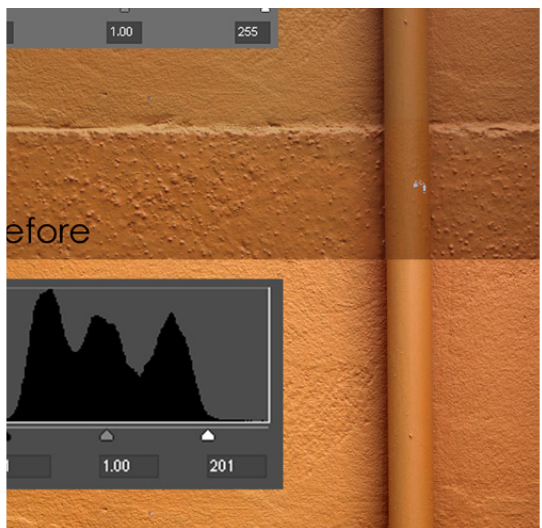
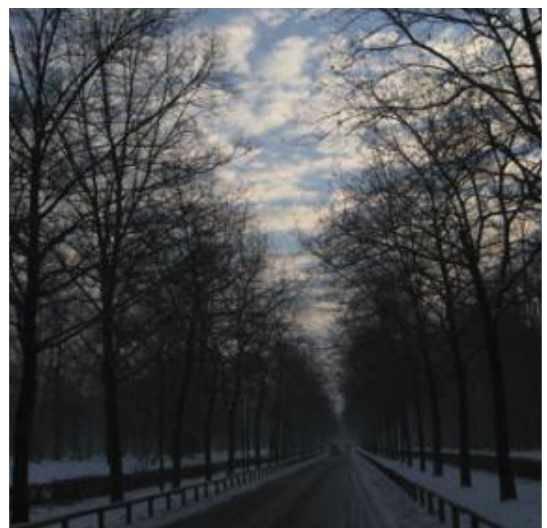
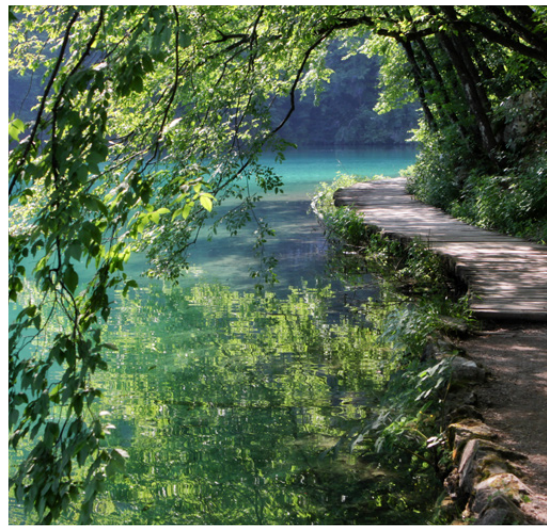
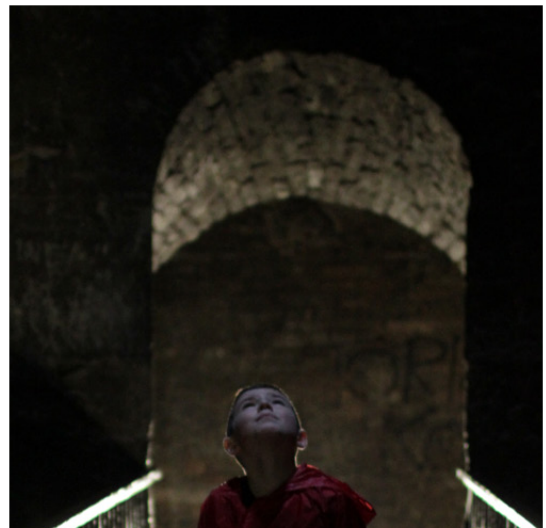
- a. Open these photos in your photo editing software, and play around with color correction. How did your camera do with the color correction? Were you able to "fix" it if it was off? Which image do you like better – before or after the correction?
- b. Write down what you like about each of these images, what caught your eye. If you would change anything next time, note that too.



NOTE: Always save edited files to a new filename. Make sure you don't overwrite your starting file with the edited file. If you make a mistake or learn a new technique, you may want to go back later and re-edit your image, starting with the original file.



# CHAPTER 2: EXPOSURE



In this chapter you will learn more about how your camera captures light and how to control exposure. After these first two chapters, you will likely begin to notice light and exposure in your images and those you see around you, in advertising, magazines, online, and in movies. This is great! Take notice of what you like and don't like in the images. Notice the feeling the artist conveys in the image by manipulating lighting and exposure.



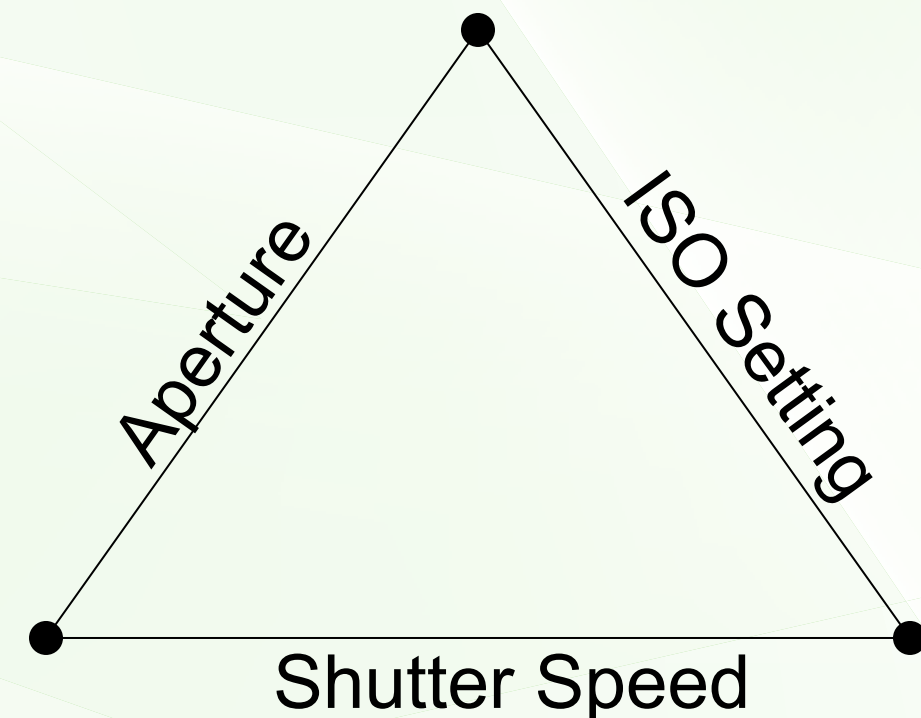
## EXPOSURE TRIANGLE

As covered in the last chapter, the image that the digital camera sensor captures is based on the light reflected or emitted from a subject and how much the sensor is exposed to that light.

Camera exposure – the “how much” – is primarily based on three settings:

- The size of the opening in the lens (aperture)
- The length of time that the sensor is exposed (shutter speed)
- The sensitivity of the sensor (ISO setting)

These three settings work together to create the exposure triangle, and you can adjust the settings in different ways for creative results.



A triangle always has three sides. Even though relative length of each side may change, it is still a triangle. The exposure triangle works similarly: you can create a closed triangle (good exposure) with many different combinations. When you move one side by changing one camera setting, the exposure triangle can be closed or “corrected” by changing the other two camera settings to compensate.

The following images help to illustrate this concept. Look closely at the settings given for each image. Even though the camera settings are different, the resulting images are almost identical. While the exposure triangle is changed by the different settings, the exposure of the image is the same for each combination of camera settings.

Future chapters delve into aperture and shutter speed in more detail. This chapter focuses on understanding the general concept of exposure.

Shutter Speed: 1/40s  
Aperture: f/2.8  
ISO Setting: 200



Shutter Speed: 1/60s  
Aperture: f/3.5  
ISO Setting: 400



Shutter Speed: 1/80s  
Aperture: f/4  
ISO Setting: 800



## OVER- AND UNDEREXPOSURE IN IMAGES

It is important to understand how your camera's handling of exposure affects the end image, since you want to capture the desired exposure in-camera as much as possible. You will want to understand which adjustments for exposure are possible in post-processing.



*Dark image, much of the image is underexposed.*

There is a broad range of exposures for any one image: from dark, with only an element or two visible within a black field, to so bright that only an element or two is visible in the surrounding white. This is a range from underexposed (dark) to overexposed (light). The perfect exposure will depend on the available light, your equipment, and what mood you want to convey in the photo. Both of the examples below have valid exposures, even though they have different looks.



*Light image, much of this image is overexposed.*



**Overexposure** - When an area of an image is completely overexposed, there is no detailed information recorded. The camera fills in overexposed areas with white pixels. This area is often referred to as being "hot" or "blown out." All detailed information is lost, you cannot recover anything in post-processing in a blown out area. To the right is an example that shows the areas in a photo where there is no detailed information.

**Underexposure** - When an area of an image is completely underexposed, the sensor responds in a similar, but opposite manner. The pixels in the underexposed region are filled in with black.

Getting an under or overexposed part of an image often happens in situations with high contrast, such as looking down a shady street under a strip of bright sky, white clouds above a landscape, dappled sunlight under trees, or looking through a window into bright light.

Here are two examples of one scene, where the exposure and focus is changed between the dark and bright areas. The resulting images have a different focal point, due to the difference in focus and exposure, even though it is the same scene.



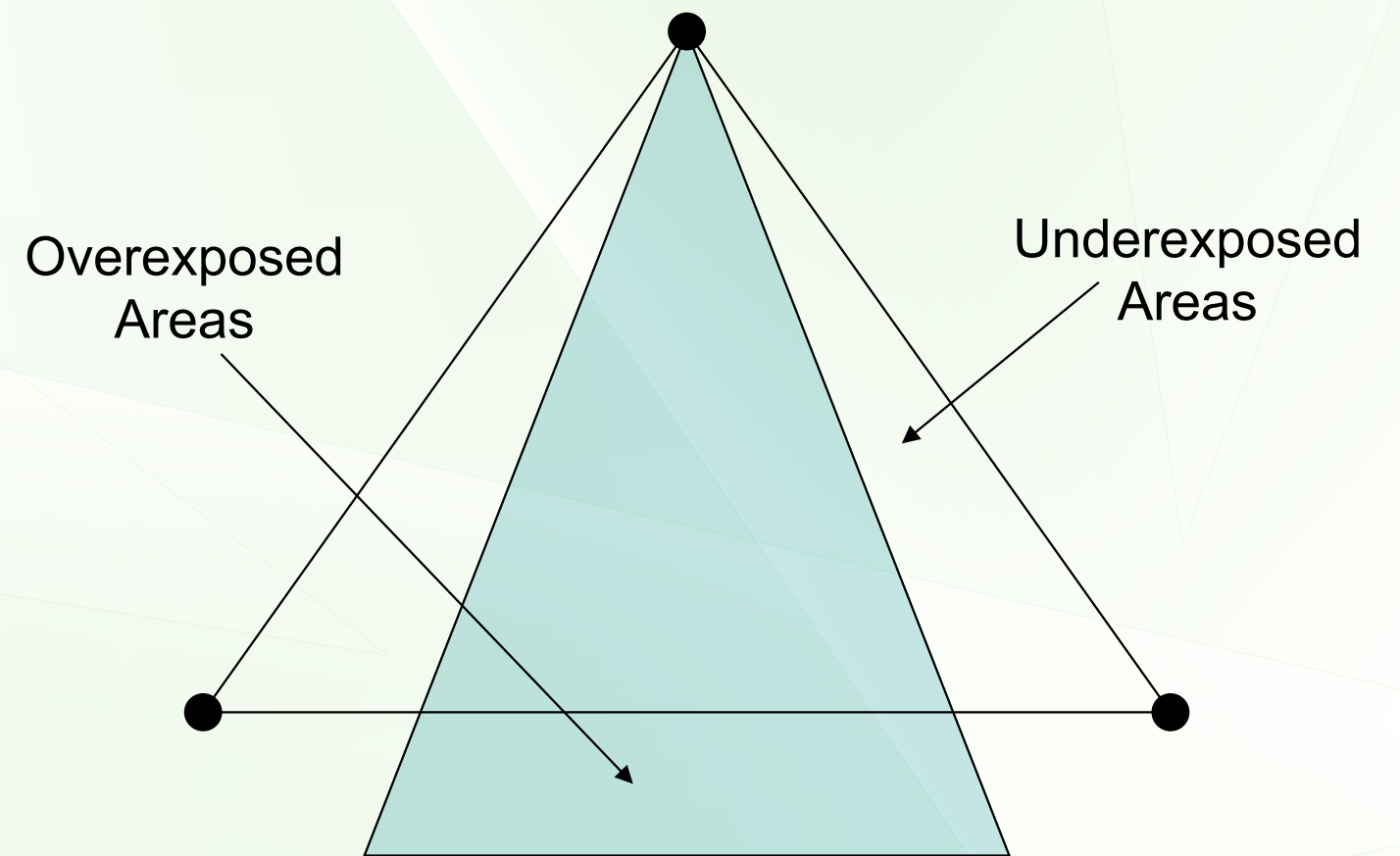
*Exposure and focus on wall*



*Exposure and focus through window*

You can think of each image exposure as a unique triangle shape that is overlaid on the ideal exposure triangle. If an image is perfectly exposed, the triangles would perfectly line up. In the real world, however, there is no perfect exposure.

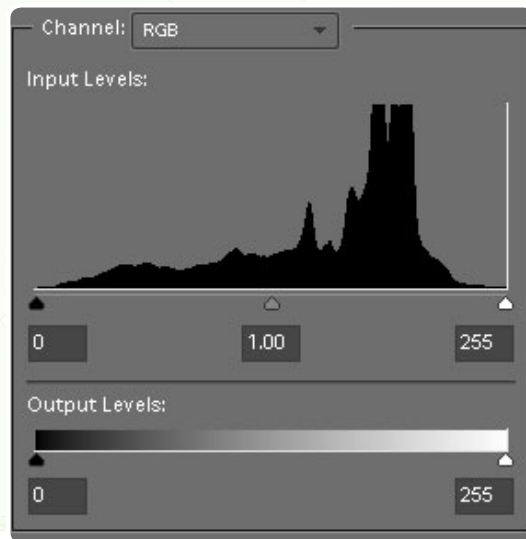
Most of the image exposure fits within the triangle, but there may be gaps on the inside or a few bits hanging outside. You want to do your best to expose within the exposure triangle. When your exposure is optimal, you won't be losing detailed information and minimal edits are needed in post-processing.



## USING THE HISTOGRAM TO VISUALIZE EXPOSURE

In most digital cameras, you can review the image on the LCD after it is captured. While this is good for assessing composition and gives a general idea of how the image will look on the computer, it can be an inadequate method to quickly assess if the image has over- or underexposed regions.

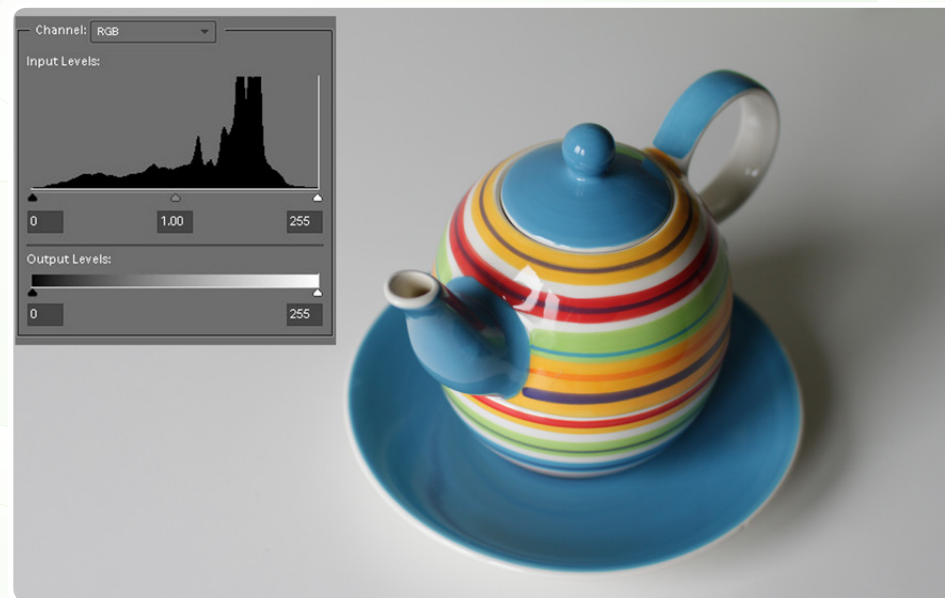
You can quickly ascertain exposure by using the histogram. A histogram shows you how the image is exposed from dark (left side, black or "0") to light (right side, white or "255").



Here is an example of an RGB, or composite histogram, which is a combination of all color channels – red, green and blue. Each color channel has its own histogram, but this discussion will be focused exclusively on the composite RGB histogram.

