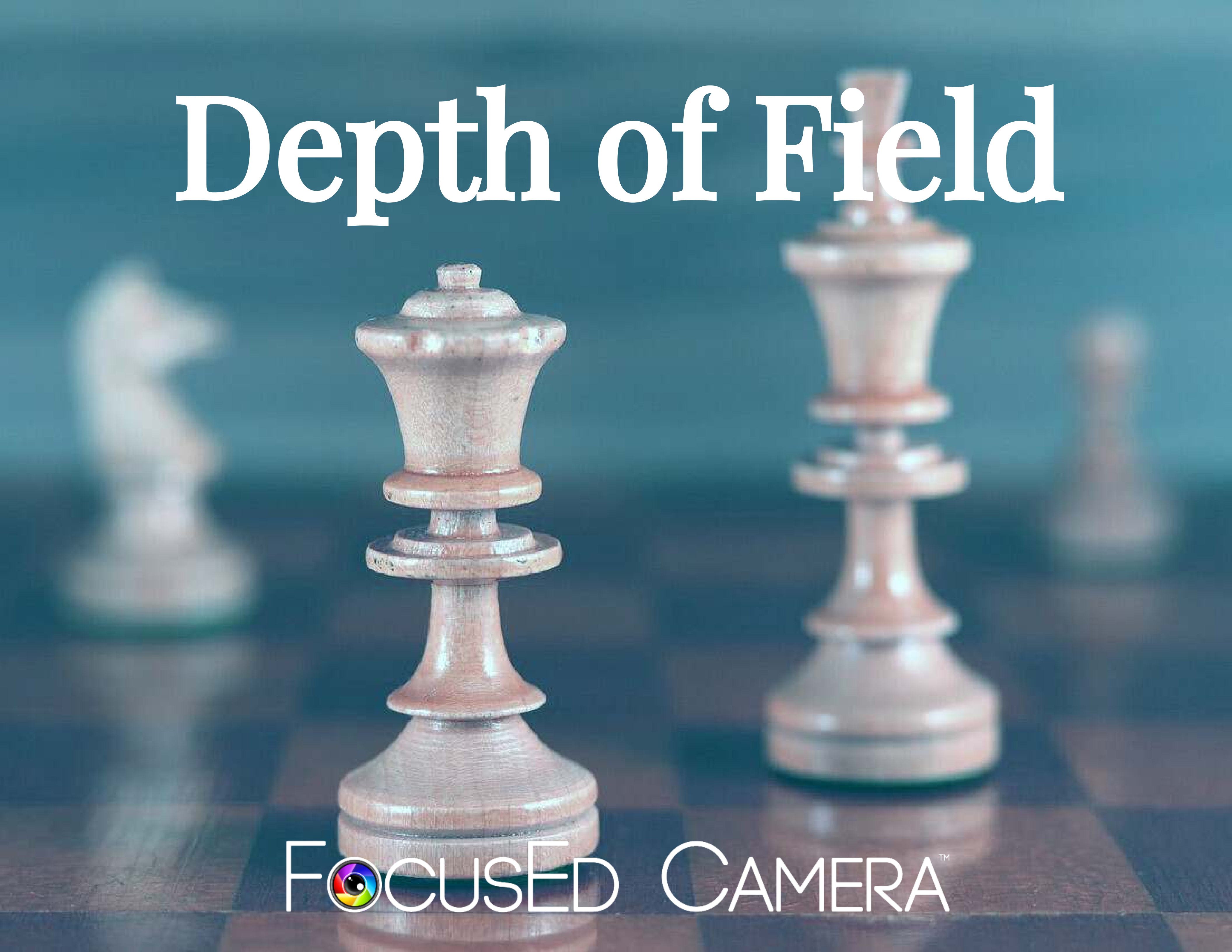
Depth of Field



FocusEd Camera™

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Introduction

Welcome to the world of photography, where mastering the art of depth of field and hyperfocal distance can elevate your images from good to breathtaking.

In this comprehensive e-book, we delve into the fundamental principles and practical techniques that will empower you to take full control over focus in your photographs.

Discover the magic of balancing aperture, focal length, and hyperfocal distance to achieve stunning shots in any setting. Whether you're a beginner or a seasoned enthusiast, this guide will equip you with the knowledge to capture truly mesmerizing moments.

Depth of Field

Online forums and Facebook groups are full of amateur portrait photographers and "someday want-to-be professional" photographers and an extremely common question they ask as beginners is “How do I get that blurry background in my photographs?” The blurry background (or blur with bokeh), is an effect accomplished by knowing how to create a shallow depth of field. It is a compositional tool used in many genres of photography such as portraits, flowers/nature, and products.

A quick word of caution, overuse of any one compositional tool can create a portfolio that is, well… boring. So don’t rely only on “blur” to create memorable images. Memorable images require proper angles, lighting, exposure, and often a good amount of planning, preparation, and care. Therefore, consider "bokeh" one such compositional tool in your creative arsenal and check out our Composition Basics e-book for more.

While bokeh creates a pretty effect for many images, some genres require crisper focus throughout and blur is not desirable. Landscape, night photography, and some types of street photography are examples where a deeper depth of field is common. To accomplish this deeper depth of field, hyperfocal distance is often used. (You can read about hyperfocal distance in the second section of this e-book, but it is recommended you first have a solid understanding of basic depth of field and factors that affect it as discussed in this first section.

What is Depth of Field?

Simply put, depth of field is the distance between the nearest and farthest objects in an image that are in acceptably sharp focus. In some photographs, everything seems to be in focus throughout and in some photographs the foreground or background, or both, may have blur. This is achieved by manipulating the factors that affect depth of field.

Depth of field is calculated using the lens' focal length, distance to the subject, the acceptable "circle of confusion" size, and the aperture setting of the lens. Thus by changing one or more of these factors, different depths of field can be created. Let's investigate the effects of each factor on the depth of field, starting with shallow depth of field.

How does one get shallow depth of field?

Shallow depth of field, also called a small or narrow depth of field, means that only a part of the image is in focus. Most often this is accomplished by using a wide aperture (small f/stop number) on the lens and shooting in aperture priority or manual mode. If a lens has the ability to shoot at f/2 at its most open setting, the resulting depth of field will be small or narrow. If that same lens was set at f/22 and its position and the subject/background positions were not changed, the result would be a much deeper or wider depth of field.

In the images above, the only factor that was changed was the aperture or f/stop. Notice in the first image shot at f/32 there is more of the image, from front to back, in focus. The main flower and the flowers behind it are more defined and the bars on the iron door can be seen. In the second image, the aperture setting was changed to f/5 so much less of the image is in focus. There is more blur behind the main flower in this image and the bars on the iron door are completely out of focus, so much so, that they almost disappear into the background. This is one advantage of a blurry background; to get rid of distractions behind the subject.

Shallower depth of field can also be accomplished with longer focal length lenses. A flower photographer might use a longer focal length lens to get a smaller depth of field and blur behind the bloom. The image below on the left used a lens at 80mm and the image below on the right used a lens at 300mm. The background of the 300mm image is completely blurred, whereas the 80mm image still has recognizable stems, leaves, and flowers in the background.

Depth of field is also affected by changing relative positions of the camera, the subject, and the background. A photo taken at close range will have a much shallower depth of field. Moving the camera closer to the subject and moving the subject farther from the background will increase the blur in the background and make the depth of field shallower. For example, a portrait photographer will want to put some distance between the person/subject and the background to get the desired blur effect.

The image on the left could be improved by moving the subject away from the wall. The image on the right has a nice background blur because the background was farther away.

The images on this page demonstrate the effect of moving the camera closer (reducing the distance to the subject). In the first image, I was much farther away from the flower arrangement which produces a deeper depth of field. Some of the background, like the door behind the flower arrangement, was already somewhat blurred, but most of the flowers in the arrangement are in focus. In the second image, I have moved closer. There is a shallower depth of field. At this very close range, the background is fully blurred.

To summarize, blur or "bokeh" is created by using a wider, more open aperture, longer focal length lenses, getting closer to the subject and moving the background away from the subject. These are all within the photographer's control. A final aspect that affects depth of field is the camera's sensor and "circle of confusion size" which are not within your ability to control (unless you are buying or changing out cameras).

A camera can only get precise focus at one exact distance from the lens. Everything in front of or behind that distance will be blurred. The blur “spot” will be shaped like the aperture of the lens, thus almost a circle. If these spots, or circles, are small enough they are almost indistinguishable from a point of light and they *appear* to still be in focus. When this happens we have acceptable sharpness or an acceptable “circle of confusion.” The “circle of confusion” size is related to a camera’s sensor size and is a complicated concept that could be a whole article in and of itself. Any blur one can see in a final photograph is simply the blur spot as it registered on the camera sensor, only enlarged (on your screen or in print). How big this blur can get without being noticeable, is the acceptable "circle of confusion" size.

The takeaway here is that even the most crisp-looking landscape image one has ever seen actually has areas that are out of focus or blurred, it's just the blur is so minimal one's eyes can't tell unless the image is magnified or the viewer gets closer. The mechanisms of the camera and the way light bends as it enters the lens make it impossible to have an image that is totally in focus from edge to edge at every given distance.

How depth of field and the "circle of confusion" changes from a crop camera to a full frame isn't something most photographers will need to know. If one plans to make super-sized prints or enlargements, then it might be beneficial to know the sensor size and "circle of confusion" calculation in relation to the anticipated print size. More important for most photographers to understand are the effects of a specific camera body and lens combination on depth of field. Most photographers would not change camera bodies to achieve the depth of field they want when they can change position, lenses, or settings instead (as already described above).

$$\text{Depth of Field} = \frac{2(\text{distance to subj})^2 \times \text{f/number} \times \text{circle of confusion}}{\text{focal length}^2}$$

A full-frame camera sensor will create a shallower depth of field when adjustments are made to keep the same field of view (remember a 50mm lens on a crop camera will only “see” the field of view of approximately an 80mm on a full-frame)

Most photographers do not complete these calculations. They learn their lens, best aperture settings, and subject distances over time and with practice. There are apps that will do these calculations for you, just search your phone's app store for a depth of field calculator. Choose one that allows you to enter your specific camera sensor and lens combination and that provides a diagram or chart of the approximate depth of field for different apertures and distances.

How do you get deeper depth of field?

Deep depth of field results in a much larger area (front to back) of the image being in focus. Basically by doing the opposite of any of the above, one can accomplish a deeper depth of field. Using a shorter focal length (for example switching from an 85mm to a 50mm) or setting a larger aperture (from f/5.6 to f/11) will increase the size of the depth of field and make it deeper. The images on the next page show the results of changing the focal length.

I remained stationary, but used the zoom on my lens to change the focal length from 18mm to 400mm (these images were also cropped to fit together). The shorter focal length in the first image creates a deeper depth of field. The iron door is clear and the door knob appears mostly focused. In the middle image, the depth of field is narrowing. By the time I zoomed all the way in for the last image, the depth of field had become much more shallow and the only part that is really in focus is the solitary flower.