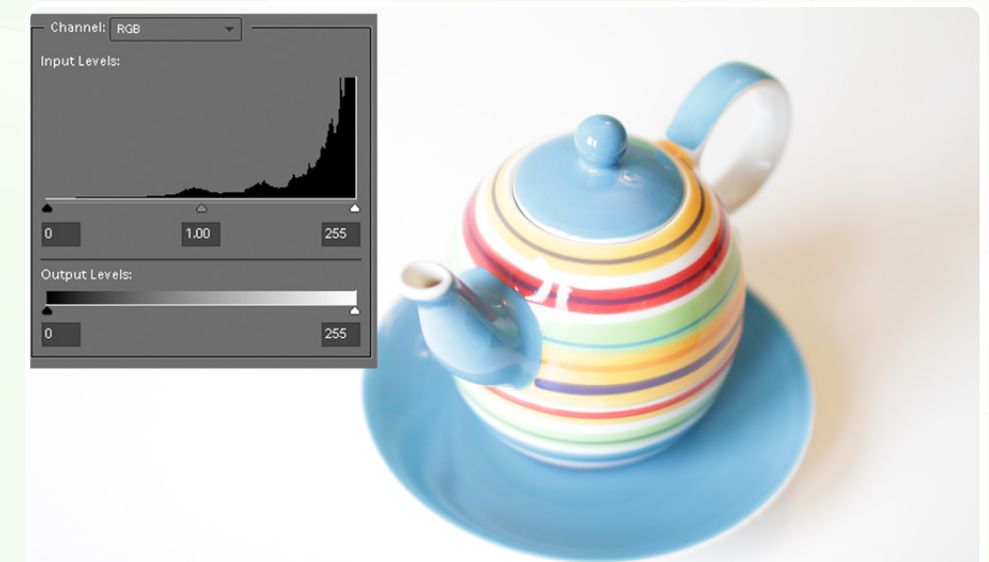
The black shape describes the total light range exposed to the camera sensor. The highest peaks of the histogram are where most of the image falls in the range of light to dark. You can see from the histogram that the image has more light areas than dark, because the highest peaks are in the right half of the histogram, toward white. You can also see that the exposure is reasonably balanced; the histogram covers most of the range from 0 to 255, although not all.

You can see how the histogram fits the image. Most of the image is light (the white background) with some medium color and no areas that are very dark.

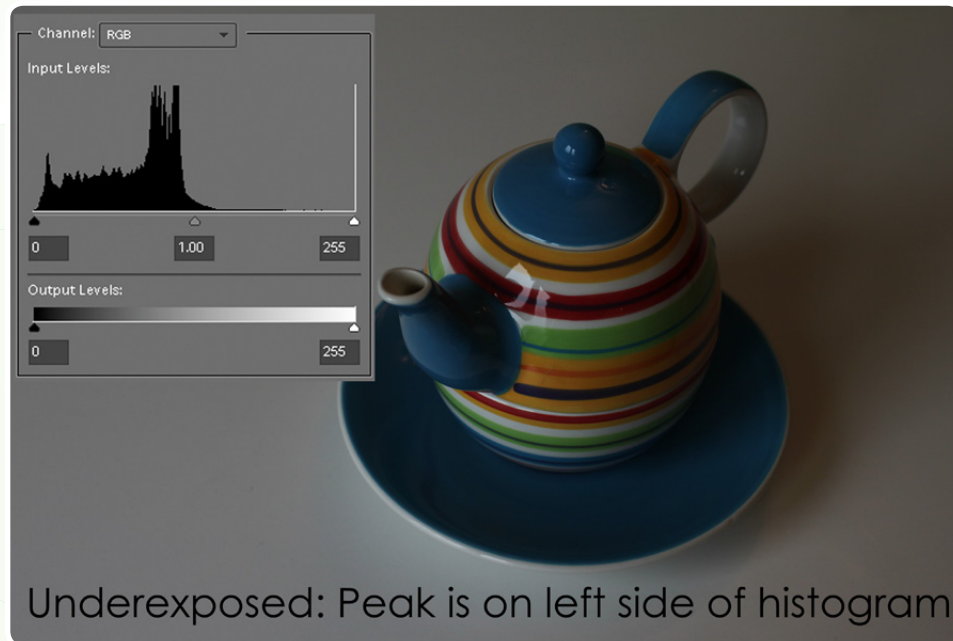


There is no "right" or "wrong" histogram, just as there is no "right" or "wrong" exposure. The histogram will vary depending on the image you are capturing. The best use of the histogram is to understand what is happening with your exposure in the lightest and darkest areas of the image. You usually want to avoid exposures that result in histogram peaks that are cut off at the right or left edge, because these indicate where the image is over- or underexposed, and where detailed information is lost.

If the exposure data is more heavily weighted toward the right side of the histogram, with nothing on left side, your image may be overexposed. The overexposure can be adjusted later in software if there are no peaks cut off at the right edge. In the image at right, because the peak in the histogram is cut off at the right edge, there will be no detailed information saved in the brightest parts of the image. Because this is an image with a white table as the background, losing the detail information of the table may be fine. For an image with a cloudy sky, losing the detail of the clouds is probably not desired.



Overexposed: Peak is on right side of histogram



If the histogram has peaks toward the left (black side), with little data on the right side, your image could be underexposed. Underexposure can be adjusted later in software if there are no peaks cut off at the left edge. Even though the image at left is significantly underexposed, no detail information is lost because the peak is not cut off on the left side.

While you can make adjustments and recover an image in post-processing, unwanted noise and a reduction of detail information is likely if the exposure is significantly off. More detailed information is captured in the lighter parts of the spectrum, on the right side of the histogram. Unless

you are choosing to underexpose an image for an artistic reason, you won't want to significantly underexpose most of your images.

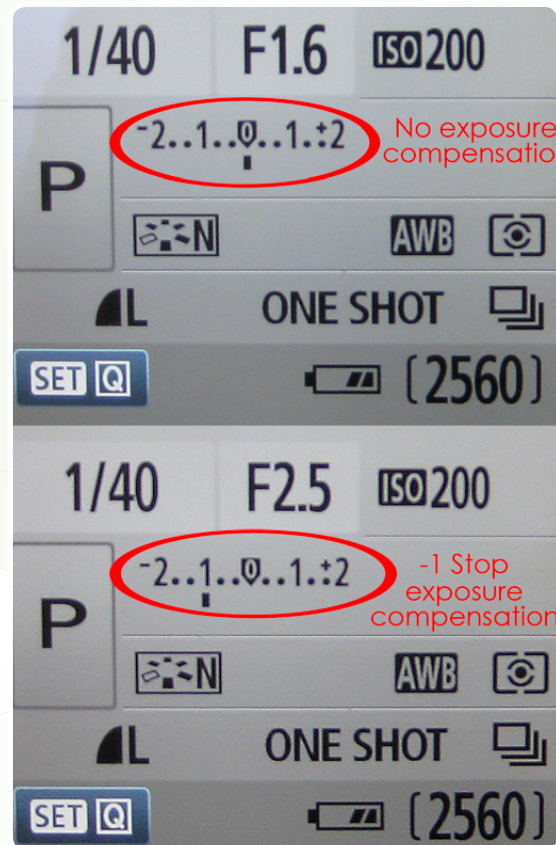
All dSLR cameras, and many point-and-shoot cameras, have a setting which shows the histogram along with the image during review. To use the histogram, set your camera to a review mode where you can see the histogram along with the thumbnail of the photo. The thumbnail will be smaller in this mode, so if you want to check focus you will need to enlarge the thumbnail. (It is best to enlarge the thumbnail to check focus anyway, since the LCD screen on the camera is small relative to the actual image size, and it is easy to misjudge focus.) Armed with the information the histogram provides, you can make adjustments to the exposure as you are photographing, rather than discovering

during post-processing that you have lost detail in an image.

Every digital photo has a histogram. If your camera does not have the ability to show you the histogram in-camera, you can observe the histogram in your post-processing software and compare how the photo looks on the LCD screen of your camera. You may develop the ability over time to judge if the photo is over- or underexposed directly from the LCD image review.



## ADJUSTING EXPOSURE IN THE CAMERA USING EXPOSURE COMPENSATION



When you discover your image is over- or underexposed, a correction can be made to shift exposure for the next image by changing the camera settings. If you were to manually control your camera's settings, exposure can be adjusted by

individually changing your shutter speed, aperture and/or ISO setting. Without going into manual mode, an alternative way to adjust exposure is with exposure compensation. This feature allows you to shift the overall exposure without adjusting individual settings.

Exposure compensation adjusts the exposure by increments, called "stops." Most cameras allow you to adjust in 1/3 or 1/2 stop increments (denoted in the camera display at left as the dots between numbers). Increasing the exposure (brightening the image) is

in the "+" direction, while decreasing the exposure (darkening the image) is in the "-" direction. The image at left shows a Canon dSLR camera display at two different exposure compensation settings: "0" or no exposure compensation and "-1 stop" exposure compensation. Exposure compensation is a useful camera feature because it will not reset after each shot. Once you set the compensation, it will stay at the same setting until you change it.

The over/underexposed teapot photo examples, shared earlier, were taken using exposure compensation; +2 stops for the overexposed image and -2 stops for the underexposed image. Exposure compensation allows you to make dramatic changes to your exposure and histogram without the need for manual mode.

By checking the histogram immediately after taking an image, you can see if the image is over- or underexposed, and if necessary make further adjustments to exposure compensation and take the image again.

It is important to note that cameras and lenses can have a "typical" exposure performance,

over- or underexposing images routinely. As you pay attention to the histogram, you may notice that you can get consistently better results if you keep exposure compensation set to a certain range on your camera.

Check your camera manual to see how to set exposure compensation. Even point-and-shoot cameras may have this feature. The image below is an example from a point-and-shoot with exposure compensation at -1 stop. If the camera had been the normal exposure ("0" setting), the detail in the background would have been lost.



## ADJUSTING EXPOSURE IN THE CAMERA USING EXPOSURE BRACKETING

+1 Stop



0



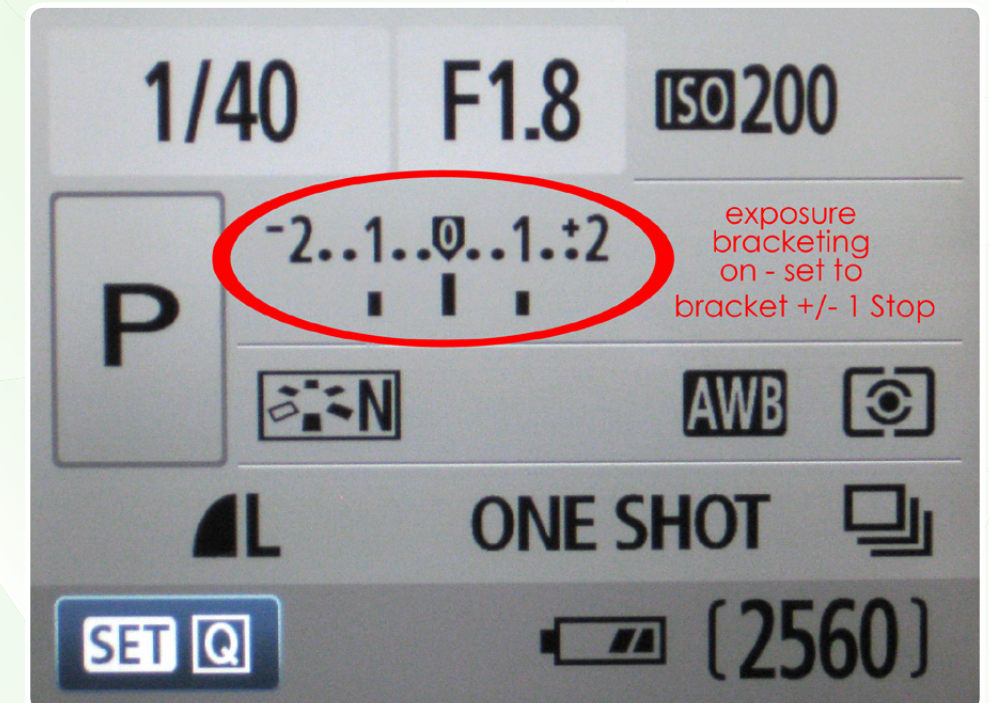
-1 Stop



Another method to adjust exposure in the camera is exposure bracketing. This is a setting on your camera where you take three images of each photo with different exposure settings:

- One "over" exposure by a specified number of stops
- One "center" exposure at the normal camera setting (which can be at zero or adjusted using exposure compensation)
- One "under" exposure by the same number of stops

You are able to specify the amount of the over/underexposure that is used in the settings when you turn on exposure bracketing. You have to actually press the shutter button three times for each image when you use exposure bracketing.

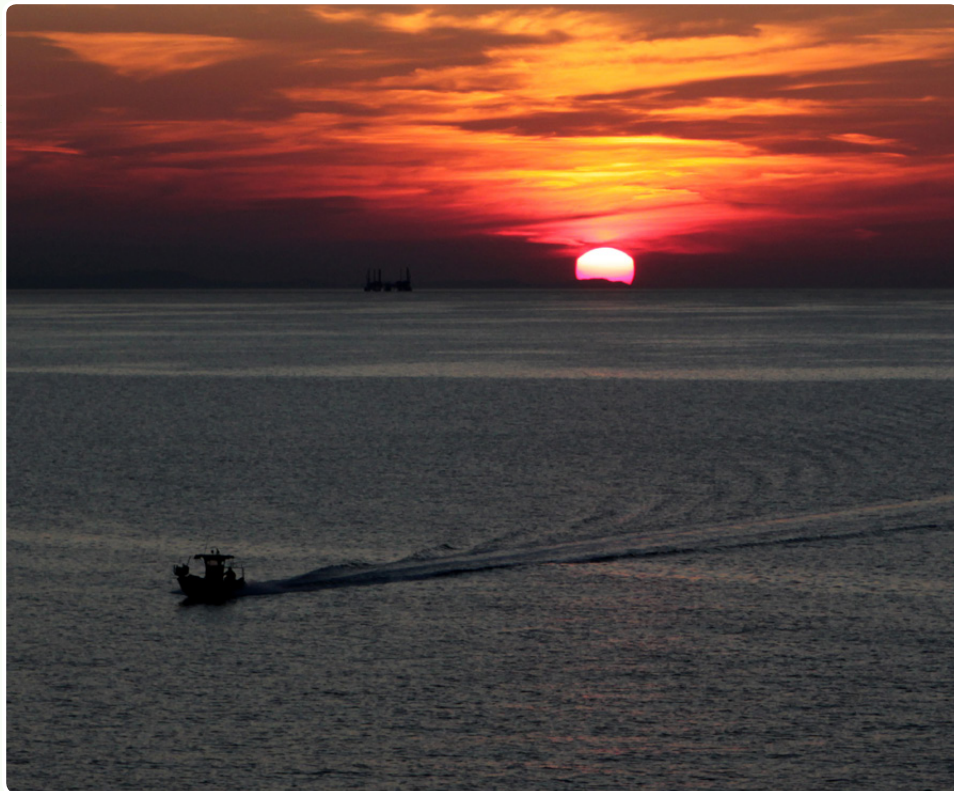


This feature may be helpful as you begin to learn exposure and are not sure what settings to use. Review of bracketed images can help you understand how changing the exposure setting affects a single image. The example at left shows an image bracketed +/- 1 stop.

Practice with the different methods of exposure adjustment to see what works best for you and your equipment.

## DIFFICULT EXPOSURE SITUATIONS

You will find there will be times that you cannot adjust your settings to get the exposure of the image to fit nicely within the histogram, such as when shooting an image that includes extreme contrasts. Extreme contrast is found in any scene that contains a bright light source and strong shadows. In these cases, choose the subject in which you want the detail and set exposure for that subject. Don't worry about over- or underexposure in other areas where the detail doesn't matter. When you get your exposure right in high contrast situations, you can create wonderfully dramatic images.



For example, in a sunset, you don't need the information in the sun itself, but you would want the detail in the clouds. If you underexpose enough such that the sun isn't overexposed, you would no longer have detail in any of the dark areas of the image. The sunset image below was exposed to capture the cloud detail. The sun is overexposed and the boat is underexposed to create a silhouette.

In the image on the right, the exposure is set to show some detail in the figure and the window pane. If exposure were chosen to show the detail of the view outside the window, the figure and window frame would be a silhouette. There is still a lot of dark area in the photo because of the extreme contrast of light to dark of looking out into the sunshine.

In high contrast situations, experiment by taking several frames of the same scene with different exposures to find the one you like best. With practice, you can learn to see and adjust your exposures quickly for different lighting situations.





Future chapters address Aperture and Shutter Speed, two sides of the exposure triangle that are also used for creative control. The third part of the exposure triangle, ISO setting, deserves some comment as well.

The term “ISO” comes from film (analog) camera days, and referred to the speed or sensitivity of the film. In digital photography “ISO Setting” refers to the sensitivity of the sensor. The effect of the ISO setting is similar between the two. The higher

the ISO setting, the higher the light sensitivity, but also more grain (analog) or noise (digital) is captured in the images. One advantage of digital over film is that you can adjust the ISO setting for each image, rather than for each roll of film.

As you increase the ISO setting, you increase the sensitivity of the sensor to light. That is a good thing, because it means that you can capture images with less light. The bad part of increasing the ISO setting is the increased noise. Noise is not always

noticeable in small or low resolution images but as you enlarge the photo it can become noticeable and distracting.

In general, you want to keep your ISO setting as low as possible in order to reduce the captured noise. During the exercises, if you find you have trouble with blurry images in lower light situations, manually increase your ISO setting. The noise performance at each ISO setting is very specific to the digital camera itself. Noise performance has

improved significantly with each generation of digital cameras, so consider this list of situational settings as a starting point:

- ISO 100 for bright sunlight
- ISO 200 for most outdoor light situations during the day, sun, or shade on a sunny day
- ISO 400 for overcast or shady areas outdoors or normal light indoors
- ISO 800 for extremely overcast or deep shade, indoor light or outdoor early evening images
- ISO 1600+ for outdoor night scenes and low indoor light.