Changing the distance between camera and subject will also change the depth of field. If the subject is placed closer to the camera the depth of field is smaller. When you want to blur the background the subject should be closer to the camera, but keep some space between the subject and the background. If the subject is placed closer to the background, and the camera is moved farther away, the depth of field will be deeper. In the example above, if I had remained in position after the third image and had moved the flower arrangement farther away from me (moving the subject farther from the camera), then the depth of field would have gotten deeper again.

How is shallow depth of field used as a compositional tool?

In portrait photography, shallow depth of field creates that soft bokeh or blurry background behind the person (and sometimes in front of the person as well). The blur can give a photo a moody look or be used to create a dreamy, mysterious, or romantic "feel." Additionally, the blur is sometimes used for an abstract effect.

The selective blur creates dimension and reduces distractions from the background. Since our eyes are drawn to and gravitate towards areas in focus, creating a composition where only some of the image is in focus allows the viewer to be guided to the subject. In portrait photography (people or pets) it is considered an important standard practice that the most crisp focus point be on the eyes.

Blur in the foreground can also remove distractions that are in front of the subject, like fencing around a cage, allowing the focus to be on what is beyond. In this image below, the wire fencing on the bird enclosure "disappears" and I am able to shoot "through it" even though my lens was several feet on the other side and the lens glass was far too large to put between the wires.

Shallow depth of field is most often used in the genres of portrait, nature, travel, and to some extent street photography. With street photography, too much blur will take the subject out of context and the story behind the image can be lost.

How is deep depth of field used as a compositional tool?

Deep depth of field is desirable for landscape photography especially. This is where using narrow (larger #) apertures and understanding hyperfocal distance becomes important.

Hyperfocal distance, in a nutshell, is the point in the foreground that is the closest point the camera can focus while still having acceptably sharp image quality throughout the rest of the image to “infinity” (which is the background or horizon in most images) In other words, it is the point of focus that will yield the greatest depth of field.

The hyperfocal distance point does not create an equal amount of focus in front of and behind the focus point. Typically, 1/3rd of the range of focus will be in front of the point and 2/3rds will be behind that point.

For a detailed look at hyperfocal distance and how to make calculations in the field, be sure to read the next section. For a short primer, continue below.

There are hyperfocal distance charts and apps that can provide a good starting point for reference, but they are not always accurate and they are one-size-fits-all, not taking into account the actual scene. Some lenses also include markings on the side of the lens barrel that can guide you, but the easiest method for starting out with hyperfocal distance is using the approximation method of “double the distance.”

How do I use “double the distance?”

A very simplistic way to achieve equal sharpness in the foreground and background is to use a method called “double the distance.” Find the closest object or element in your composition and determine (approximately – exact accuracy is not necessary) how far away it is from the camera sensor (not the end of the lens). Then double that distance and focus at that point.

For example, in the image below, if the closest rock that needs to be in focus is 10 feet away, then make the focus point 20 feet away. Use a small aperture (large f/number). Use live view if available on the camera and use it zoomed in. This method does require some practice at estimating distances, but can be quite effective and efficient once one gets the hang of it.

Keep in mind that depth of field increases with smaller apertures, so if the closest object is not in focus at a certain aperture, then one may have to adjust the aperture. For example, if the camera is set up using a 35mm lens and the closest object that needs to be in focus is 8 feet away (focus point 16 feet away) and f/8 is not working, increase the f/stop to f/11 or f/16 to bring the focus closer (increased depth of field). Other adjustments may then be required to shutter speed and ISO, so an understanding of the exposure triangle is also essential to achieving the desired outcome.

What is the takeaway?

In summary, manipulating the depth of field is a compositional tool used by photographers in many genres. It is typically accomplished by changing the aperture of the lens, the lens focal length, or the positioning of the subject and background along with the positioning of the camera.

A shallow depth of field creates a nice blur effect in front of and behind the subject which results in a softer or more abstract feel, whereas, a deep depth of field has crisper focus throughout the image from front to back.

Knowing the calculations or keeping a focus distance chart is not necessary. An understanding of the exposure triangle and the effects of focal length and aperture settings on your specific camera are essential. Practicing with your camera and lens in different settings is the best way to see the effects on depth of field in practice.

For improved landscape photography, narrow the aperture and use the "double the distance" method to get a deeper depth of field. For portraits and flower blossoms, put space between the subject and background and use a wider aperture or a longer focal length, or shoot in close range of the subject.

With an understanding of these basics, one may be ready to move on to a more detailed look at hyperfocal distance in the next section, or perhaps some practice with other compositional tools (see our e-book on our website).

Hyperfocal Distance

Deep depth of field is especially desirable for landscape photography. This is where understanding hyperfocal distance becomes important. If you are just starting out, it will be important to understand the basics of depth of field from the previous section first before you continue reading.

What is hyperfocal distance?

Hyperfocal distance, in a nutshell, is the point in the foreground that is the closest point the camera can focus while still having acceptably sharp image quality throughout the rest of the image to “infinity” (which is the background/horizon in most images) In other words, it is the point of focus that will yield the greatest depth of field.

When composing an image, if the focus is on the foreground, then the background will be blurry. In a portrait shoot, whether for people or animals, the subject can be in focus and the background can be blurry, and that is normally desirable.

If the focus point is changed to focus on the background, then the foreground will be blurry. When capturing a distant mountain at sunset from an overlook, one can focus on the horizon or "infinity" and won't notice the blurry foreground because there are no objects in it.

Understanding hyperfocal distance is only important when there are objects both far away and close up that need to be in sharp focus. Focusing at a point in between the close and faraway objects becomes necessary. The calculation of where this point is will depend on several factors like the focal length, the "circle of confusion" for the camera sensor, and the aperture.

When we find the hyperfocal distance point, "acceptable sharpness" will be found throughout the image.

Acceptably sharp – what is that?

Imagine a photograph hanging on the wall. It is an 8” x 10” size photo. If a person with good vision (20/20) stood 10 feet away, and the image looks completely in focus to them throughout, then it is “acceptably sharp.” You are at a distance from the photograph where your eyes cannot distinguish any blur in the photo even if it is actually there.

Every photo has blur even if you cannot perceive it. Large print may look "acceptably sharp" when viewed at a proper distance, but if you walk right up to the image and essentially "pixel peep" you will find that the image is not equally sharp throughout.

The hyperfocal distance point does not create an equal amount of focus in front of and behind the focus point. Depth of field is always greater beyond the subject/focus point than in front of the subject. As a general rule, roughly one-third of the distance will be in front of the focus point and two-thirds behind it. There will be areas that are blurred, but the size of the blur is so small the human eye cannot distinguish the blur from a point of light.

This is known as the circle of confusion. There are specific calculations for this and it becomes complicated very quickly (we touched on this briefly in the first section). While there are a lot of scientific and mathematical calculations that can help locate the hyperfocal distance point, some ways are easier than others, and where the best focus point is may depend on the circumstances of each unique landscape and the particular taste, artistic style, and preference of the photographer.

So let's start there…

Which is better to have in focus, foreground or background?

Since it is a given that some area of a photo will always be out of focus (even if it is so small one can't see it without pixel peeping or blowing the image up to super large sizes), which is better to have in focus? This will depend on the characteristics of the image one is composing and one's personal tastes.

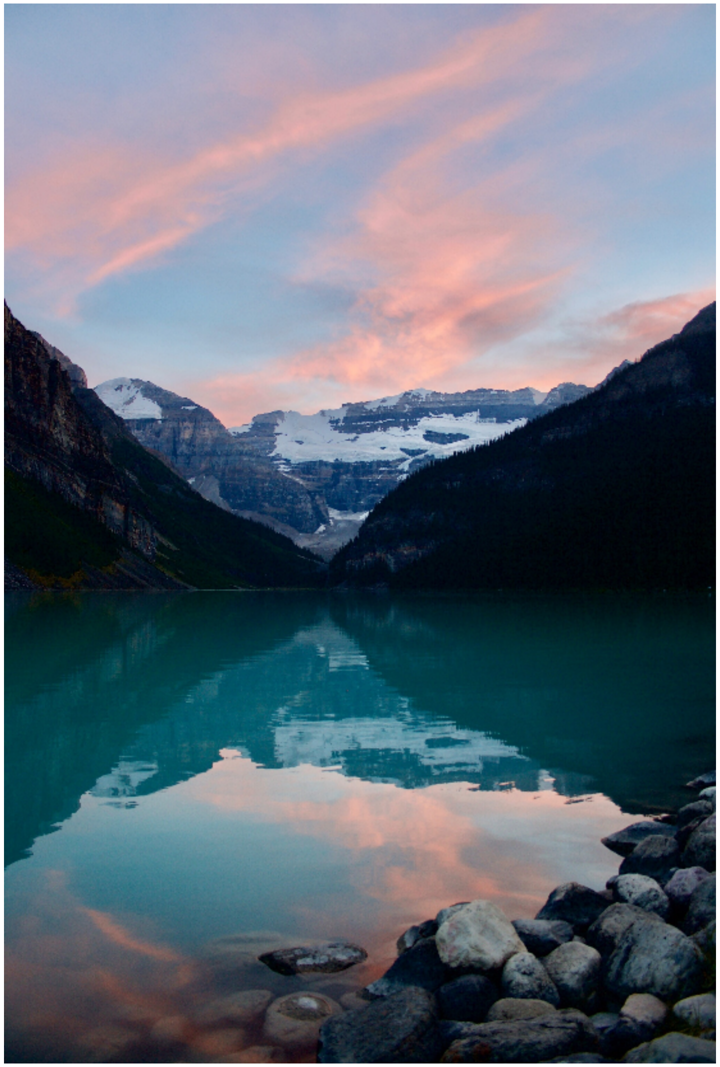
Expert photographers have discussed and taken opposite positions over the years. On one side, some photographers suggest that faraway objects need crisper focus in order to be recognizable and that the loss of detail is especially noticeable in enlarged prints. They claim our eyes will be more forgiving if objects in the foreground are slightly blurred. To use this in practice, one would focus beyond the hyperfocal distance (maybe even use infinity) and then adjust the aperture (f/stop) smaller and smaller until foreground objects become focused enough.

Other photographers claim the loss of focus on nearer objects is more noticeable and disturbing and that background focus can be less sharp, especially if they are large and easily identified objects like a mountain. In practice, a photographer would focus at hyperfocal distance or in front of the hyperfocal distance, and again make changes to the aperture (f/stop) to get a crisper foreground focus.

There are several ways in which we can arrive at a hyperfocal distance calculation including using lens markings, distance scales in the camera, charts, apps, and good old math!

How do I find the hyperfocal distance?

With the exception of a few readers who are math wizards, most of us don't want to have to do hyperfocal distance calculations on the fly while out in the field. Fortunately, there are hyperfocal distance charts and apps like DoF Table, Digital DoF (my favorite), and PhotoPills that can provide a good starting point for reference.



Unfortunately, as I already mentioned in the first section, they are not always accurate and are one-size-fits-all, not taking into account the actual scene. The easiest method with the least math is the "double the distance" method, but we will look at other methods too.

How do I use “double the distance?”

A very simplistic way to achieve equal sharpness in the foreground and background is to use a method called “double the distance.” Find the closest object or element in your composition and determine (approximately – exact accuracy is not necessary) how far away it is from the camera sensor (not the end of the lens). Then double that distance and focus at that point. Use live view if available on the camera and use it zoomed in. This method does require some practice at estimating distances, but can be quite effective and efficient once one gets the hang of it.