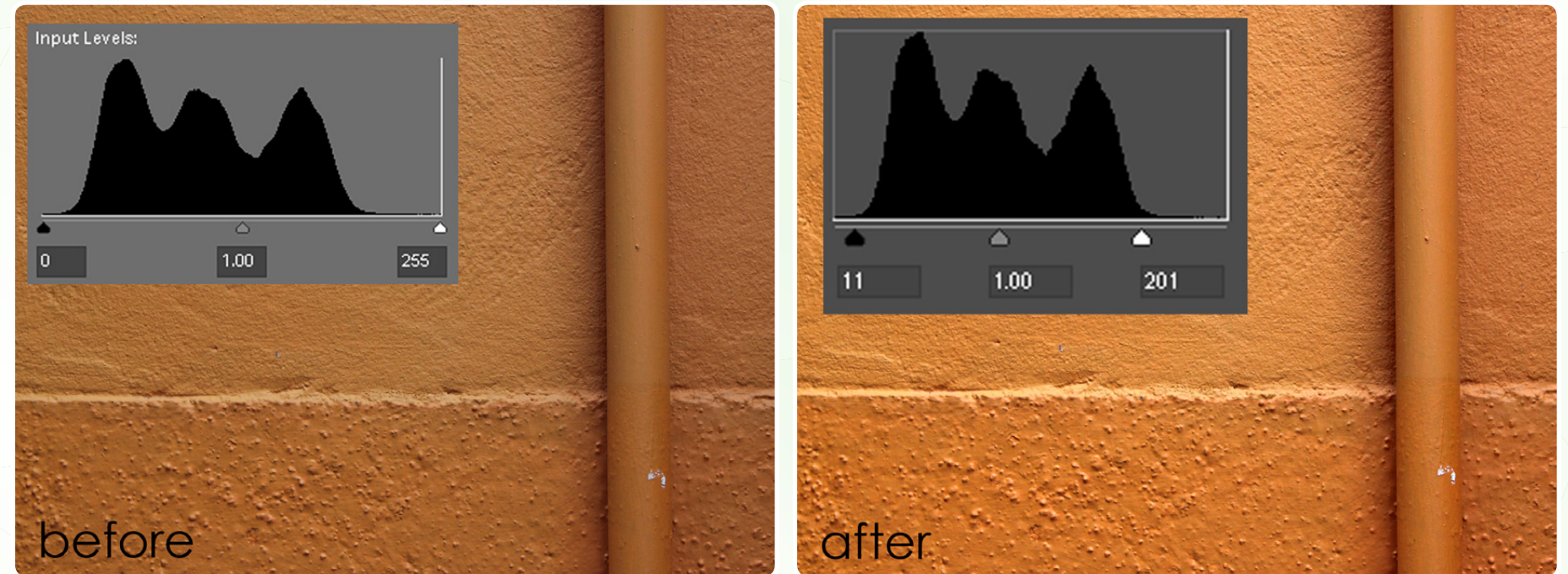
You will have to experiment with your equipment to develop your own “rules of thumb” for ISO setting. Read your manual for the range of ISO settings available in your camera, and whether they can be automatically or manually set. If you are new to your camera or the exposure topics, see if you can keep ISO setting on an automatic mode, so it will be one less thing you have to think about in the exercises.

## POST-PROCESSING FOR EXPOSURE

### HISTOGRAM ADJUSTMENTS

Assuming that an image is not completely under- or overexposed, you can adjust your image histogram in photo editing software to balance out the overall image for light and dark areas. To adjust the overall exposure, look for a “Levels” tool or “Brightness/Contrast” tool.

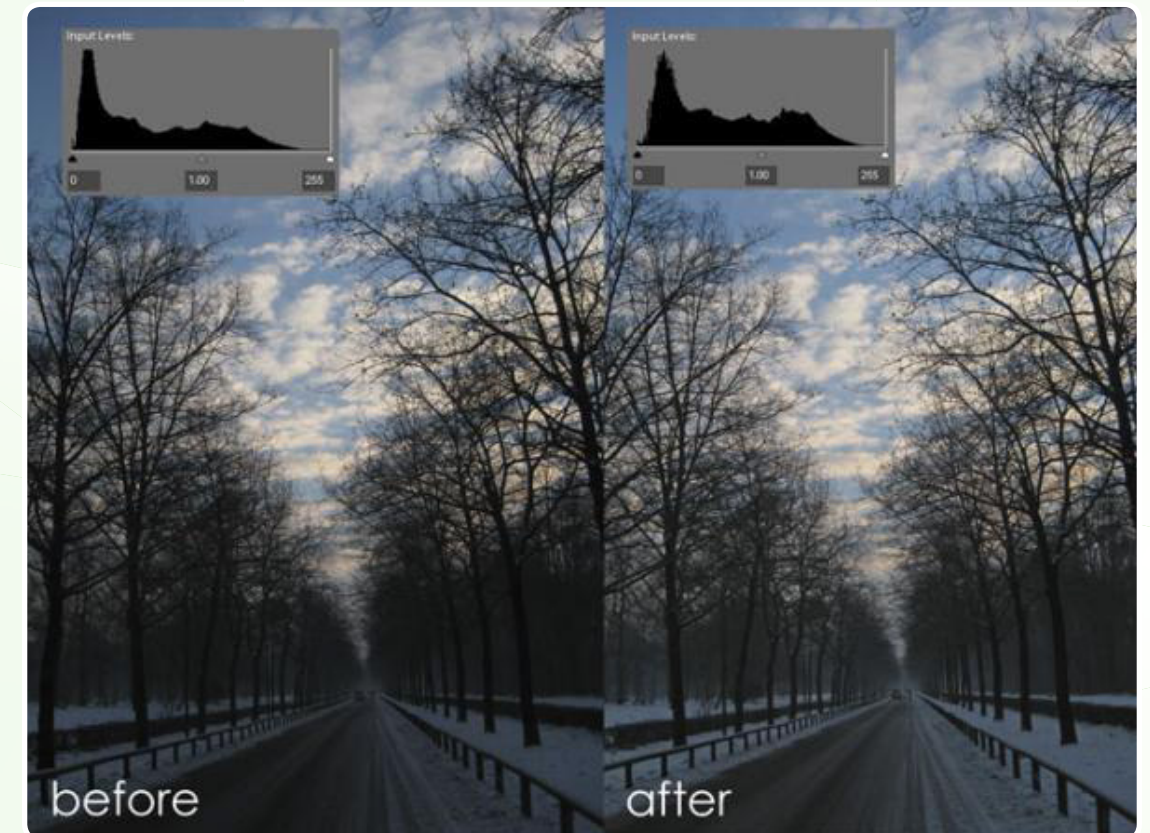
In the before and after example (right), the histogram was adjusted by moving the maximum and minimum sliders toward the center to adjust the exposure. This increases both the overall brightness and contrast within the image.



### LIGHTEN SHADOWS/DARKEN HIGHLIGHTS

The Levels/Histogram adjustments will adjust the entire image, which is not always desired. Many different photo editing software programs will allow selection of shadows, highlights or midtones and adjust only those areas. The more advanced the editing software, the finer the range of adjustments available. Lightening shadows or darkening highlights works well in images with strong contrast, where you don't necessarily want to adjust the entire exposure.

This image (right) was exposed for the clouds and sky. The resulting exposure for the road was darker than desired, so the “lighten shadows” tool was used to make a minor adjustment. You can see the histogram was changed by the edit, moving more of the exposure toward the center of the range.



## BURN/DODGE

Another set of tools for selectively adjusting exposure is to “burn” (darken) or “dodge” (lighten) a specific part of the image. This terminology goes back to film processing techniques, but the effect is the same in either film or digital. These tools are helpful if you want to adjust the exposure of a very specific area of an image.

Burning can de-emphasize a distracting element in the background by making it darker to blend in with shadows, or the combination of dodge and burn can increase the contrast on the focal point. As with any edits, it is possible to overdo exposure adjustments. When you go to extremes in editing, the adjustment can look unnatural.

Pay attention to common edits you make during post-processing, to understand where you can adjust your settings in the camera. If you consistently have to brighten your images, you may be underexposing in camera. If you consistently have to darken, then the opposite may be true. Getting the exposure where you want it in the camera will save you time in the post-processing and produce the best results.

## EXERCISE - PLAYING WITH EXPOSURE

1. Review your camera manual for the following functions, and learn how to set them if they are available:
  - a. Review with histogram
  - b. Exposure compensation
  - c. Exposure bracketing
  - d. ISO Setting
2. Adjust your camera to following settings:

<b>Camera Mode</b>	Automatic mode without flash. For a dSLR this will typically be Program mode (“P” on the dial). For a point-and-shoot you may have a Program mode or use Auto with the flash off.
<b>White Balance</b>	Set to Auto White Balance (AWB), this would be the default setting if you’ve never changed it.
<b>ISO</b>	If you can, set the ISO setting to Auto. This will allow the camera more freedom in finding a good exposure. If you need to set the ISO setting, choose 400 as a general-purpose setting. (If you find you are getting blurry images in the exercise in lower-light situations, increase the ISO setting to 800 or higher.)
<b>Exposure Compensation</b>	“Off” to start exercise.
<b>Histogram</b>	“On” for review.

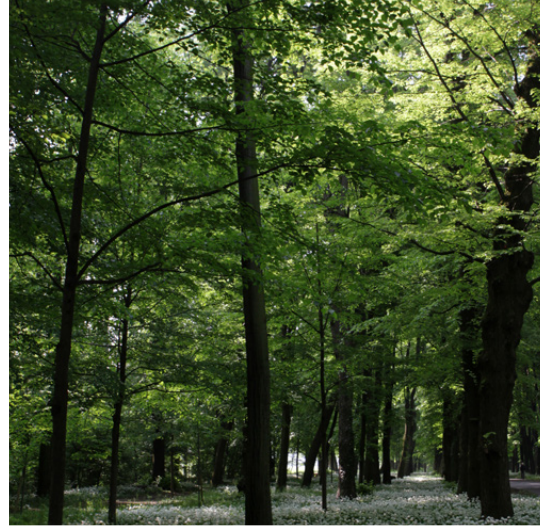
3. Take photos of the same subject in at least two different lighting situations. Look for the following opportunities: direct light and indirect light, for high and low contrast. In each situation, do the following:
  - a. Set the camera to the standard exposure (no compensation) and photograph your subject.
  - b. Review the histogram of the image on the LCD screen (or, if the histogram function is not available, review the image for exposure).
  - c. Adjust the exposure compensation, up or down.
  - d. Repeat the image and review the histogram. Note the difference in how the image looks and also how much the histogram changes depending on the exposure compensation.
  - e. Repeat for different exposure compensations, up or down.
  - f. Optional: Turn on exposure bracketing and experiment with this method of exposure adjustment. Remember that you will have to press the shutter three times for each image.
4. Download images and review in the computer.
  - a. Compare images sequentially to see the effects of the change in exposure settings, and notice how the difference in exposure effects the feeling of the images.
  - b. Note which exposures you find most appealing, without any adjustments. Were they exposure compensated? Do you remember the histogram for that image? Do things look different as you review on the computer as compared to the camera LCD screen? With no compensation, does your camera typically over- or underexpose?
  - c. If you can't remember your camera settings, look at the file summary information included in the file. "Exposure Compensation" is one of the settings recorded in the image file.

5. Pick two or three of your best images from this exercise, or, if you don't have any favorites, pick the ones that have the most potential. Open these photos in your photo editing software, and make adjustments for exposure: Histogram, Shadows/Highlights or Burn/Dodge.

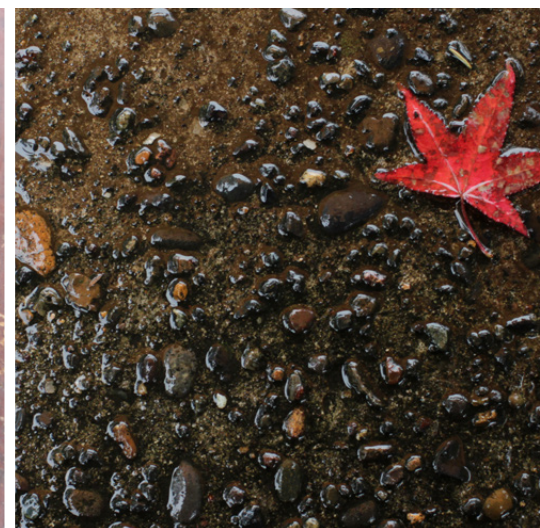
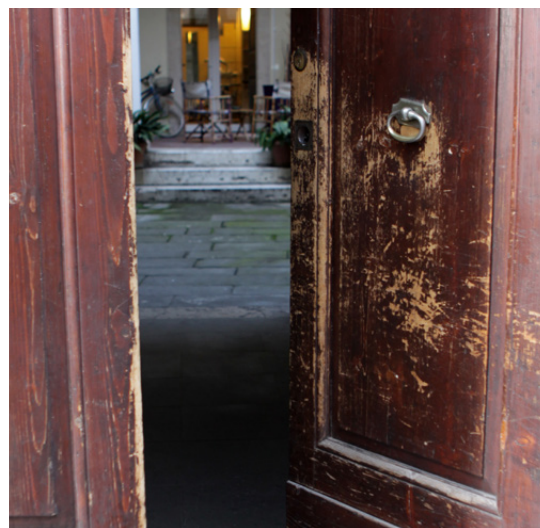
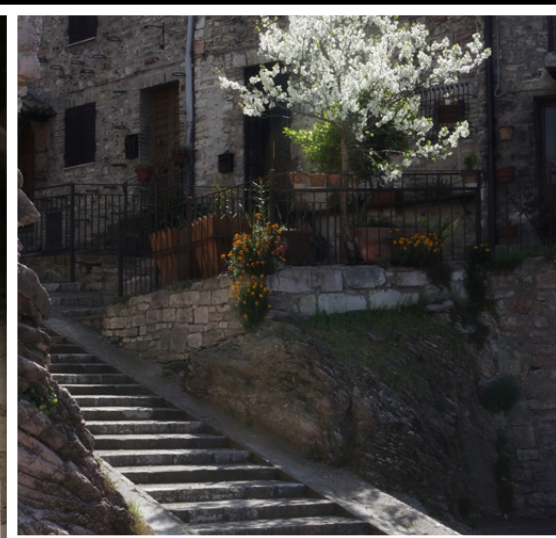
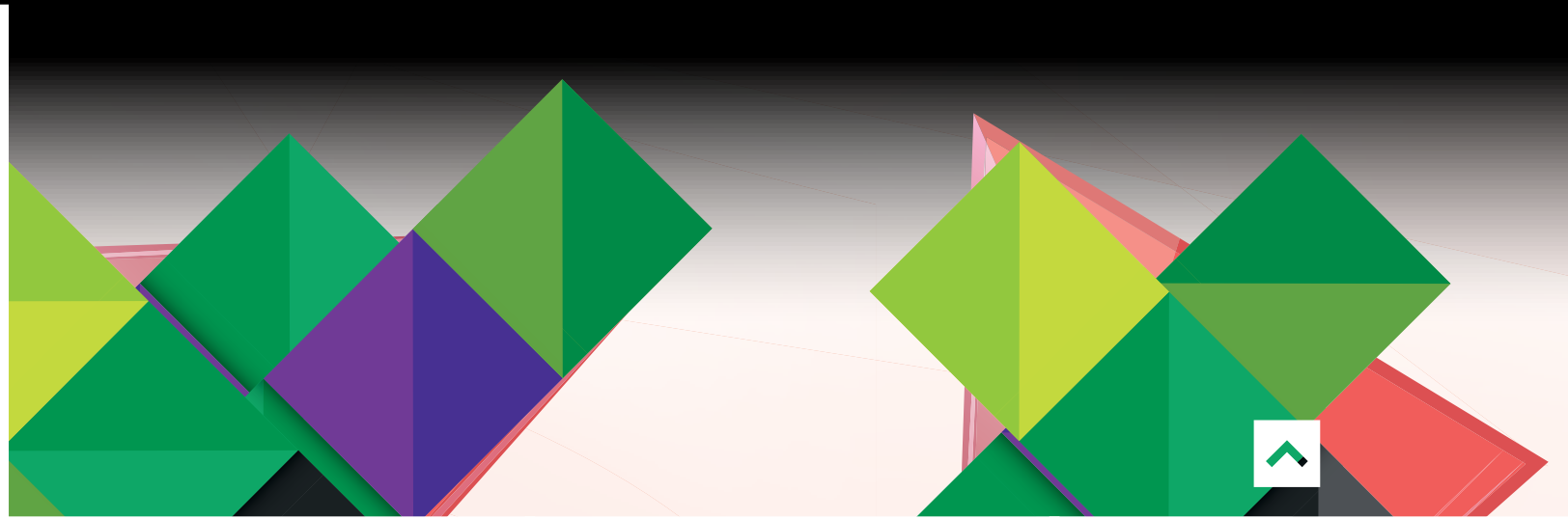
How do these adjustments enhance the photo? Which image do you like better – before or after the change? Make a few notes on what you like about each. If you would change anything next time, note that too.

Answering these questions will help you keep the information in mind the next time you go out to photograph.





CHAPTER 3:  
**COMPOSITION & FOCUS**



T

his chapter explores composition and focus, with the goal of obtaining good results in-camera and discovering when and how post-processing can be used to improve them further.



## CAMERA FOCUS

Focus can be used a number of ways in photography. You may hear terminology that refers to the subject as being in focus or as the focal point. In a future chapter depth of field will also be covered, which refers to how much of the depth of an image is in focus.

Focus is an important part of photography. As the photographer, you get to make the choice of subject as well as how much of the subject is in focus in the image. The only limiter may be your equipment.

The main equipment limitation on focus is your distance to the subject. The minimum focal distance you can achieve is going to depend on the camera (for point-and-shoot) or the lens (for dSLR). Refer to your camera or lens manual for specifications for minimum focal distance. You can also determine minimum focal distance by trial and error.



## Try this:

Get close to an object, closer than you think the camera can focus, and press the shutter button halfway to engage the autofocus. If you get an “out of focus” error, back up a bit and try again. (If you are not familiar with the “out of focus” error message for your camera, consult your manual.) Repeat the process until your subject is in focus. This is your minimum focal distance.