Keep in mind that the depth of field increases with smaller apertures, so if the closest object is not in focus at a certain aperture, then one may have to adjust the aperture. For example, if the camera is set up using a 35mm lens and the closest object that needs to be in focus is 8 feet away and f/8 is not working, increase the f/stop to f/11 or f/16 to bring the focus closer (increased depth of field). Other adjustments may then be required to shutter speed and ISO, so an understanding of the exposure triangle is also essential to achieving the desired outcome.

Should I use a hyperfocal distance chart?

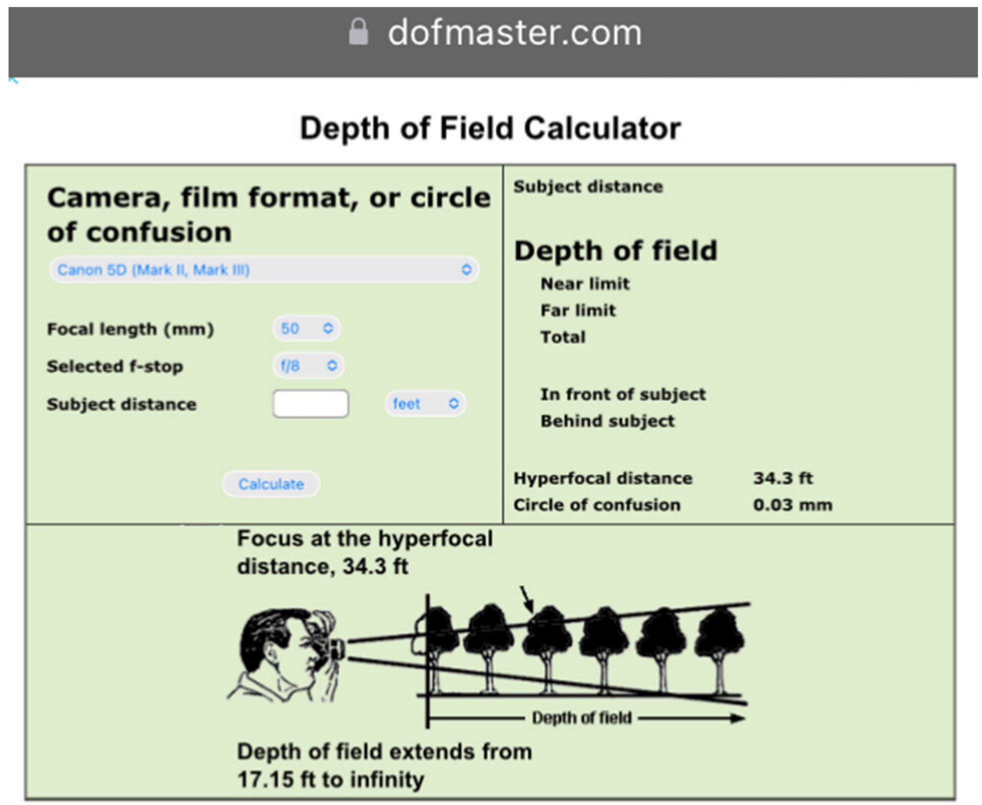
As I stated before, a chart can be a great starting reference point. Find the focal length of the lens being used and the aperture settings, and it provides the closest point for focus where the background will still be "acceptably sharp." A quick online search of hyperfocal distance charts will give you many options, but a quick look at the options also will demonstrate the inaccuracies I describe. One will find that the numbers don't match from chart to chart.

For example, I pulled up three charts and looked for the focus point if I was using a 24mm lens at f/2.8. The charts told me: 22.3 feet, 22.6 feet, and 21.1 feet. Now since most of us aren't going to be pulling out a measuring tape to measure off 21 or 22 feet from our camera's sensor, these numbers are close enough to give us a starting point. We would pick a point of focus that is approximately 22 feet from our camera's position.

Should I use an app to calculate hyperfocal distance?

The apps for smartphones do these same calculations and are often a little more exact and definitely more convenient than carrying around paper charts. Unfortunately, these apps, depending on who made the app, can also be very inaccurate. Of the apps available, I prefer Digital DoF, which is free and often gives me good results to start with.

There are also calculators available on websites online, such as DOFMaster. In the image on the right, I entered my sensor size, lens focal length, and aperture on their website; it then provides a hyperfocal distance point of about 34 feet with a near limit of about 17 feet.



This is "double the distance" in action. If the closest subject I need to have in focus is about 17 feet in front of me, then I double that number and focus at 34 feet. If my nearest subject is closer than 17 feet, then I need to change my aperture from f/8 to f/11 or f/16 to expand the depth of field and shift the hyperfocal distance point closer.

Can I do my own calculations of hyperfocal distance?

Of course, you can calculate hyperfocal distance yourself. You will need to know the circle of confusion number (often this number is 0.03 as in the example above) for your camera sensor. Multiply the aperture times the circle of confusion number. In this example that would be 8 x .03 = 0.24. Then take the focal length (50mm) and square it, 50 x 50 = 2,500. Divide the first number into this, 2500/0.24 = 10,416. The result is the hyperfocal distance in millimeters. Convert to feet or meters, using an online calculator, or divide by 304 for feet or 1000 for meters. In this case, 10,416/304 = 34.3 feet* (which is the same number as provided by the calculator above).

*The actual formula includes adding the focal length back into the calculation at the end (10,416 + 50mm) = 10,466 and then dividing for feet which would give us 34.4 feet. In most cases this is going to be insignificant and this step can be left off of your calculation for simplicity.