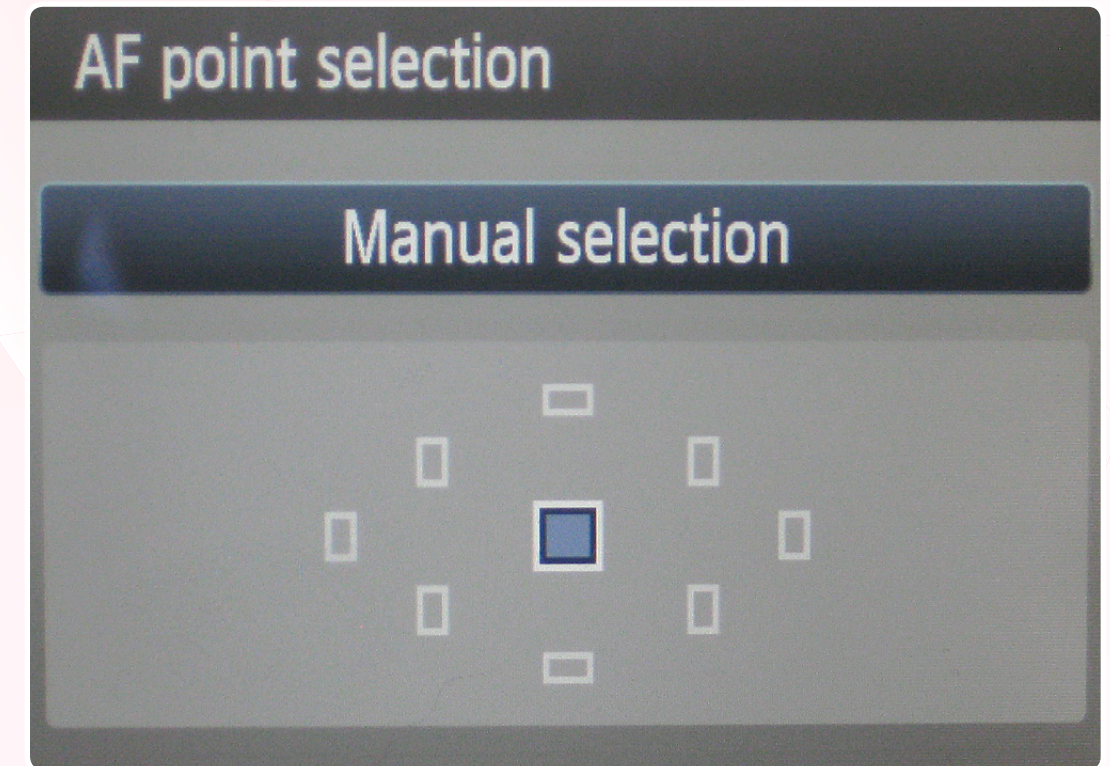
Minimum focal distance often varies through the zoom range of a lens, so try the experiment above at the minimum and maximum zoom to understand how your equipment performs.

Some camera modes will allow you to take an out of focus picture, other camera modes will not allow the shutter to release to protect the photographer from getting a bad image. If you get an out of focus image without intending it, check your manual. Learn the “out of focus” error signal for your camera and in what modes it functions. It is good to be able to override the camera at times, but you also want to understand what the error signals are telling you. Focus can’t be corrected later in photo editing software, so it is important to get focus right in the initial photograph.



One useful way to better control focus is to fix the focus point in the camera to the center. The autofocus on most digital cameras selects any available focus point in the standard focus mode, and some autofocus modes even track faces.

This can seem like a great help until the camera selects the wrong focus point, leaving your intended subject out of focus. Having the wrong element in focus is something you may not notice until you’re at home reviewing the photos on the computer. By that time, it is too late to go back and recreate the image – the moment is gone, the light is different, or the person or place may be halfway across the world.



When you set your camera to a fixed focus point, you always know what point in your frame will be in focus. To create an interesting composition, however, you don’t normally want the subject or focus in the center. To use the camera with a fixed-center-focus point, and yet still attain interesting compositions, you can set focus and then recompose.

## Try this:

Set your focus point to the center. Put the subject that you want in focus in the center of the frame, and press the shutter button half way to fix the focus and exposure. Then, shift the camera while continuing to hold the shutter button half way, recomposing the image. When the image is composed as desired, press the shutter button down fully to release the shutter and capture the image.

This works for most digital cameras, both dSLR and point-and-shoot, so check your manual to learn how to turn on this feature.

At first the whole focus-and-recompose process may seem uncomfortable. It can be frustrating because you will forget a few times, and it may seem like it takes more time to capture an image. In most situations, however, this method is effective and quicker than trying to get the camera to select the desired focus point in the automatic mode or using manual focus. There are some situations where you will want to change this setting, such as when you are using a tripod, when the subject is moving, or when you are working with a very shallow depth of field. Future chapters will cover the situations when you may want to change this setting.

For now, set your camera to a fixed focus point in the center of the frame and start practicing with recomposing the image after fixing your focus. After a while, the focus-and-recompose process will become second nature.

## COMPOSITION

Composition is a vast topic that inspires books and courses on its own. Basic artistic composition and design principles apply to photography the same as to any visual art. Once you learn these principles, you can begin to see what elements might make one image more pleasing than another. This chapter presents a few basic principles to get you started. If you are already familiar with the basic principles of composition, take some time to review your existing images to see which compositional principles you are using consistently and where you may be able to explore more creatively.

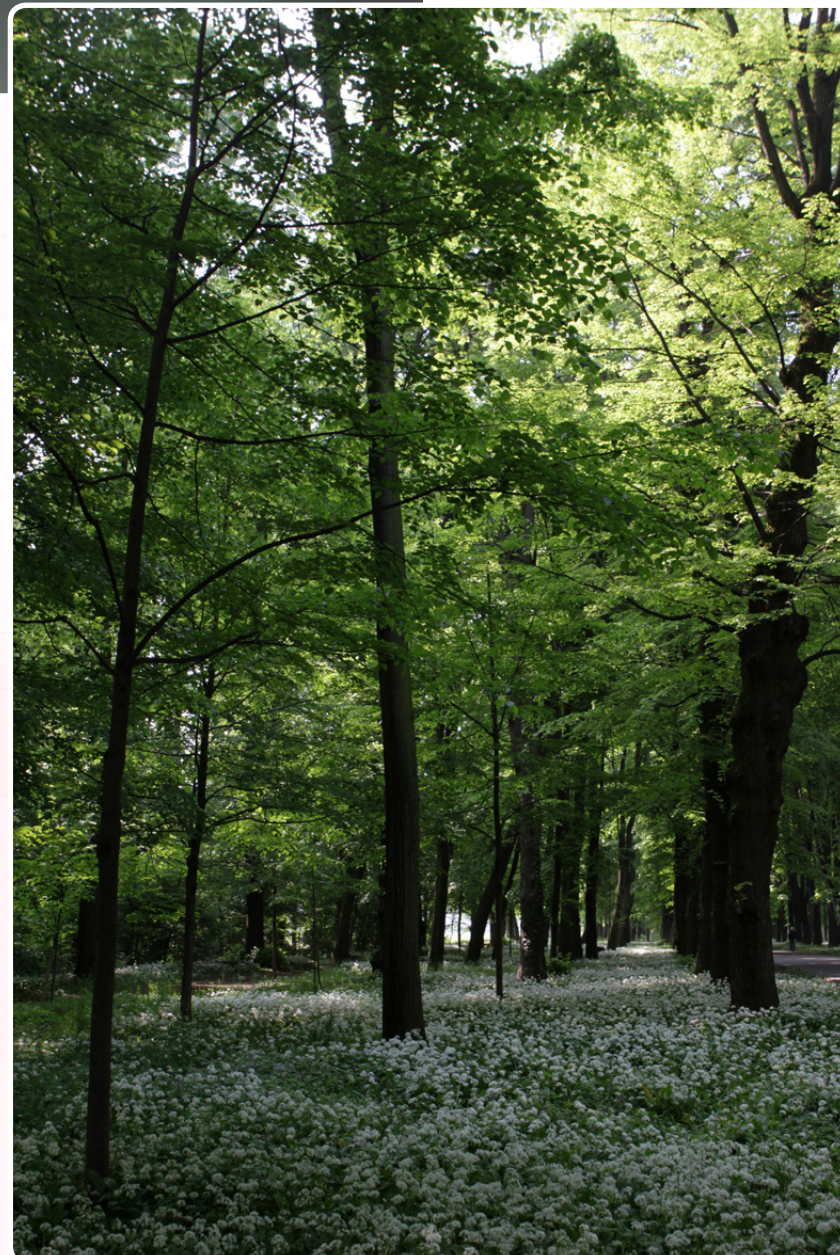
This text does not use the word “rules” to describe the compositional principles on purpose. Photography is a creative art form and you should always be willing to experiment with composition in your images. Don’t let yourself get boxed in by the “rules” of composition. Consider these principles as starting points.

### PICK YOUR SUBJECT

When you are preparing to take a photograph, think about what you are trying to convey. Ask yourself, “What do I want to say?” The viewer will not have the context that you have at the time you take the photograph, so the subject must be clear. You want the subject to be the focal point of the image; the thing that catches the viewer’s eye. When you are setting up a photograph, keep it as simple as possible to bring your viewer’s eye to your subject. Eliminate distracting elements and visual information that is not useful to what you are trying to convey, either by zooming, moving angles, or physically removing the distracting elements. (See [Exploring with a Camera: Process of Elimination](#) for more on this topic).



These two images were taken at the same time and location, but with different chosen subjects – the forest versus the individual flower. They each convey a different message and feeling.



## DECIDE YOUR ORIENTATION

Horizontal framing (also called “landscape” orientation) is the easiest to use, since the camera is made to naturally work in your hand in this orientation. It takes slightly more effort and intent to turn the camera vertically (or to “portrait” orientation), but vertical orientation may result in a better composition for your subject. Vertical images can emphasize long lines and height, while horizontal images can emphasize breadth and distance.



## FILL THE FRAME

Framing your subject in the image is one of the most important compositional principles. In general, you want to fill the frame with your subject, eliminating extraneous information. To fill the frame, zoom in with your camera or physically move in closer. You may need to change angles to fill the frame with the subject. When framing the photo, think also about what you are trying to convey. If you are taking a photo of a single tree, for example, are you trying to show the detail of the trunk and the shape of the branches? Or are you trying to show the loneliness of the tree in the field? You would “fill the frame” with different elements in each case.



When there is motion, such as someone running, a ball being thrown, or a vehicle moving, you may want to give space in the frame for the motion to move into. The cyclist in this image has room to move forward in the composition.



Keep your eyes on all four sides and corners of the frame and make sure you aren't picking up distracting elements. You may need to slightly change your location, or zoom (with your lens or with your feet) to eliminate them.

In this image (right), an air conditioner above the internal door was eliminated in the scene by moving closer.



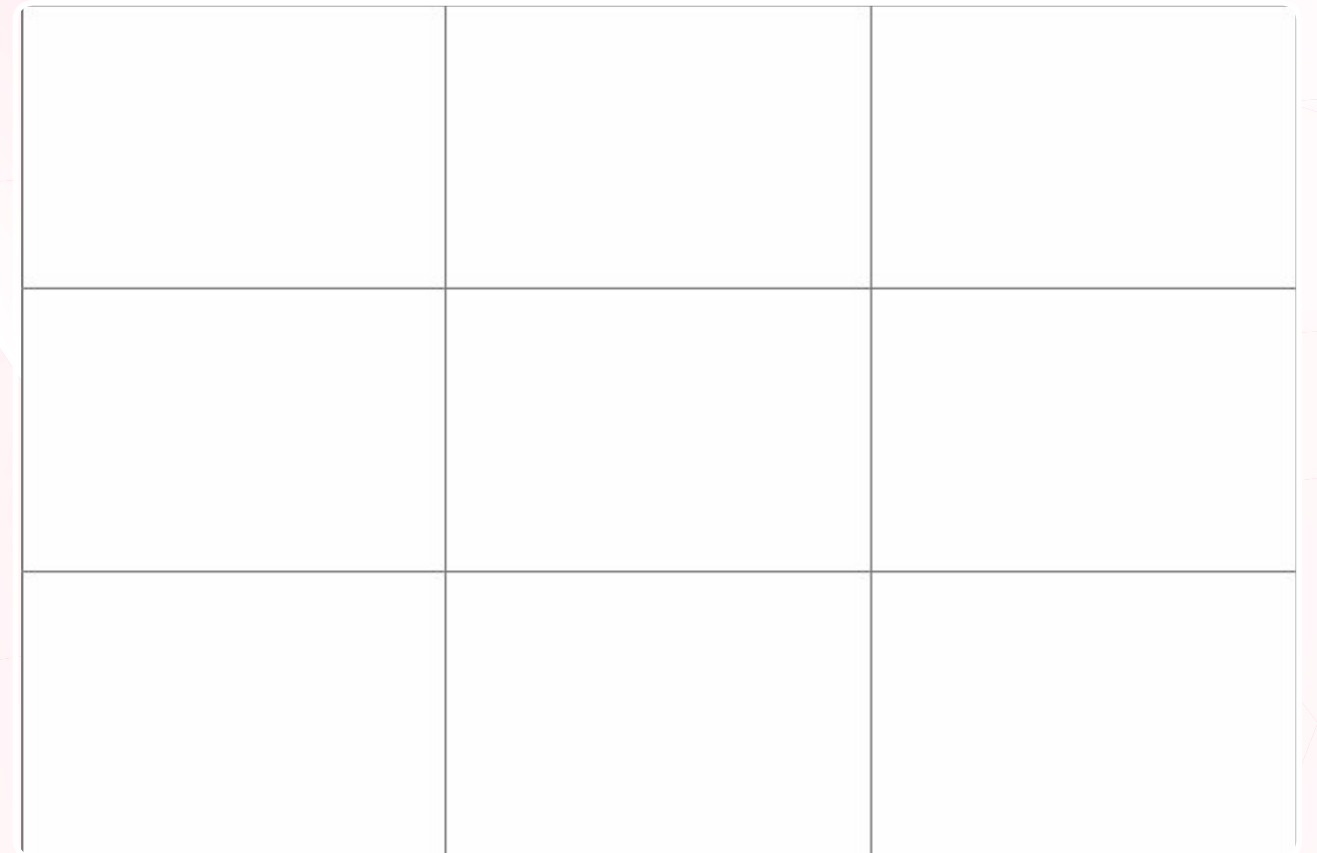


Consider using a “frame within a frame” to highlight a subject. Looking through trees, windows, doors, or into mirrors can all be effective “frame within a frame” techniques. (Visit [Exploring with a Camera: Frame within a Frame](#) for more on this topic.)

### “RULE” OF THIRDS

Divide your frame into thirds, horizontally and vertically. Place your subject along one of the lines or at the intersection of the lines for more visual impact. It can be pleasing to the eye to have the subject off center by following the rule of thirds.

These two examples loosely follow the rule of thirds to create interesting compositions.



While the rule of thirds is one of the most effective and easiest compositional principles to learn, it is also one that was meant to be ignored at times. Take into consideration the overall balance of the elements in the photograph; don't blindly follow this "rule." Take a look at the images of photographers you admire and see how they use, or don't use, this principle to good effect. Experiment for yourself. (Visit [Exploring with a Camera: Breaking the Rule of Thirds](#) for more on this topic).

### FIND THE BALANCE

Understanding and finding balance within the frame is fundamental to good composition. It might take some practice to be able to see how balance is achieved or not achieved in a photograph, but it is worth the effort. In order to understand and see balance, you need to first understand visual weight. Visual weight is a concept used to describe how objects in a photograph will attract the viewer's eye differently. Something that attracts the viewer first has more visual weight. Here are some examples:



Bright colors will attract more attention than subdued colors.



Objects in focus attract more attention than out of focus objects.

Brightly illuminated objects attract attention more than shadowed objects.





Objects on the edge of the composition attract more attention than objects in the center.



Human faces and features attract more attention than inanimate objects

**Symmetry** There are two types of balance: symmetric, where the image is evenly balanced vertically or horizontally by the objects in the photograph, and asymmetric, where the image is balanced through the visual weight of the objects without regard to vertical or horizontal symmetry. Symmetric images can be calm and visually pleasing, while asymmetric images can be more dynamic and visually interesting.



Isolated objects attract more attention than those in a dense or cluttered area.

### *Symmetric Examples*



## Asymmetric Examples

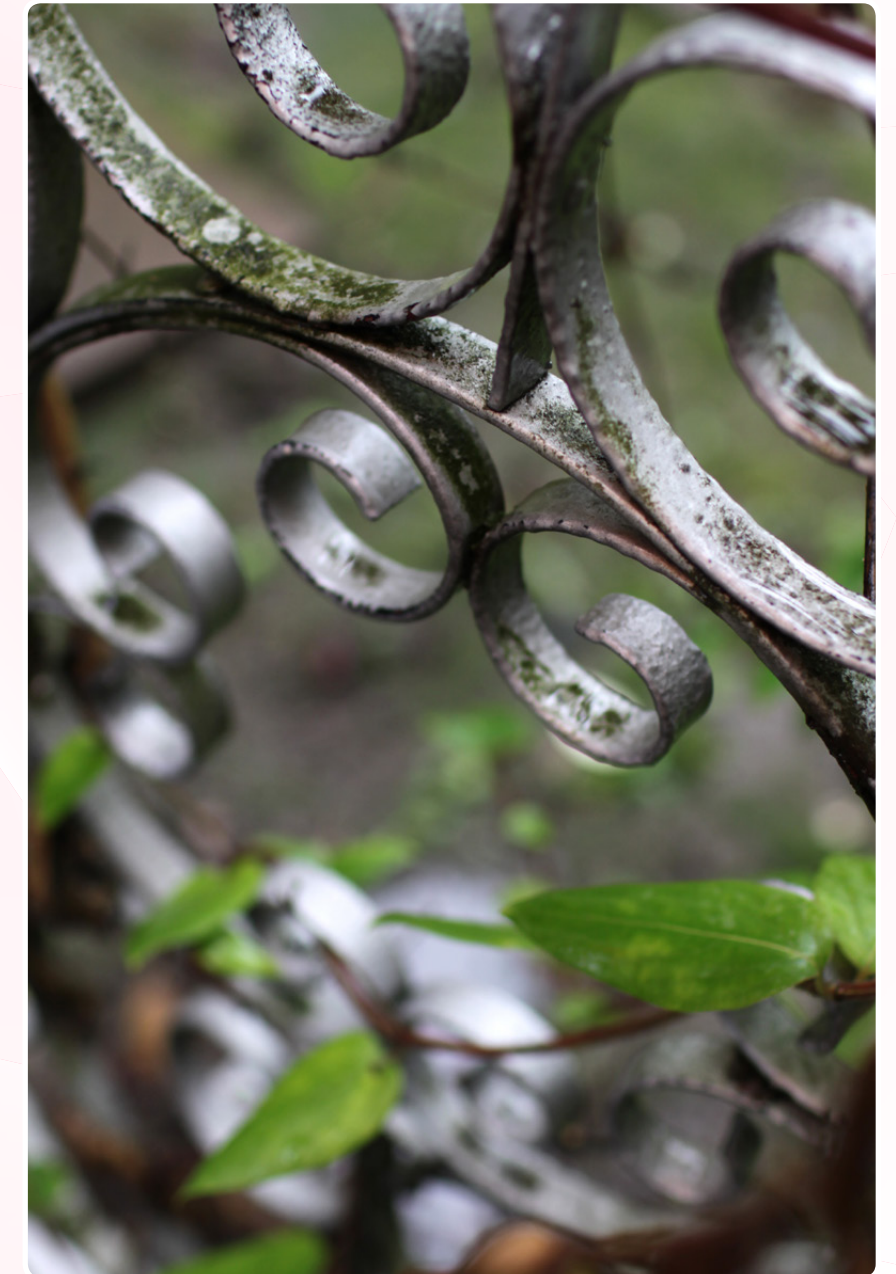


The compositional principle of balance is often why an image is effective, even when it breaks the conventional “rules.” Start looking at the relative visual weights of the objects in your images, and play with balance. (For more on these topics, visit [Exploring with a Camera: Balancing Shapes](#) and [Exploring with a Camera: Visual Weight](#)).