Making calculations using lens markings or camera distance scales

Some lenses have markings on the lens barrel that will provide the hyperfocal distance and depth of field measurements. In most cases these were printed on or etched into the lens barrel, but some newer lenses have small viewing windows or a digital display.

In the image shown here, this 28mm lens is set to f/22 (black dot) and the infinity symbol is set above the orange mark on the left (f/22 is orange). The focus is "acceptable" from less than 1 meter (orange mark and meter scale on the left) all the way to infinity. Hyperfocal distance (black dot) is a little over one meter.

Jud McCranie, CC BY-SA 4.0 <https://creativecommons.org/licenses/by-sa/4.0>, via Wikimedia Commons

Additionally, some cameras offer distance scales in the electronic viewfinder or while in the Live View (you may have to be in manual focus for this to appear). In this example, the aperture is set to f/5.6 and the depth of field is indicated by the dark gray line from about 1.6 meters to 2 meters. Everything in this range should be in acceptable focus. The white line indicates the focus point (subject), not hyperfocal distance. Focusing on different areas of landscape photo will show you the varying depth of field and you can select a focus point with the deepest depth of field.

Do I need to know how hyperfocal distance works?

If one plans to take landscape photos, yes. Having an understanding of how hyperfocal distance works and changes with focal length and aperture will allow adjustments in the field that will improve image quality.

Hyperfocal distance moves closer to the camera sensor as smaller apertures are used. Remember smaller apertures make greater depth of field therefore the range of what is in focus moves closer and closer to the camera. The farthest reaches of the focus range are also getting larger, allowing the focus point to move closer (away from the horizon or infinity) while keeping the level of acceptably sharp focus both in front of and behind the focus point.

As the focal length of a lens gets longer, the hyperfocal distance moves farther away. This does not mean, for example on an 85mm lens at f/11 and a hyperfocal distance of 70 feet, that everything closer than 70 feet will be out of focus. On the contrary, the image will be sharp from halfway to 70 feet (35 feet) all the way to infinity. Anything 35 feet or closer will start to lose focus. Remember, double the distance? This is that same principle in reverse.

If you only use a chart, you will be constrained by the limitations of the chart. Going back to “acceptably sharp” focus for a moment, we come across the first limitation of a hyperfocal distance chart. They rely solely on the math calculations that include the “circle of confusion” (which I have also already explained is quite complicated and an internet rabbit hole all its own should you choose to go down it). The problem is that in camera-land long ago and far away, the circle of confusion was set at .03mm to create those charts. For technical folks, that .03mm is the size of the out-of-focus tiny points of light on your camera sensor and they are roughly circular. That .03mm standard may be too large for today’s high-resolution prints and computer monitors to look "acceptably sharp" so the charts can’t be the “end all” tool you use.

Additionally, these charts will not be accurate for a camera with a circle of confusion number other than .03mm and will not apply to crop sensor cameras (although some apps allow you to make these calculations). Here's a quick example of how a crop sensor will affect hyperfocal distance calculations.

With a Canon 5D full frame and a 50mm lens set to f/11 the hyperfocal distance is 24.3 feet. If we place our focus point at 24 feet, then the depth of field begins at about 12 feet and ends at approximately 1735 feet, for a total depth of field of about 1747 feet.

With a Canon Rebel APS-C and a 50mm lens set to f/11, the hyperfocal distance is 38.3 feet. When the focus is placed at 38 feet, the depth of field begins at about 19 feet and ends around 4488 feet, for a total depth of field of about 4507 feet.

Depth of field is much deeper and goes farther into the distance with the APS-C sensor, however, the point where acceptable focus begins is farther from the camera. Knowing this information you can decide if this happens to be an advantage or disadvantage for a particular scene.

Lastly, hyperfocal distance charts and apps do not take into consideration the vast array of possible landscape situations one may find oneself in. Where you should focus should change depending on the scene you find in front of you!

Let’s look at this this way – we have two very different scenes and for both compositions we are using our 35mm on our full frame camera at f/8.

1. A delivery or bike messenger on a busy street in the city with the road stretching out behind him or her, skyscrapers on both sides, and cars. The bike rider is about 50 feet in front of you, on the other side of the intersection.
2. A hot air balloon way off in the sky during a beautiful sunset

According to a chart I accessed online, for both of these, one should be focused at 17 feet in front of where the camera is standing. Using the chart we would have acceptably sharp focus for both images, but all that means is that both images will have the exact same amount of blur (0.03mm for each pinpoint of light to be exact).

Does that even make sense if we think about it logically? Of course not, the focus point should depend on the scene! For image 2 with the hot air balloon, if there is no foreground why would we want to focus at 17 feet in front of the camera? We wouldn't, we should focus out near the horizon, at "infinity," or on the balloon.

So the takeaway is to start with a reference point, either from a chart, app, a lens marking, camera distance meter, or double the distance method, then know how to adjust the hyperfocal distance point and lens focal length and/or aperture to get the best overall sharpness for all images, not just acceptable sharpness for some of them.

Why can't my camera just calculate the hyperfocal distance and tell me what it is?

Let's say we are shooting a meadow with a tree off in the distance and even farther away is a mountain range. Let's also assume the camera can give us a readout to tell us what the hyperfocal distance would be, say it's 237 feet. How would we be able to put that into practice? Would we pull out a 237-foot measuring tape or cart around a measuring wheel with us on our shoots? What if there was a lake between us and the mountain and 237 feet puts us into the water? In practice, getting a readout on your camera would be no more accurate than using a focal distance chart or app (taking into account the camera sensor's circle of confusion and lens focal length/aperture). That readout wouldn't help that much more than just using the "double the distance" method, although I expect cameras will be adding more features like split screen focus, focus peaking, and live view modes that will make the process of checking overall focus easier. Many cameras include distance meters and this feature may be expanded in the future to include hyperfocal distance.

Depth of Field

Hyperfocal Distance

So if Double the Distance is easy and works well, how would I use it in practice?

Let's go back to the example I gave above of a bike rider in the city. The first step in our approach would be to determine if there are any foreground objects nearby – like a fire hydrant or a parked car. Whichever object is closest to the camera that we want to be in focus, we approximate that distance and then double that number. Our focus would be at that distance.

Let's look at this sample image. If we assume the dog and the rocks around him are approximately 15 feet away, then the focus point should be double that distance, which is about 30 feet away. Voila!

The best part about this method is that it doesn't matter which camera or aperture setting or lens focal length is being used; it works for all landscapes. Now this isn't to say that camera settings are not still critical. They are! For landscape photography, we use smaller apertures like f/8 or f/11. If we did set the aperture to f/4, use the double the distance method, and focus 20 feet away, it would still give us the most sharpness in the scene, but it is probably not going to give us the image we would want.

It is important to also know the limits of the lens being used.

When trying to capture landscapes, focal lengths such as 85 mm or 200 mm are not going to be the best lens choices; one will want a wider angle lens, such as a 20mm. This is even more true if using it on a crop sensor camera body. Longer and longer focal lengths will increase the hyperfocal distance (shifted farther away from the camera) even when all other settings remain the same. If you'd like to read more about focal length and lenses check out our e-book.

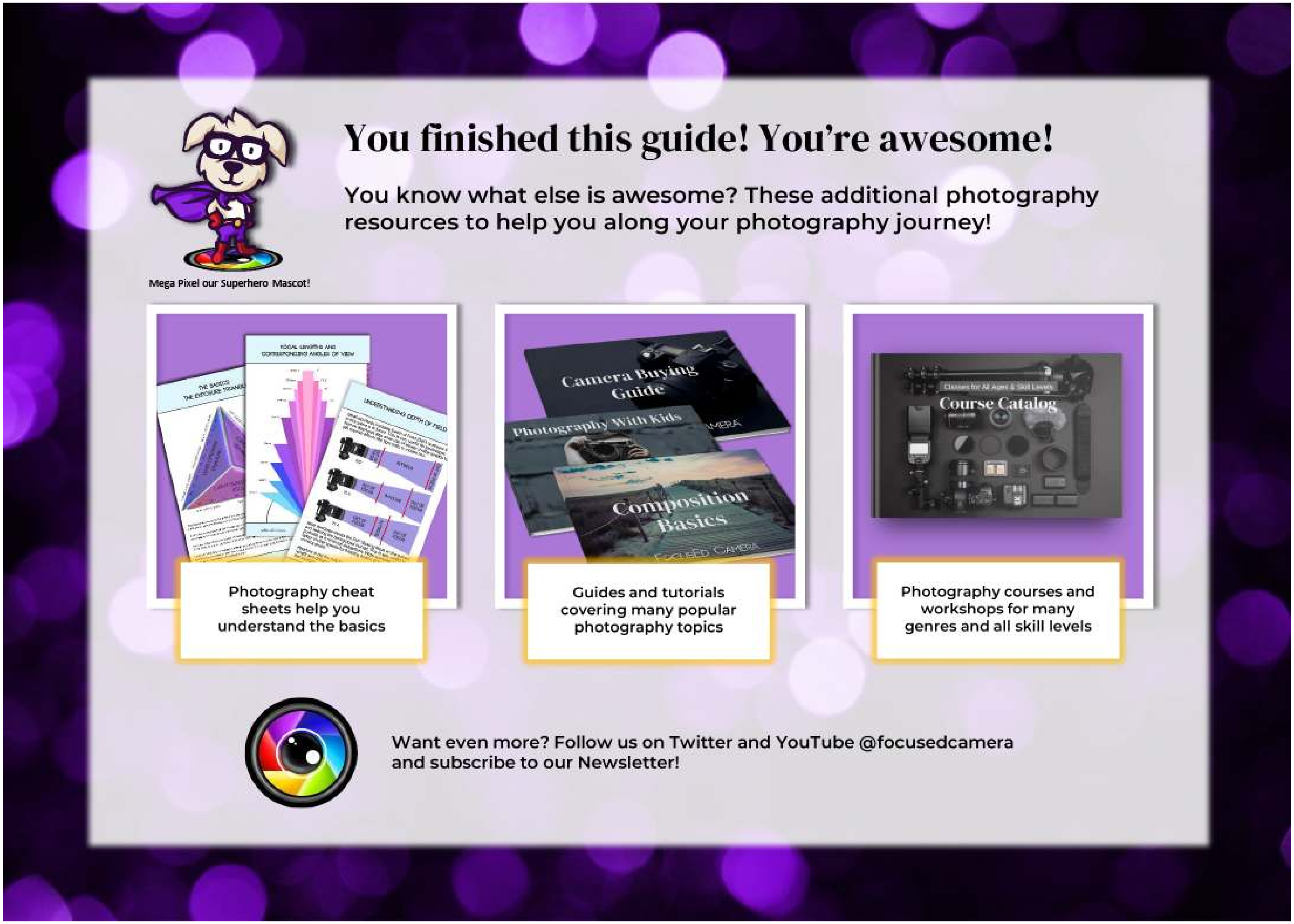
Another lens limitation is that lenses are not their sharpest at either end of their range. For example, a lens that will shoot at apertures from f/1.8 up to f/22 will not be at its sharpest at either extreme. To achieve the desired hyperfocal distance you want, the settings suggested by a chart might include a very narrow aperture (higher f/#). Since we know that apertures such as f/16, f/22, and higher will not create the sharpest photos and may cause diffraction, we have to determine which trade-off to make. Which will create a better image? Should we use a higher f-stop for better focus throughout or a smaller f-stop for better sharpness from our lens? In cases like these, it can be good to learn about other options such as focus stacking multiple images at different focus points.