## POINT OF VIEW

Sometimes you just need to change your point of view to achieve a creative composition. A change in perspective, whether up, down, or from a new angle, can completely change the effectiveness of an image. It is easy to get stuck in the eye-level perspective with your camera, because that’s how you typically experience the world. It can be refreshing to get a different angle on your images. Wear old or sturdy clothes, so you won’t be afraid to get down on the ground or climb up on something. Get off the beaten path a bit, and get a different perspective on your images. Some points of view to keep in mind as you photograph: above, below (Visit [Exploring with a Camera: From a Flower’s Point of View](#)), left, right, front, back, inside, outside.

### Above





*Below*

There are many, many more compositional principles to consider in photography. Most photography books have a section on composition, as do visual art and graphic design references. More is available on the web if you search “photography composition.”



*Inside/Outside*

## POST-PROCESSING FOR COMPOSITION AND FOCUS

There are a number of simple edits you can do with post-processing in software that can improve your composition.

### STRAIGHTEN

If you often have crooked photos coming straight out of the camera, you are not alone. It’s easy to focus on everything else as you create an image, so you may not notice until you review your images that the horizon is not quite level, or the vertical lines are slightly askew. The “straighten” tool can be used in post-processing to resolve this issue. It can also be used to intentionally make the lines even more askew, if desired.



The example above shows an image before and after editing. In the final version, the horizon was straightened, and the photo cropped and adjusted for exposure.

## CROP

*Cropping* is a tool that changes how a photograph is framed. Choosing what elements are in the final frame can be done in the camera at the time the photograph is taken, or in post-processing. A fun way to learn more about composition is to explore different crops of the same photo in post-processing. What you learn in this photo editing “play” will help you build stronger compositions in the camera as you take photos in the future. When you find a composition you like while shooting, you might also consider taking a step back and framing the same composition with more space around it. This allows for more cropping adjustments later in software.

Cropping in post-processing can also be a helpful tool when you are using a fixed focal length lens, or cannot get close enough to your subject at the maximum zoom of a zoom lens. In this example (right), the original image was taken at maximum zoom. Cropping the image in post-processing enabled a tighter composition.



## SHARPEN

*Sharpness* is related to focus and refers to how clean the edges of the in-focus part of a photograph are. Initial image sharpness will highly depend on your camera, lens and chosen file type. (JPG images are sharpened by the camera, while RAW images are not.) If your images are not as sharp as you would like them, you can do some adjustments in post-processing to increase the sharpness. Sharpening may also help you recover a photo if the focus is slightly off or “soft,” but it can’t recover an image if it is completely out of focus. In the example below, sharpening, along with adjusting exposure and color intensity, highlights the texture.



It is important to avoid over-sharpening in digital photography – you can get some weird effects. If you see “halos” around objects or next to lines, then you have sharpened too much. When sharpening, enlarge your photo on the screen in order to see the effect on the image at a detailed level. Look at the image both sharpened and unsharpened, to decide which looks better.

## CLONE

Sometimes you get elements that distract the viewer’s eye from your intended focal point. This could be trash on the ground or a street sign in the field of view. The goal is to remove the distracting elements at the time of capturing the image by changing perspective, but there are times it is not possible to remove the element this way.

Luckily, you can often remove a distracting element in software. This is typically done by using the “clone” tool in your software. Using a clone tool requires that you have similar elements in your photo that you can copy over the distracting element. Investigate whether your photo editing software has this capability.



*The image was cropped and the head in the foreground cloned out to keep the focus on the beer mugs.*





The repeating pattern of the windows and shadows was used to clone out the street light. The image was also straightened, cropped and converted to black and white to highlight the repetitive nature of the windows, balconies and shadows.

Visit [Exploring with a Camera: Process of Elimination](#) for more on achieving effective images using framing, cropping and cloning.

## EXERCISE - EXPLORING COMPOSITION AND FOCUS

1. Review your camera manual for the focus functions, and learn how to set a fixed focus point in the center.
2. Adjust your camera to following settings:

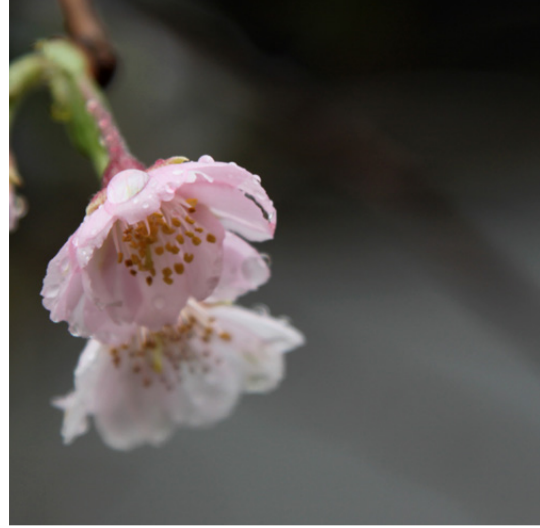
<b>Camera Mode</b>	Automatic mode without flash. For a dSLR this will typically be Program mode ("P" on the dial). For a point-and-shoot you may have a Program mode or will need to turn the flash off.
<b>Focus Point</b>	Set to center.
<b>White Balance</b>	Set to Auto White Balance (AWB).
<b>ISO</b>	Set as appropriate for your lighting situation.
<b>Exposure Compensation</b>	Set as needed for your camera.
<b>Histogram</b>	"On" for review.

3. Pick an object and place it in a location that has good light and where you can move around it. Take photos of this object with different compositions as described in this chapter. Remember your focus point is set to center – so focus first and then recompose. Push yourself past your initial points of view, taking as many as 100 photos of the same subject in the same location. Move around to get all points of view.

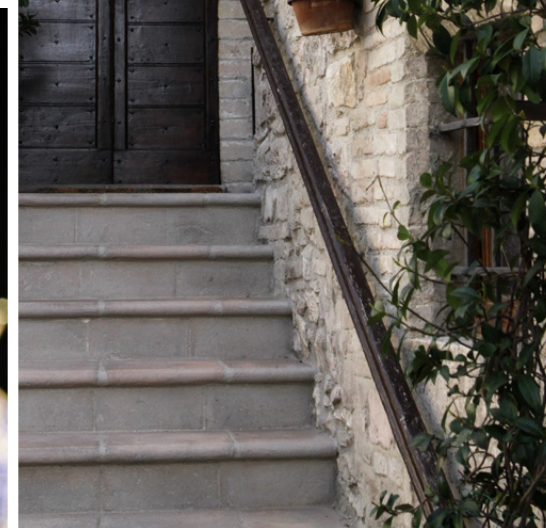
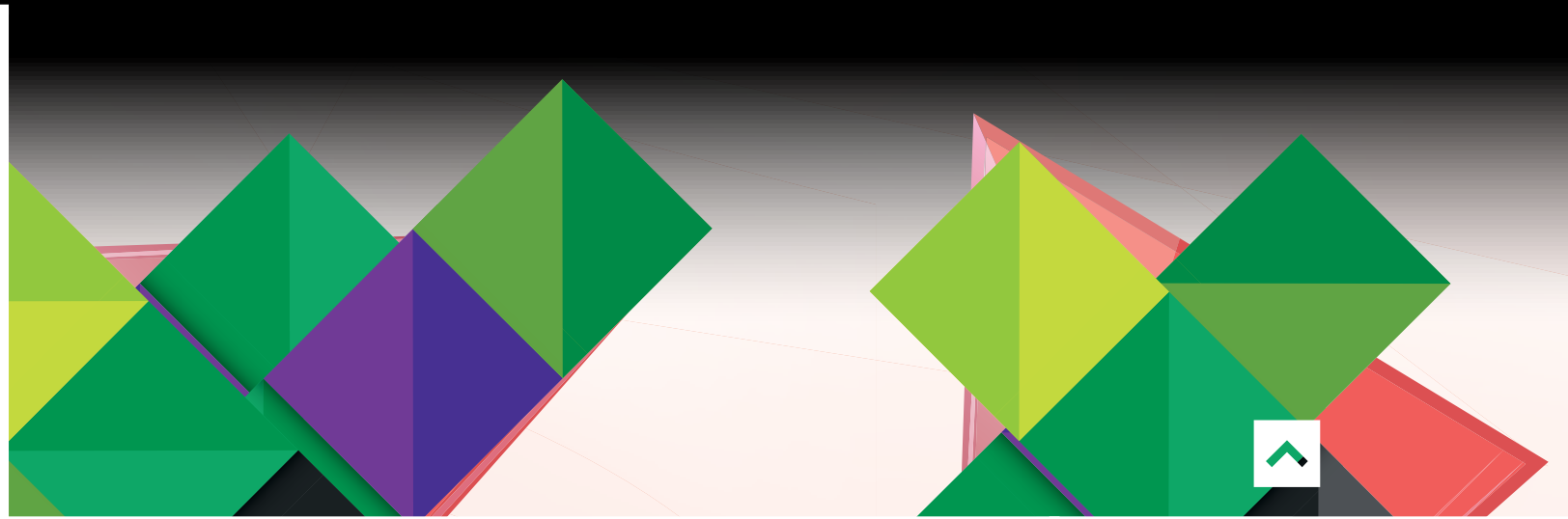
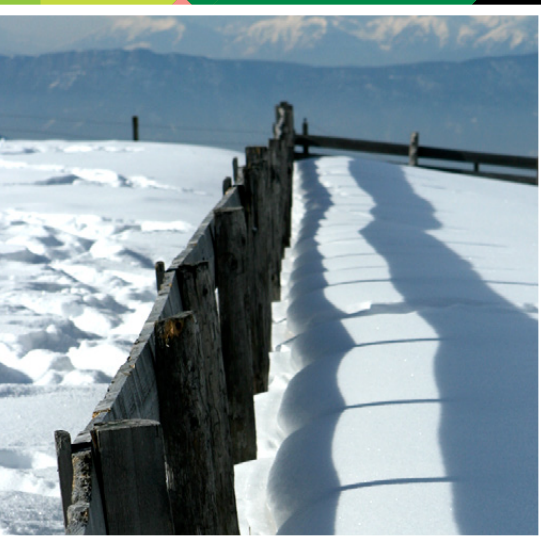
4. Download and review on the computer. Notice the differences in the feel of the photos as you vary composition and focal point. Note which compositions are most interesting to you.

5. Pick two or three of your best images. Open these photos in your photo editing software, and make compositional adjustments. How do these adjustments enhance the photo? Which image do you like better – before or after the change? Make a few notes on what you like about each. If you would change anything next time, note that too.





CHAPTER 4:  
**APERTURE**



T

his chapter explores aperture as a tool for creative expression in photography. Manipulating depth of field through the aperture setting is a favorite creative control for many photographers.

## DEPTH OF FIELD



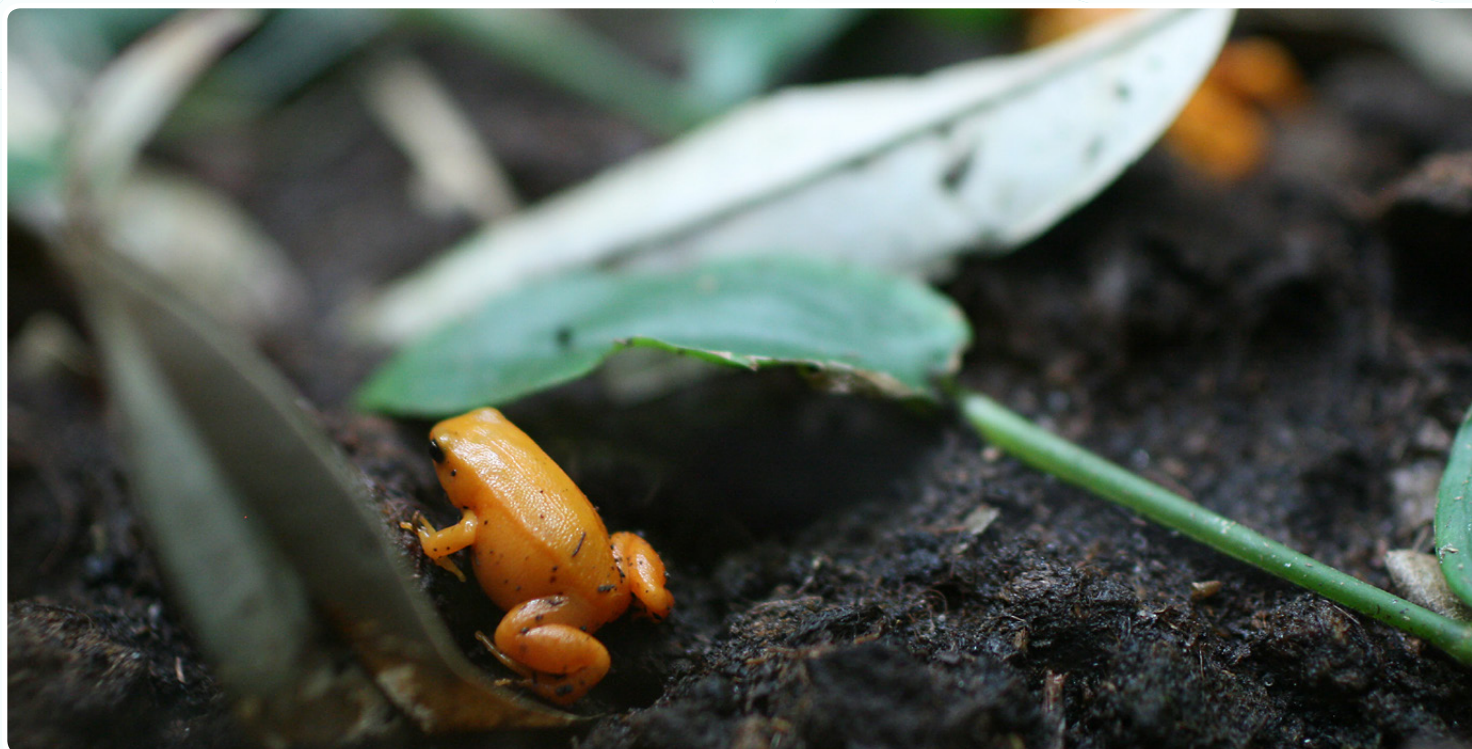
A photograph is a two-dimensional representation of our three-dimensional world. A way to give an indication of three dimensions in photographs is by adjusting the depth of field (DOF). The "field" is the area of the photograph in focus. When you vary the depth of focus in an image you are changing the depth of field. A few example photographs will help illustrate depth of field.

When DOF is "deep" the entire image is in focus; there is no blurry background. "Deep" DOF is relative. It can apply across long distances (see image on the left), or it can apply across shorter distances (see image on the right).

When DOF is "shallow" only a small amount of the image depth is in focus, and the rest is blurred. You can use a shallow DOF in an image to accentuate the subject, bringing attention to your focal point and distinguishing it from the background.



Shallow depth of field can be achieved when there is a long distance between subject and background (below, top) or where the subject and background are in close proximity (below, bottom).



Depth of Field is controlled through the aperture setting on your camera. In addition to specifying the depth of field, aperture also sets one of the three sides of the exposure triangle discussed in the Exposure chapter.

### WHAT IS APERTURE?

Camera lenses are quite complicated, with multiple pieces of specially-ground glass, moving parts, and electronics. The aperture is one of the moving parts of the lens, closing and opening to control how much light comes into the camera. The lens aperture works much like the iris and pupil in your eye. Here is a quick experiment to understand how aperture works:

- Find a mirror near a light source you can turn on and off. (A bathroom mirror will work well as long as it's not completely dark with the light off.)
- With the light off, look into the mirror at your eyes.
- Switch the light on, and watch your eyes. You will see the pupil adjust, making the opening smaller to reduce the amount of light passing through your eye.
- Turn the light off, and watch the opposite happen. Your pupil will dilate to let in more light.





The same concept applies to a camera. There is a minimum amount of light that needs to reach the sensor to create an image. When light is low, the aperture is opened, or widened, to allow more light to reach the sensor. When light is bright, less of the available light is needed to capture the image, and the aperture is closed or narrowed.



Lens with Wide Open Aperture (left) and Closed or Stopped Down Aperture (right). Image Source: 16 minolta 50mm.jpg, Wikipedia Commons

## TERMINOLOGY

The aperture setting is also referred to as the f-stop or f-number. When you see “f/3.2” or “f/12” along with an image, the numbers refer to the aperture setting. The table above ties the terminology together.

Photographer “Lingo”	Physical Aperture	F-stop or F-number	Depth of Field	Effect
Wide open		Lower numbers	Shallow 	Small amount of image depth is in focus; areas not in focus are blurred.
Stopped Down or Closed Down		Higher numbers	Deep 	Large amount or all of image depth is in focus; very little blur.