If you are interested in learning about these options, or you are a glutton for punishment and just can't get enough about hyperfocal distance, then you might want to check out a landscape photography class or mentoring with us. In addition to learning more about hyperfocal distance, we also discuss ways to work around the limitations of lens focus depths by using focus stacking and bracketing to make composite images.

Final Thoughts...

It is important to remember that for almost all images you compose and shoot, “good enough” is better than not taking the shot at all. There are many trade-offs in photography and to be completely honest, even if you learn all the background information and understand the concepts, no technique for hyperfocal distance will be perfect even with adjustments in the field. Chasing “perfect” sharpness is like chasing the end of the rainbow. Hyperfocal distance and understanding depth of field are tools for better photography and improved image sharpness, but they are not your only tools. With the background knowledge you now have from this guide, you can use simple adjustments to aperture and focal length to take control and make improvements in your photography. Whether you're a novice or an experienced enthusiast having these skills can help make your photos stand out.

So, grab your camera and let your creativity shine through the lens. Happy shooting!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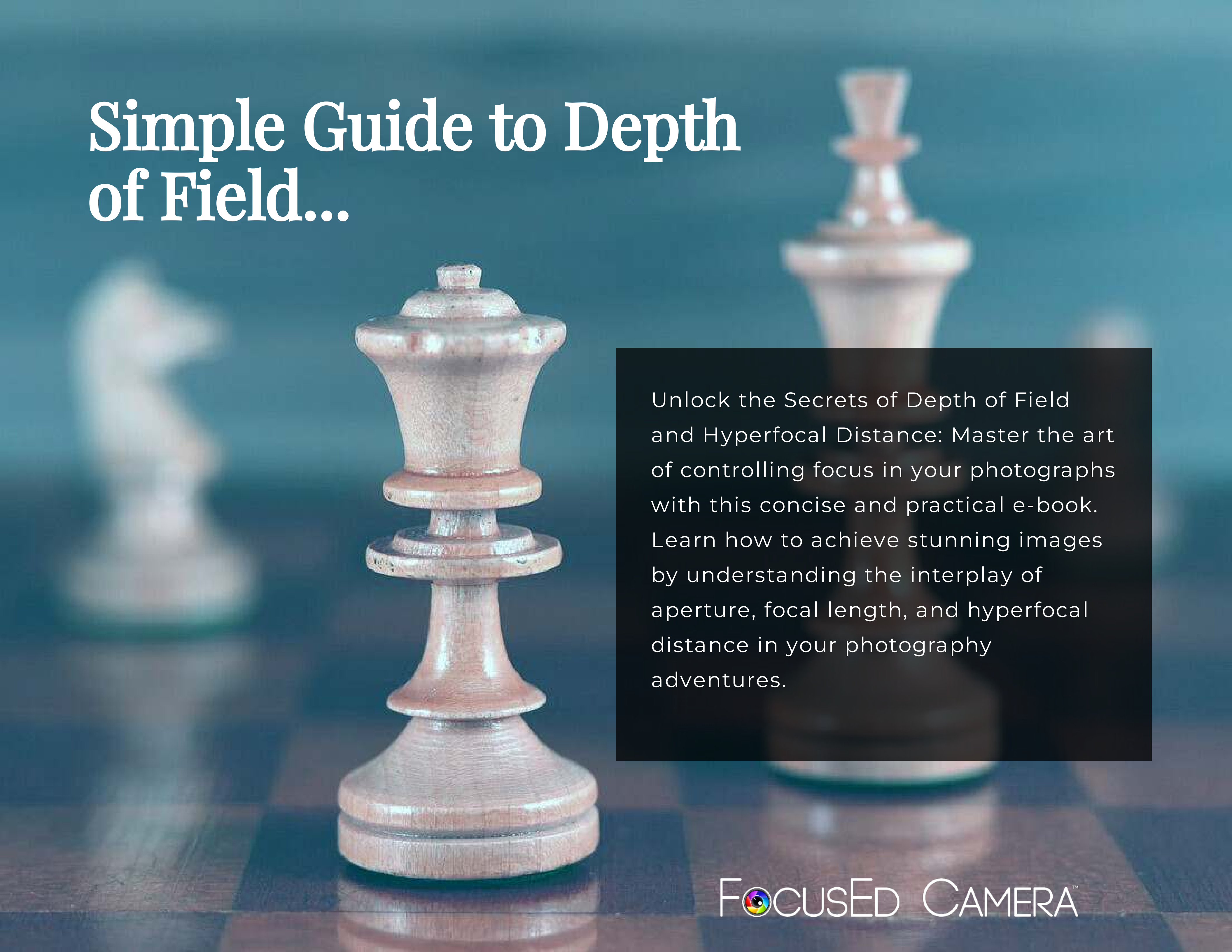
About the Author

Cheryl Ritzel, founder of FocusEd Camera, is an esteemed instructional coach. Her exceptional talents have garnered recognition and accolades throughout her career. Cheryl's company and her remarkable work have been featured in prestigious publications such as ICM Magazine, Business Insider, Dogster, Spectrum News, and Yahoo News, and on the social media channels of Lensbaby, Canon, and Adaptalux.



Simple Guide to Depth of Field...

Unlock the Secrets of Depth of Field and Hyperfocal Distance: Master the art of controlling focus in your photographs with this concise and practical e-book. Learn how to achieve stunning images by understanding the interplay of aperture, focal length, and hyperfocal distance in your photography adventures.

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