If a photographer says they are shooting “wide open,” they are using the widest aperture, or lowest f-stop, the lens has available. If you hear a photographer say they “closed down” or “stopped down,” it means they reduced the opening in the lens by narrowing the aperture or increasing the f-stop.

If you have a dSLR, the aperture range available is solely set by the lens and not the camera body. The camera body’s only contribution to aperture is control and communication of the aperture setting to the lens. If you want to gain a wider aperture range than you currently have available with your equipment, you will need to invest in a different lens.

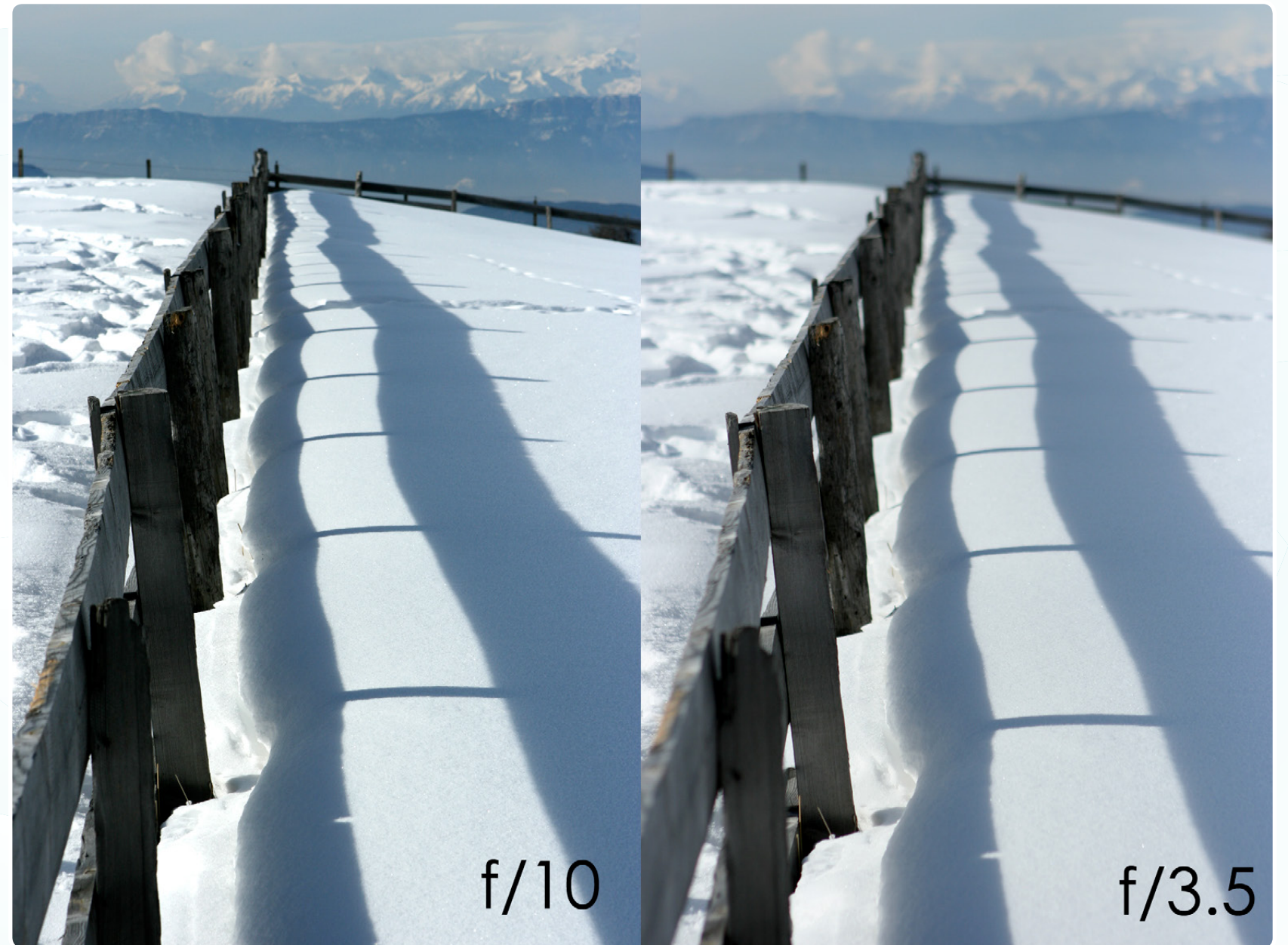
## USING APERTURE TO SET DEPTH OF FIELD

You can set the aperture independently to achieve the depth of field you desire. If you plan to set aperture as a priority, keep in mind the exposure triangle. The other two settings, shutter speed and ISO setting, are adjusted to close the exposure triangle. If you use your camera on Program or Automatic mode without flash, the camera will choose the aperture solely to get the best exposure available to complete the triangle. The automatic modes will not always result in your desired aperture for depth of field; you must set aperture independently.

On dSLR cameras, you can set aperture by using an “Aperture Priority” mode. When you shoot in Aperture Priority mode, you can choose any available f-stop of the lens. Here are examples of the same scene photographed with different apertures set using Aperture Priority mode.

With point-and-shoot cameras, you may not have the option to set aperture manually. You will, however, have “picture modes” which allow some control over aperture. These picture modes affecting aperture are often available:

- 1. Portrait Mode.** Portrait mode sets the aperture as wide open as it can for the maximum background blur. The setting will be limited by the lowest f-stop available for the camera. The camera icon for this mode is typically a person.
- 2. Macro Mode.** Macro mode may also set the aperture as wide open as possible, you will need to experiment with your camera. The mode is used for focusing on close subjects, and the icon is typically a flower.



- 3. Landscape Mode.** Landscape mode sets the aperture as small as possible to maximize the depth of focus. The aperture setting will be limited by the highest f-stop available for the camera AND the available light. If the light is low, the camera may need to open up the aperture to let enough light through the lens for a reasonable exposure. The icon is typically a mountain.

Consult your camera manual for more information on how the picture modes work for your specific model.

## INTERACTIONS WITH OTHER FACTORS

To effectively use aperture as a creative control, there are several interactions to understand.

### FOCAL LENGTH CONTRIBUTION

The depth of field you can achieve at a specific aperture setting will also depend on the focal length of your lens. Focal length is a complex concept to define, so for simplification purposes it can be equated with angle of view. A wide angle lens has a shorter focal length (i.e. 24mm), while a telephoto lens has a longer focal length (i.e. 100mm). A zoom lens moves through a range of focal lengths seamlessly.

For the same aperture setting, a zoom lens at its longest focal length (i.e. 100mm) offers a shallower DOF than at its shortest focal length (i.e. 24mm). In this example (right), both images were taken with the same zoom lens and aperture. You can observe more background blur for an f-stop of f/4 at a focal length of 70mm than at 24mm.

To maximize the blur for a specific aperture setting, use a longer focal length. Take a step back if you want to maintain the composition.



**Important Safety Note:** Before moving forward, backward or any direction while photographing, stop and LOOK around you to make sure you aren't going to put yourself in danger.

Along with increasing your focal length, you can increase background blur at a given aperture by physically creating a greater distance between the subject and the background

## BOKEH

We can't talk about DOF or aperture without talking about bokeh! You know those little round circles of light you see blurred in the background of some photos? That's bokeh.

Bokeh requires three elements: A shallow depth of field, distant point light sources, and a close subject. To achieve bokeh in your photographs, move close to your subject, increase the distance between your subject and the point light source in the background, and open up your aperture.

If you want the bokeh itself without an in-focus subject, then put your lens on manual focus and make an out of focus image. Vary how much the image is out of focus to create larger or smaller bokeh.



The shape of the bokeh – whether circles or something more like hexagons or octagons – will depend on the aperture setting along with the aperture construction inside the lens. Typically, the wider the aperture, the rounder the bokeh. High end lenses will often create rounder bokeh, because of the shape and size of the blades used in the aperture construction.

## FOCUS

As mentioned in the chapter on Composition and Focus, there are some specific cases where you might not want to use the center-focus-point method. When working with shallow depth of field, as you recompose from the center focus point you may lose the focus on the subject because a small shift in the camera will shift the focal plane. Closer subjects and longer focal lengths make the problem worse. If you struggle with focus when working with a shallow DOF, move your focus point closer to the subject or switch to manual focus.

## HOW TO DETERMINE THE APERTURE RANGE OF A LENS

For a dSLR, you can find the aperture range on your lens. The aperture information follows the focal distance. It might read 1:4 (indicating the lowest f-stop is f/4 throughout the focal distance of the lens) or 1:3.5-5.6 (indicating the lowest f-stop is f/3.5 at the shortest focal distance and f/5.6 at the longest focal distance). A few key points:

1. Kit lenses (the ones supplied with your camera body) will typically have higher minimum apertures than higher quality lenses sold separately. As you begin to look at new lenses, take note of the available aperture to ensure it will have the range you desire for depth of field.
2. Zoom lenses will have higher minimum apertures than fixed focal length lenses. A good way to explore aperture is to experiment with an inexpensive fixed focal length lens, such as a 50mm f/1.8. A lens with a wide aperture will greatly expand your creative controls for depth of field, as well as improve your ability to take photographs in low-light situations.

For determining the aperture range of a point-and-shoot camera, you will need to consult your manual.

## EXERCISE - EXPLORING DEPTH OF FIELD

1. Review your camera/lens manual to learn about:
  - a. Aperture priority mode
  - b. Minimum/maximum aperture available in camera/lens
2. Adjust your camera to following settings:

<b>Camera Mode</b>	Aperture Priority
<b>Focus Point</b>	Set as appropriate for subject and composition
<b>White Balance</b>	Set to Auto White Balance (AWB).
<b>ISO</b>	ISO setting to auto, if available. This will allow the camera more freedom in finding a good exposure. If you need to set the ISO, choose 400 as a general-purpose setting. (If you find you are getting blurry images in the exercise in lower-light situations, increase the ISO setting.)
<b>Exposure Compensation</b>	Set as needed for your camera.
<b>Histogram</b>	"On" for review.

3. Set up a scene in bright, indirect light which includes a subject you can move relative to the background. Your subject could be something like an object placed in a window sill (not in direct sunlight), or a person in front of a building.

**a. Exercise 1 – Investigate the effects of aperture on depth of field.**

- i. Set your camera to the longest focal length available (maximum zoom). Ensure your composition includes both subject and background in the frame (you may have to step back).
- ii. Start by setting your camera to the widest aperture (lowest f-stop) and take a photo.
- iii. Increase the aperture by one or two f-stop settings and take the same photo again.
- iv. Repeat the process, working through the range of apertures available. NOTE: If you cannot set your aperture with your camera, change between the Normal, Portrait and Landscape modes.

**b. Exercise 2 – Investigate the effects of focal length on depth of field at a set aperture.**

- i. Set your camera to the widest aperture (lowest f-stop), or on Portrait mode if aperture cannot be set.
- ii. Start by setting your camera on the shortest focal length (lowest zoom) and take a photo.
- iii. Zoom in to the longest focal length and take the same photo.

**c. Exercise 3 – Investigate the effects of subject-to-background distance on depth of field.**

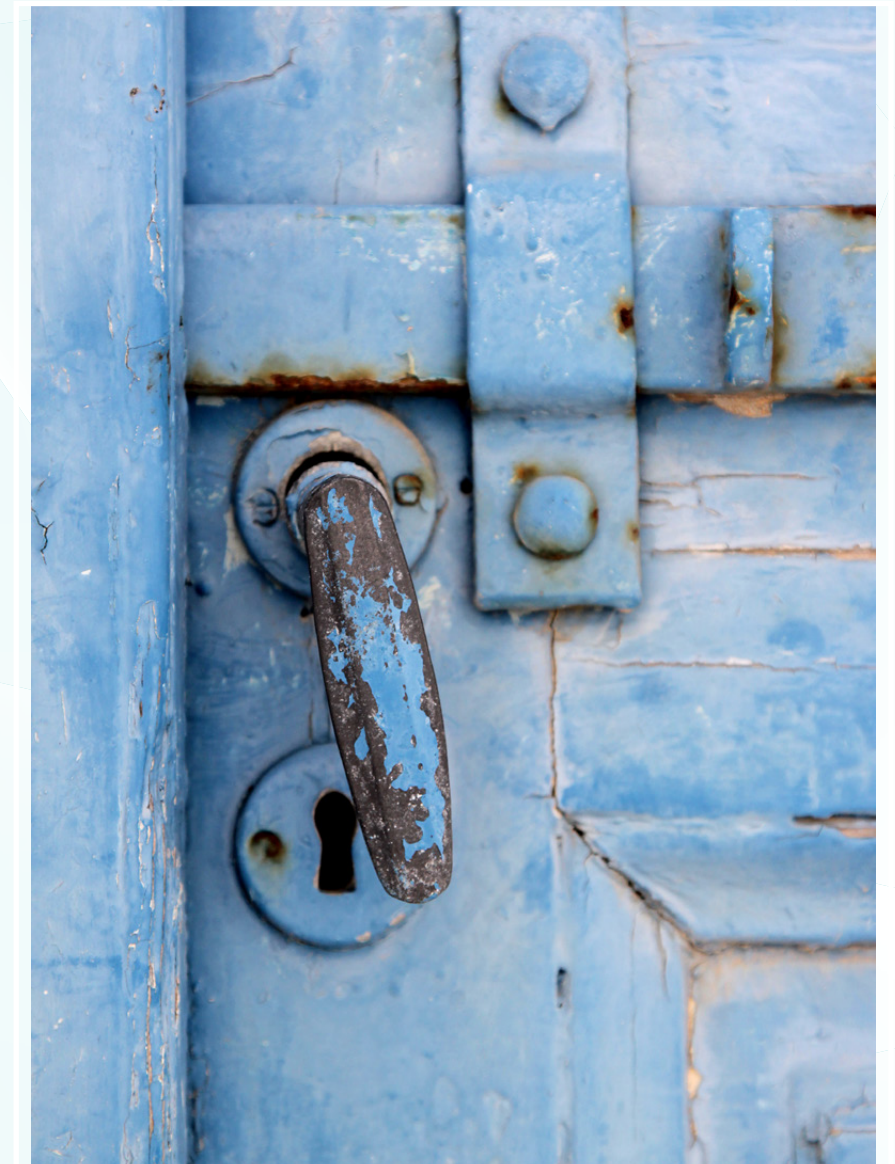
- i. Set your camera to the widest aperture (lowest f-stop), or on Portrait mode if aperture cannot be set.
- ii. Start with a long subject-to-background distance and take a photo.

iii. Reduce the subject-to-background distance and take another photo, trying to keep the same composition for the subject.

iv. Repeat the process until the subject is right in front of the background.

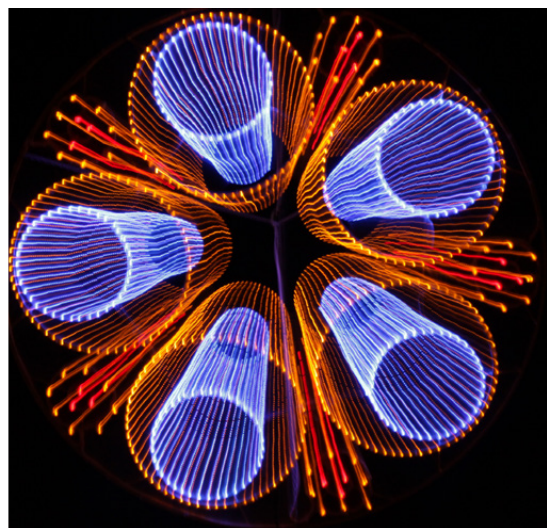
4. Download and review the images on the computer. Notice the differences in the photos as you varied the depth of field. Observe the depth of field in the photos you find most interesting. Look in the properties of the file to find the aperture settings for each image.

5. Pick two or three of your best shots. Open these photos in your photo editing software, and make adjustments as learned in previous chapters – color, exposure, composition. How do these adjustments enhance the photo? Which image do you like better – before or after the change? Make a few notes on what you like about each, what caught your eye. If you would change anything next time, note that too.





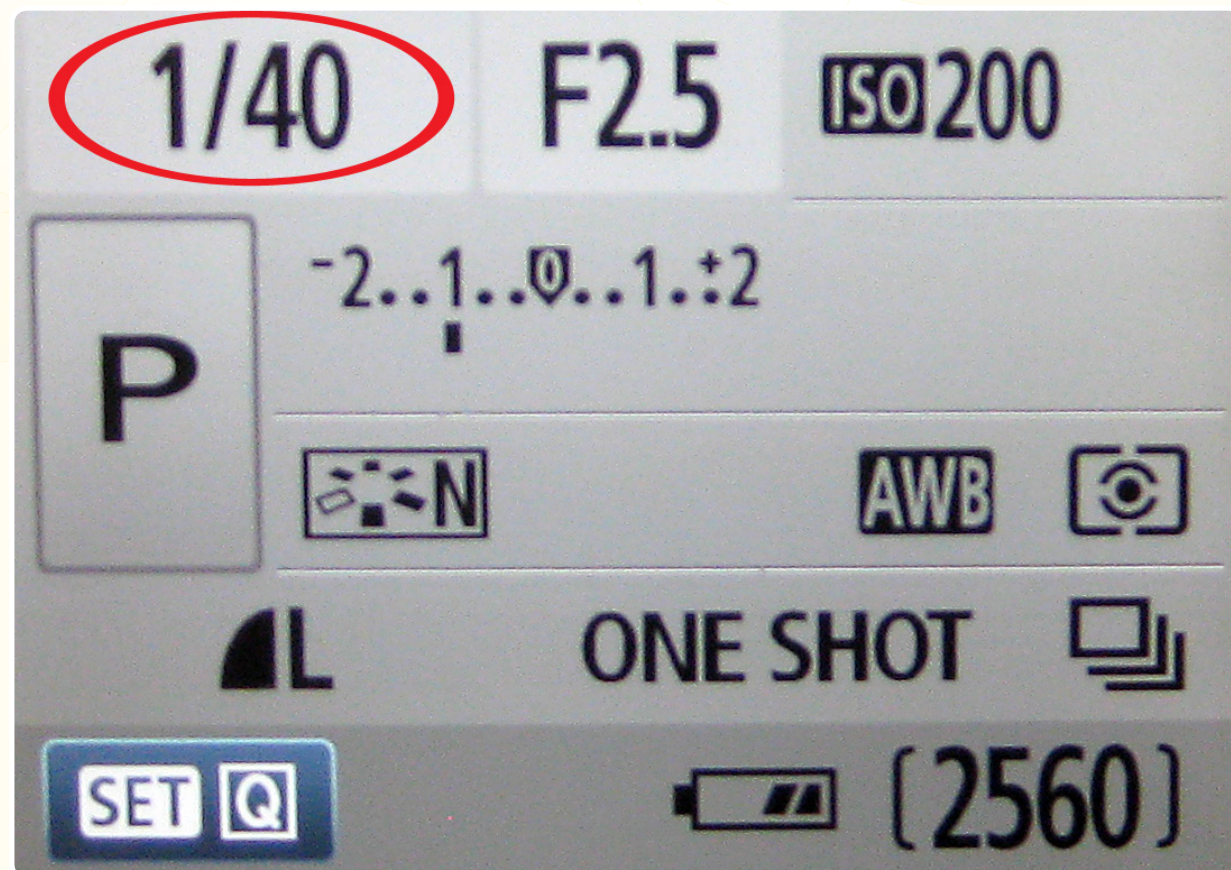
CHAPTER 5:  
**SHUTTER SPEED**



A photograph is a single point-in-time representation of our ever-changing world. When capturing a moment, how do you capture the feel of movement through time? Playing with shutter speed is all about capturing motion in time – either freezing the motion or allowing the motion to show through blur.

### WHAT IS SHUTTER SPEED?

Shutter speed is probably one of the easiest elements to understand in the exposure triangle. You can think of your shutter as your camera's "window curtains". When the shutter is open, the curtains are open, and light is reaching the sensor. When the shutter is closed, the curtains are closed, and the sensor is kept in the dark.



To get enough light to the sensor to capture an image, you adjust the length of time the shutter is open. The longer the shutter is open, the more light reaches the sensor.

Shutter speeds in entry-level dSLRs typically range from 1/4000 of a second (fastest) to 30 seconds (slowest). The specific range of shutter speeds available will depend on your camera. In the camera's viewfinder display for shutter speed you may see a number like "40" while the LCD will show 1/40. Both mean the same thing: the shutter is open for one-fortieth of a second. Higher numbers in the denominator, such as the "200" in 1/200, mean faster shutter speeds. If math and fractions are not your strong suit, remember this rule: Higher numbers in denominator = faster shutter speeds.



Throughout this chapter the text will refer to shutter speeds in the format "1/30," which means one-thirtieth of a second. The shutter speed may be displayed as either 30 or 1/30 in your camera display, so refer to your manual.

## HOW SHUTTER SPEED AFFECTS YOUR PHOTOS

If you are taking a photo of a stationary scene, shutter speed will have little impact on your final image other than letting in more or less light (with the exception of camera shake, to be discussed later, and color intensity, which will not be covered here). Shutter speed is a useful tool to close the exposure triangle properly for a stationary scene. Even night shots with low light can be achieved with long shutter speeds, as shown in the example at right which was taken with a shutter speed of four seconds.



Shutter speeds become an obvious creative control when you are photographing a subject in motion. If you want to freeze motion, use a fast shutter speed. To show motion, use a slow shutter speed. How fast or slow you need to set the shutter will depend on the speed of the motion you are trying to capture.

In these example photos (middle and below) the shutter speed is the same at 1/1250. The cyclist is frozen while the F1 car is blurred. There is a difference both in the speed as well as the direction relative to the camera of the F1 car as compared to the cyclist, both of which play into the final result.



If you want to express the movement of a subject through blur, you set a slow enough shutter speed so the object moves relative to the camera during the time of exposure. The longer the shutter is open, the more the object will move during the exposure, and the sensor will record the movement as blur. Again, how long the shutter needs to be open will depend on the speed of the object in motion.

Shutter speed is interesting because you can capture movement in ways which are different than you see. You can freeze the motion of water droplets and see their strange shapes, or even capture the seemingly impossible moves of an athlete in mid-flight. Alternately, you can show how an object has moved by capturing the traces of where it has come and gone.



*Shutter speed at 1.3 seconds. Motion of water is blurred.*



*Shutter Speed 1/4000*



*Shutter Speed 1/15*

## SETTING SHUTTER SPEED

Going back to the exposure triangle, you can set the shutter speed for the desired motion effect, and then adjust the aperture and ISO setting accordingly for a good exposure. If you use your camera on Automatic mode without flash, or in Aperture Priority mode as we've been doing for the last few weeks, the camera will choose the shutter speed solely to get the best exposure available to complete the triangle.

For this chapter, you will set shutter speed independently by using the "Shutter Priority" mode. When in shutter priority mode, you can set the shutter speed manually to any shutter speed available in the camera and the camera will adjust the other two settings to achieve a good exposure.

On point-and-shoot cameras, you may not have the option to set shutter speed manually. You will, however, have "picture modes" which allow you to influence the shutter speed setting. Here are two picture modes you can use to set shutter speed on a point-and-shoot:

**1. Sports.** The Sports mode will set the shutter speed as fast as possible to achieve a good exposure, so that the motion will be frozen. The icon for Sports mode is typically a running person.

**2. Night.** The Night mode will set the shutter speed slower than automatic mode, to allow for capturing more of the low light. The camera assumes you will be taking a photo of a nearby subject with an illuminated object in the distance (behind the subject). The shutter will remain open longer than normal to capture the object in the background in addition to the subject in the foreground. The icon for Night mode is typically a person with a crescent moon over one shoulder and an object in the background. Night mode may not allow for flash to be turned off, which could cause problems in using it for shutter speed practice. Consult your manual.

Your camera may have other modes which affect shutter speed. Look for modes described as "freezing action" for fast shutter speeds or "low light" for slow shutter speeds.

## UNDERSTANDING CAMERA SHAKE

As you decrease your shutter, your images can be affected by nothing more than the movement of the camera in your hands. You can never hold a camera completely still, so camera shake can cause undesired blur in images, especially at slow shutter speeds.

Camera shake is a sneaky little problem, because you often can't see the subtle blur on the camera LCD. It's only visible when you zoom in the thumbnail on the camera or review it larger on the computer. This can be disappointing, because finding a blurry image at the computer is too late. You can only recover camera shake by taking precautions as you capture the images.



*Taken at 1/25. Slight blur is due to camera shake*

Most cameras will solve the problem of camera shake in full automatic mode by turning the flash on. In fact, most automatic modes turn the flash sooner than is absolutely necessary. If you are using natural light and have turned the flash off, the full automatic mode of the camera will not help here.

A rule of thumb to avoid camera shake when hand-holding the camera is to use shutter speeds no slower than  $1/[\text{focal distance in mm}]$ . So if your focal distance is 50mm, your shutter speed shouldn't go below  $1/50$ . At 35mm, a shutter speed of  $1/30$  should work. If your focal distance is 200mm,  $1/200$  would be the slowest shutter speed to avoid camera shake. As you increase the focal distance, the magnification of the lens also magnifies the tiny movements of our hands holding the camera, so you need to increase shutter speeds to avoid camera shake.

Many modern digital cameras and lenses, even point-and-shoots, are equipped with image stabilization features which help reduce the effects of camera shake. Check your camera and lens manuals to see if you have image stabilization. You can also reduce the effects of camera shake by the following:

1. **Make your body more stable.** Increase your stability by taking a wide stance with your feet, tucking your elbows tight into your sides, and hold your breath while you take the shot. With practice, you can sometimes get good photographs down to  $1/20$  or  $1/15$  with this method, but it is hit or miss. You can also lean your body against a stationary object, such as a pole or wall, for increased stability.
2. **Make your camera more stable.** You can also increase your stability with an "assisted handhold." You can use anything stable, like a railing, bench, or fence, to help hold your camera. You can find beanbags sold for the specific purpose of supporting the camera on uneven surfaces. With an assisted handhold, plan for more straightening and cropping in post processing since you don't have as much control on the angle of the camera. This night image from Venice was captured with the assistance of a bridge railing for stability.

3. **Use a tripod.** Make sure your tripod is sturdy enough to hold your camera in a stable manner. If the tripod is made for a point-and-shoot and you use it with a heavier dSLR, it may not be stable. Instability leads to blurry images, even with a tripod. It is possible to shake the camera on a stable tripod just by pressing the shutter button. You can use a remote shutter release, or the self-timer on your camera, to avoid camera shake due to pressing the shutter button. Another less-bulky option to increase stability is to use a monopod instead of a tripod.



## CREATIVE EFFECTS WITH MOTION

There are several fun things you can try when playing with camera movement, shutter speed and motion.

### PANNING

Have you seen images where the object in movement is frozen in the image, but the background is blurred? These images are captured using a technique called panning. The idea is to move your camera at the same speed as the subject is moving as it travels past. The subject in the resulting image remains clear while its surroundings are blurred. Start moving your camera with the object before you press the shutter release and continue movement through the entire time the shutter is open. Panning takes quite a bit of practice, but the results are interesting.



You can also pan from a moving vehicle, by pointing the camera on a fixed point and keeping it still relative to the point as you pass. Since your eye and head will naturally move to stay focused on one spot, your camera will too. This image to the left shows the effect.

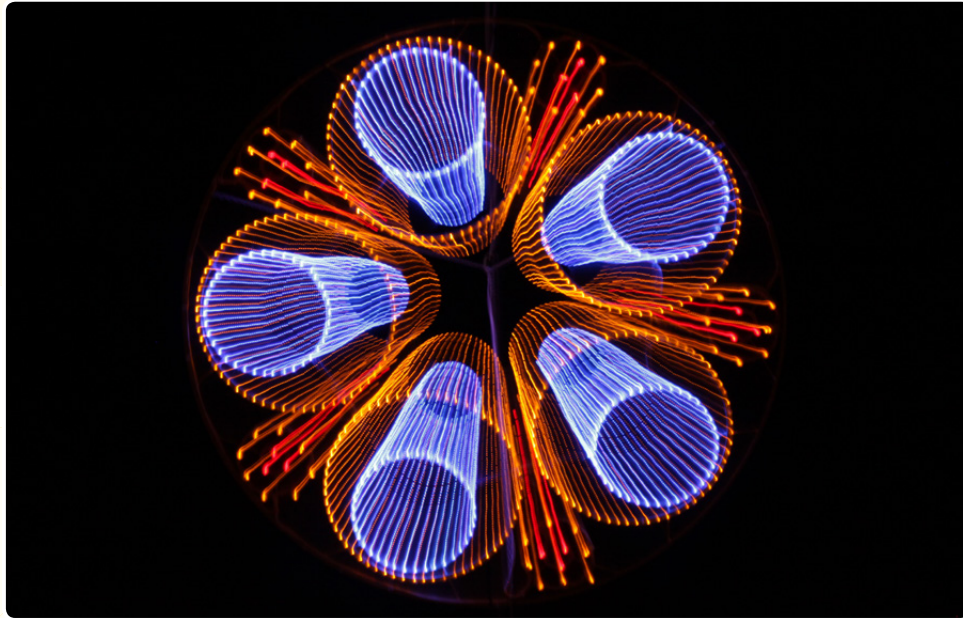


### INTENTIONAL MOVEMENT

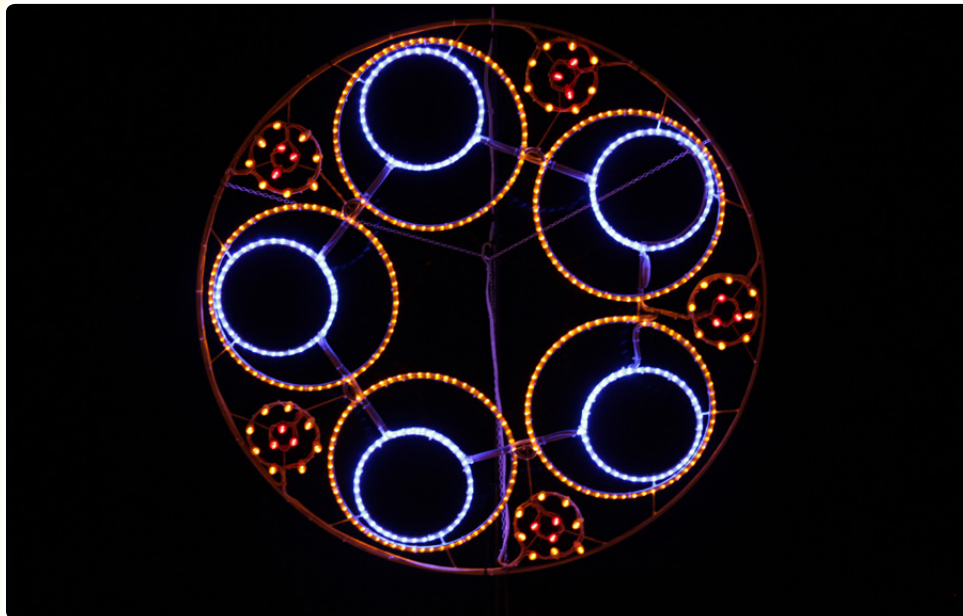
You can get interesting effects by setting your camera to slow shutter speeds and then moving intentionally throughout the exposure. Try moving in one direction, circling around, or drawing shapes. The effects range from impressionistic to abstract. It can be especially fun at night.

## ZOOM DURING EXPOSURE

If you are using a zoom lens, another way to drag light during an exposure is to change your focal distance while the shutter is open. For the images at right and below, the camera was set to a shutter speed of one second and the zoom started at a long focal distance (zoomed in). As the shutter button is pressed, the camera is zoomed out. The images were captured while hand-holding the camera. When using a tripod, the light trails would be straight instead of wiggly.



*Above and below: Same Christmas lights, without the zoom during exposure.*

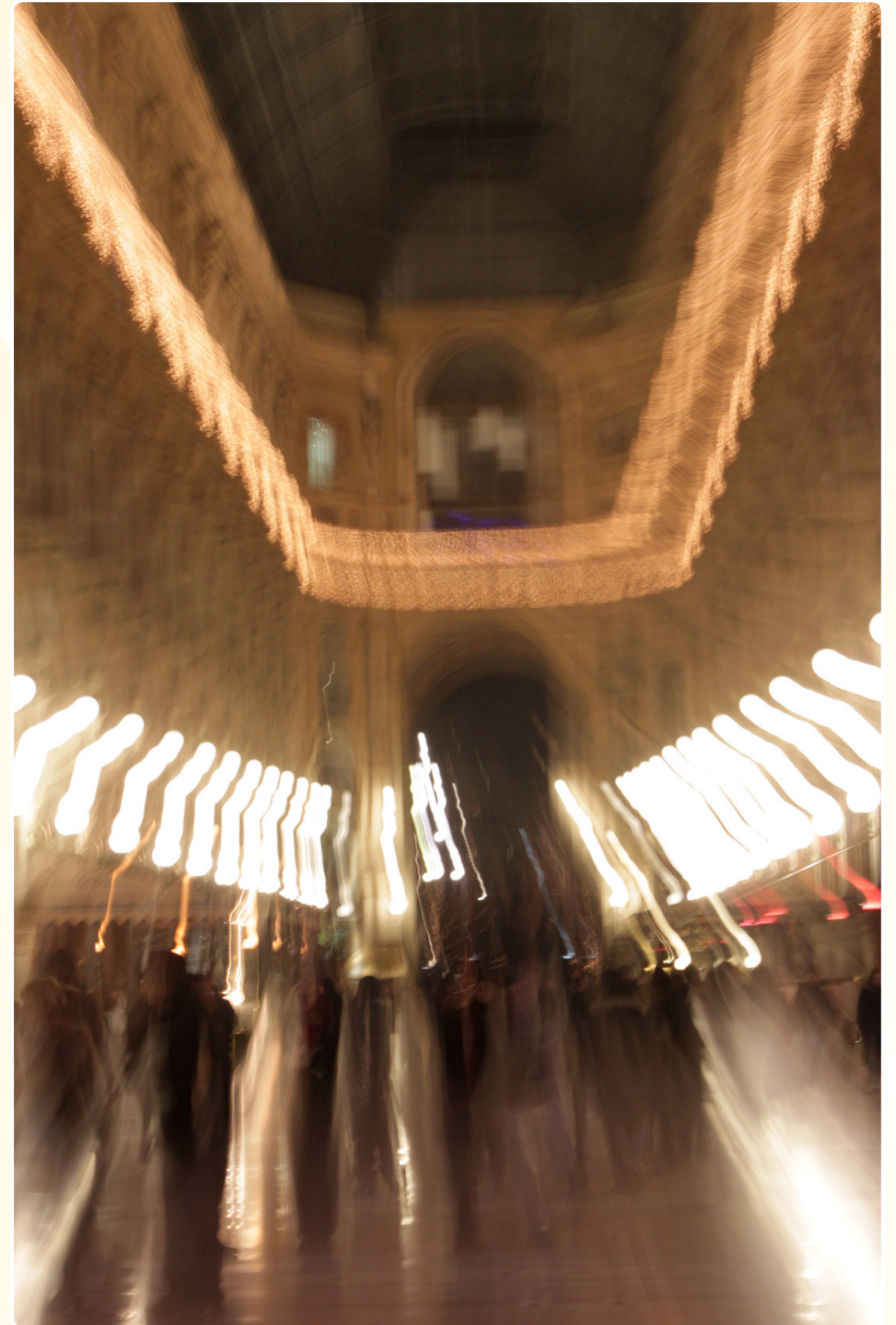


## FOCUS CONSIDERATIONS

When you are working with moving subjects, you can't easily focus and recompose. The object may be moving faster than your camera can focus.

Change your focus mode from a single shot focus (usually the default setting) to a mode where your camera continually focuses on a moving subject.

Check your camera manual for different focus modes available to you and how to set them.



## EXERCISE – EXPLORING SHUTTER SPEED

1. Review your camera/lens manual for the following functions, and learn how to set them if they are available:
  - a. Shutter priority mode (or modes available which affect shutter speed)
  - b. Range of shutter speeds available
  - c. Focus modes
2. Adjust your camera to following settings:

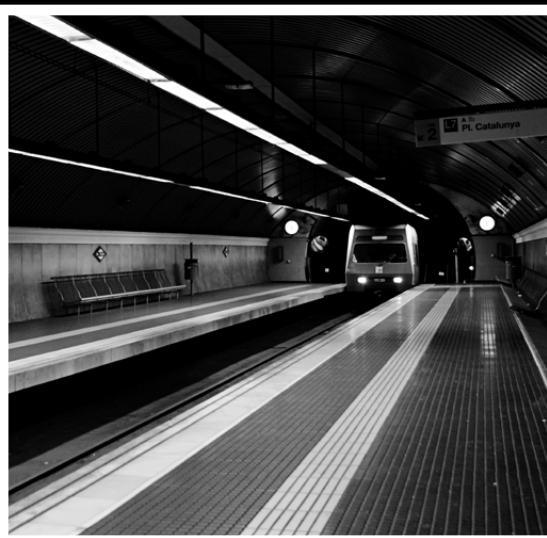
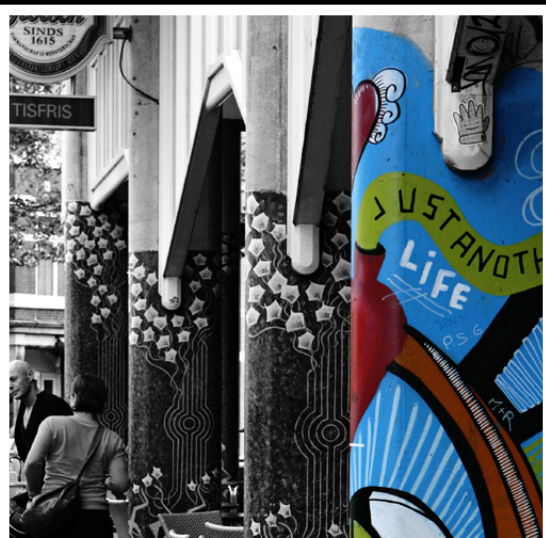
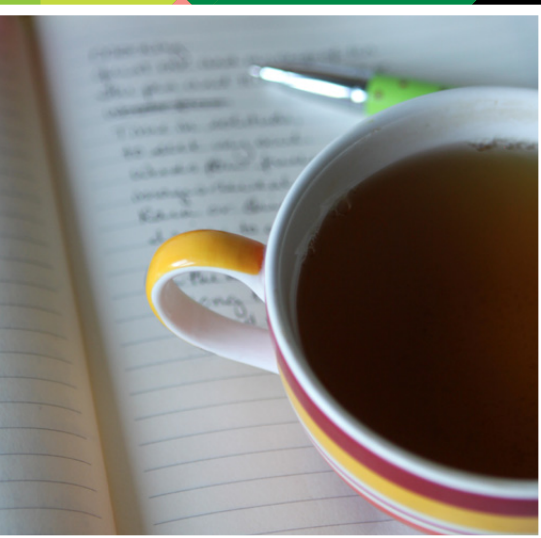
<b>Camera Mode</b>	Shutter Priority.
<b>Focus Point</b>	Set to continual mode (called “AI Servo” in my camera).
<b>White Balance</b>	Set to Auto White Balance (AWB).
<b>ISO</b>	Auto ISO setting. If you need to manually set the ISO setting, set it as appropriate for your camera and lighting conditions.
<b>Exposure Compensation</b>	Set as needed for your camera/lens.
<b>Histogram</b>	“On” for review.

3. Pick a scene which includes consistent movement. Some ideas: a fountain, a road with traffic, or a bike path. Aesthetics are not the primary goal in this exercise, so don't worry about having a beautiful scene. Try to have strong, even light in the scene to allow a wide range of exposure settings. Generally outdoors in the daytime will work, even on a cloudy day.
  - a. Pick a vantage point for your camera and keep it fixed. If possible, use a tripod or set the camera on a stable surface. If neither is possible, set yourself up in a stable manner to reduce camera shake.

- b. Set your camera to the fastest shutter speed possible for a good exposure, and take a photo. Note: Your camera may not allow you to take a photo at the fastest shutter speed setting if it will result in an underexposed image. Watch your error messages and consult your manual.
  - c. Slow your shutter speed setting, and take another image of the same scene.
  - d. Repeat step c, working your way down to the slowest shutter speed possible without obvious camera shake.
  - e. Optional Exercises:
    - i. Repeat the exercise in a different situation where the objects have a different speed.
    - ii. While handholding the camera, take a series of still images, each with a slower shutter speed. See where you start to get camera shake and if you can avoid it by improving your stability.
    - iii. Play with panning, intentional camera movement, or zoom during exposure.
4. Download and review images on the computer. Notice the differences in how the movement looks with the change in shutter speed. Note which shutter speeds you find most interesting. Is it the images with frozen action or blur? Does it vary depending on your subject or location?
  5. Pick two or three of your best shots. Open these photos in your photo editing software, and make adjustments as covered in previous chapters – color, exposure, composition. How do these adjustments enhance the photo? Which image do you like better – before or after the change? When you are done, save the file with the final edits. Make a few notes on what you like about each and what caught your eye. If you would change anything next time, note that too.



CHAPTER 6:  
**EDITING BEYOND  
THE BASICS**



**T**he last two chapters have focused solely on the camera as a tool without covering any new post-processing techniques, so this chapter will remedy the imbalance by touching on some creative options with post-processing in photo editing software.

One exciting aspect of digital photography is having these creative options at your fingertips. You don't have to decide in the moment what type of processing you are going to do with each image, you can decide later. You can convert some of them to black and white, modify textures and colors, or do simple exposure adjustments and crops. You can take the same photo and create many different looks. This flexibility might be overwhelming at times, but it adds marvelous creative possibilities.

Part of learning photography includes trying out different styles, not only with how you take the photos, but how you post-process. You can play around with a new technique, evaluating whether or not you like it on a few different images and learning where you might find it effective in the future. Just like when you were a child, through play you can discover new things and expand your ability to express yourself creatively.

This chapter presents a few possible post-processing techniques. These may not be available in all photo editing software packages, and they certainly are a limited range of what is possible. For your software, view the demos and help features, search online, or pick up a dedicated book to see what is possible. You don't have to be a computer expert or spend a lot of money on software to edit your photos in fun ways.

### **AUTOMATED PROCESSING**

In most photo editing software packages, there are one-click automated processing options. An example would be an option to directly convert a photo from color to black and white. In Photoshop these are called "Actions," and in Lightroom they are called "Presets." There are probably as many names for one-click automation of processing as there are software packages, so they are referred to as actions throughout the remainder of this text for simplicity. Regardless of the software package you use, actions allow you quick and easy processing. Actions can be a great time-saver when you want to do repetitive processing, and they can also allow you to do complex processing without learning the software in depth.

Find out what automated processing is available for your software package – either in the software itself or available separately – and use the actions as a starting point for post-processing play. If you use a common photo editing software, you will have a wide variety of actions available, many even free.



## MONOCHROMATIC CONVERSIONS

One of the most basic of digital post-processing techniques is the monochromatic conversion. Black and white, sepia, brown tones, etc. are all examples of monochromatic conversions.

For a monochromatic conversion, you will want to pay attention to the contrast and range of tones in the photo. These can vary greatly depending on how the conversion is done, and have a big impact on the final photo.

The following sequence of images (right) shows several conversions of the same photo to explore how different black and white conversions affect the original image.



Explore a range of different monochromatic conversions to see which you like best to convey the mood. You can also experiment with tints in monochromatic images. Sometimes black and white will not create the desired look for your photograph.

The example shown here shares a conversion where a sepia tint created the better option than black and white for preserving detail, while creating a strong contrast between the town and the landscape behind.



## LAYERING AND BLENDING IMAGES

Blending layers with your photo can be a wonderful way to add texture and change the look and feel of the final image.

### BLENDING WITH THE SAME PHOTO

In this technique you duplicate the photo as a separate layer and then blend the original photo with the duplicate. The example uses the soft light blending mode (right) to enhance shadows and colors of the original (left).



### BLENDING WITH A DIFFERENT PHOTO

You can layer two different images using different blending modes to get interesting effects. Using “textures” on a photo is essentially blending two images – your image plus a texture image. Here are some examples (left) where textures have been blended with photographs.

*Final image created using Kim Klassen’s Wet Tile texture blended using Soft Light at 100% opacity. A very simple edit, but it dramatically changes the final image.*

Here is another example, using two texture layers on an image. Original at left, and final image at right created using two textures from Kim Klassen: Mustard Seed Texture using Multiply blending mode @ 76% opacity, followed by Scripted Texture using Overlay blending mode @49%. The result is a vintage feel which goes well with this photo from a medieval castle.

Here are a few websites offering textures and/or actions, many of which also have tutorials:

[Shadowhouse Creations](#)

[Kim Klassen Cafe](#)

[Textures by pareerica](#)

[Isabelle Lafrance Photography](#)

[Paint the Moon](#)

[Nelly Nero](#)

[More Texture Websites](#)

[Pioneer Woman](#)



## SELECTIVE PROCESSING

Selective editing, or masking, is a common post-processing technique. You can create or remove an effect from a specific part of the photo. The way you achieve this will vary depending on your photo editing software.

A common selective processing technique is to convert a photo to black and white, while selectively allowing a certain portion to remain in color. Selective color is often used for a single color object, like the scooter at right.



Selective color processing can also be used for a multiple colored object as in this example to the right (middle image).

Another way to use selective color is to convert a distracting part of an image to black and white. In the example below, there was a small amount of distracting greenery, which was converted to black and white while the remainder was kept in color.



You can use selective processing with almost any processing style. In the example below, the non-blue building colors were desaturated while the blue was left normal.



## HOW TO DECIDE?

There are so many options in post-processing, how do you decide what you want to do to your images? When you are reviewing and post-processing your photos, think about what you want the image to convey; how you want the image to feel. The chosen post-processing can strongly influence the feeling of a photograph.

When you take time to play with the post-processing options available in your software, you learn the effects on a photograph. When you learn a new technique, spend time trying it on several images, observing the results. Through experimentation, you learn not only how to use a specific technique, but also on what type of images it might be effective in the future.

Following are a few examples of post-processing to achieve a certain intent.



*Above: **Intent:** Highlight the personality of the flower in the scooter windscreen in the row of sameness. **Achieved by:** Black and white conversion with selective color to highlight the flower.*

*Below: **Intent:** Create a vintage feeling and emphasize the Fiat. **Achieved by:** Processing with a vintage action which desaturates and shifts the tones, and selectively increase the saturation of the red on the car.*



*Above: **Intent:** Emphasize the radiating lines of the subway station. **Achieved by:** Converting to black and white.*

Post-processing options can extend your creative range and your ability to express yourself artistically through photography, but they aren't a substitute for good photographic technique. The basic concepts covered in the previous chapters are needed to make any photograph stand out. Trends in post-processing change over time and can be easily copied, so relying on a specific editing technique to define your style will not serve you in the long run. Underneath the processing a solid photo is needed to stand the test of time.

Focus on improving your technical skills and understanding, playing along the way, and over time you will discover your own perspective and style expressed through your photographs.

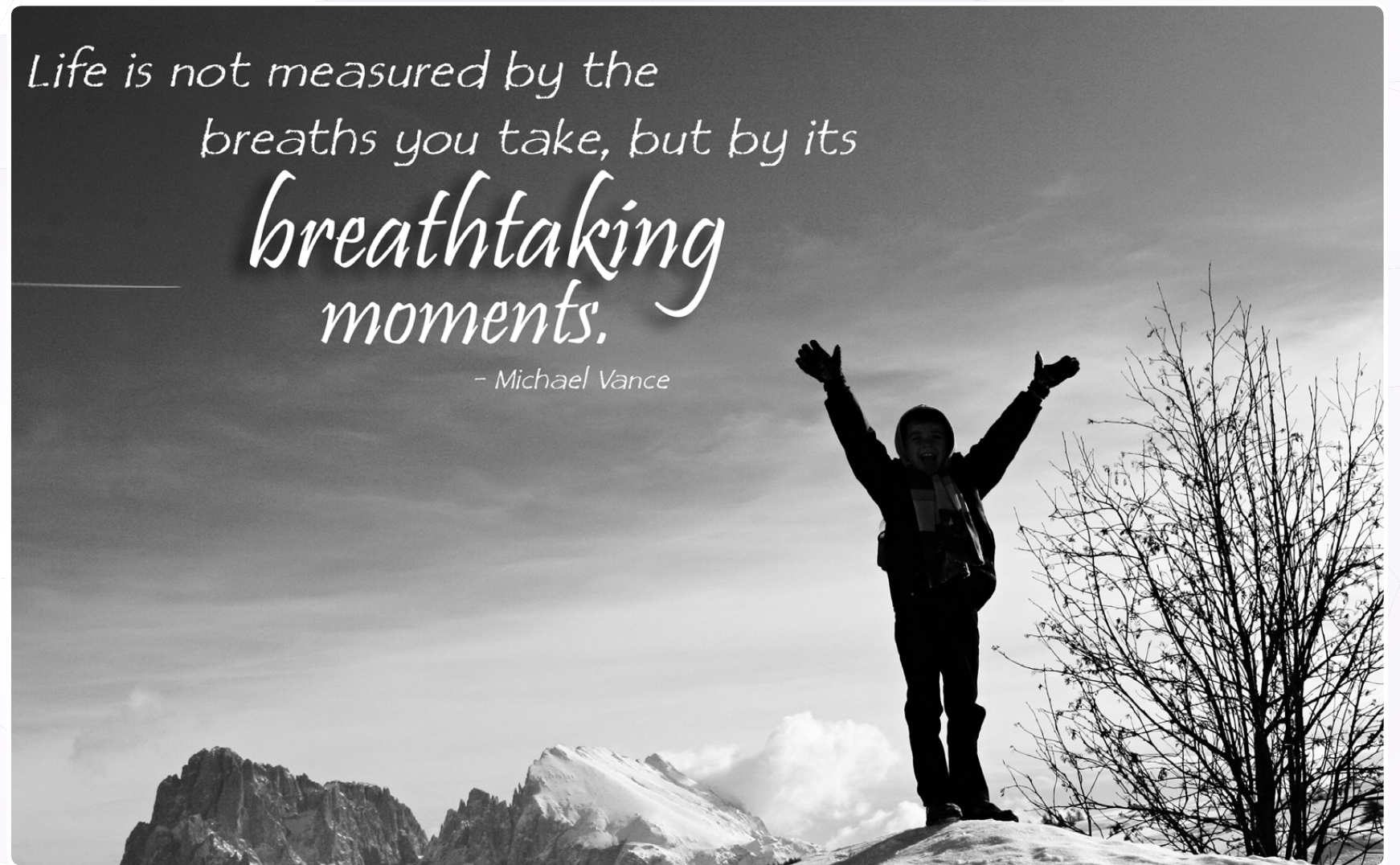
### EXERCISE - EXPLORING POST-PROCESSING

1. Review the software manuals, books or online for tutorials for the following topics for your post-processing software:
  - a. Automated processing (aka Actions or Presets)
  - b. Black and White Conversions
  - c. Layers and Blending modes
  - d. Selective processing and masking

As you search, make a list of post-processing techniques you would like to learn in the future. Don't worry about trying to learn all of the techniques at this time. Locate the information and bookmark it so you can find it again when you are ready.

*Life is not measured by the  
breaths you take, but by its  
breathtaking  
moments.*

*- Michael Vance*



2. Review images from a previous photo shoot to find an image with potential which did not "wow" you upon first review. Look for an image with good initial exposure and composition.
3. Load the image in your photo editing software and begin to play. Process it as you normally would, and then process it with at least three different techniques. Save each different end result. Make a few notes on what you like about each, and which technique works best on different photos.

## NEXT STEPS

Now that you have learned the basics, you are ready to take the next step on your photographic journey. What is the next step? That is completely up to you. Your personal interests will define what you learn next. Photography is too broad of an art form to define a single path that fits for everyone.

If you don't know yet what you want to learn, the best thing to do is continue to practice and play. As you do, you will integrate your new skills and begin to see where you want to go next. Usually, it's your frustrations that point you toward things you need to learn, but be sure to listen to the call of the things about photography that bring you joy. If you pursue photography for the love of it and continue to focus on what makes you happy, you may find your direction and your skills naturally evolve. As with any art, there is no end point in your development with photography. No matter how long it's been since you first picked up a camera, as long as you continue on your journey, there is room for growth and change.



### A PARTING NOTE...

Once you have the basic technical skills under your belt and are ready for some creative inspiration, I hope you will come and join me at [Kat Eye Studio](#). Between an inspirational [blog](#), [free series](#) on artistic photography topics and [online classes](#), there is much fuel for your creative soul. Sign up for the [Kat Eye News](#), the twice-monthly email newsletter, to keep abreast of all that is available. I look forward to meeting you online!

☺ Kat.

## ABOUT KAT

**K**at Sloma is a fine art photographer who believes everyone has a unique vision of the world to share through their art. Dedicated to providing resources to help photographers find their personal creative vision, Kat writes, teaches, and speaks about various aspects of photography. She has taught and exhibited her work both in the US and internationally. Kat honed her photography and writing skills during a two-year assignment living in Italy and traveling Europe, where she created many of the example photographs in this book. She currently resides in Corvallis, Oregon with her husband and son. To see more of Kat's work, visit [kateyestudio.com](http://kateyestudio.com).



# DIGITAL PHOTOGRAPHY for BEGINNERS

**Kat Sloma** *Author*

**Dave Seeram** *Editor-in-Chief / Publisher*

**Moghees Siddique** *Art Design / Layout*

© 2015 **PhotographyBB**

All rights reserved. No part of this publication may be reproduced or transmitted in any form by any means without prior written permission from the publisher. PhotographyBB is a division of PowerButton Central.