SPEEDLITER'S HANDBOOK

LEARNING TO CRAFT LIGHT WITH CANON® SPEEDLITES®

SYL ARENA

Speedliter's Handbook
Learning to Craft Light with Canon Speedlites

Syl Arena

Peachpit Press
1249 Eighth Street
Berkeley, CA 94710
510/524-2178
510/524-2221 (fax)

Find us on the Web at www.peachpit.com

To report errors, please send a note to errata@peachpit.com
Peachpit Press is a division of Pearson Education

Editor: Ted Waitt
Production Editor: Lisa Brazieal
Indexer: James Minkin
Cover Design: Mimi Heft
Interior Design: Syl Arena
Cover Image: Syl Arena
Back Cover Images: Syl Arena

ISBN-13 978-0-321-71105-2
ISBN-10 0-321-71105-X

9 8 7 6 5 4 3 2 1

Printed and bound in the United States of America

PART 2
Speedlites Fundamentally

PART 3
Gear For Speedliting

PART 4
Speedliting In Action

CHAPTER SEVENTEEN

CHAPTER EIGHTEEN

CHAPTER NINETEEN

Portraits With Two And Three Speedlites......... 258

CHAPTER TWENTY

Gelling For Effect... 280

Random ideas for every photographer.

You can be touched by light, but you can't touch it.

To create interesting light, you have to create interesting shadows.

There are two types of photographers—documentarian and pictorialist.

You are not remembered for the gear you used, but by the photographs you created.

Choose to be a photographer and not a retoucher.

Your best photograph is still out there.

WELCOME SPEEDLITER!

If you shoot with a Canon camera and want to learn how to use Speedlites, then welcome to the *Speedliter's Handbook*. Since we're going to be spending a lot of time together, I want to share my perspective on the book.

This is a book about how I shoot.

The *Handbook* presents my approach to lighting with Canon Speedlites and the techniques I use in my work. If you've been shooting for any length of time, don't be surprised if occasionally you think, "I'd do this differently." Ask any three experienced photographers how they would approach a situation and you'll likely get five answers. We're just this way.

For the record, this project was not supported by, nor is it endorsed by, Canon. Sure, I occasionally received technical information from friends in various divisions at Canon. If you've ever read a Canon user manual, you'll understand why I had questions.

Know from the outset that while I'm proud to be a Canonista, I'm not shy about sharing my criticism of the Canon system when it could be better. Likewise, I am not hesitant to share praise when it's warranted. There are many things that Canon Speedlites do brilliantly.

The How and Why of the Handbook.

The *Handbook* is a book you should have if you want to thoroughly explore the vast potential of Canon's Speedlite system. If you are looking for a quick read, I'm not your guy.

That said, it's best if you do not try to read the *Handbook* cover-to-cover. Rather, I encourage you to pick it up and put it down many times.

If you are a novice with Speedlites, then start with Chapter 0, *Quick Start Guide To Speedliting,* so that you can start shooting as you work your way through the book. If you know the basics and want to jump into a single topic, then dive right in to that specific chapter.

I am a photographer, not a retoucher.

The *Handbook* is a book about flash photography and not a book about lighting via Photoshop. Unless an image specifically states that it has been retouched in post-production, you can assume that it is as it came from my camera.

My view is that I am a photographer who happens to use Lightroom and Photoshop. I'm not really great at either—nor do I feel that I need to be great at driving software. I am a photographer. I hope you decide that you are too.

Pay attention to the sidebars.

Throughout the *Handbook*, you will find bits of information tucked into sidebars. There are three main types of sidebars, which you can tell apart by their colors.

SPEEDLITER'S TIP

—Insights I Share With Friends—

I hope that you will read every Speedliter's Tip. My goal is to provide direct insights into how I shoot. When you are just flipping through the book, feel free to just stop at the red boxes.

SPEEDLITER'S JARGON

—The Lingo Every Speedliter Needs To Know—

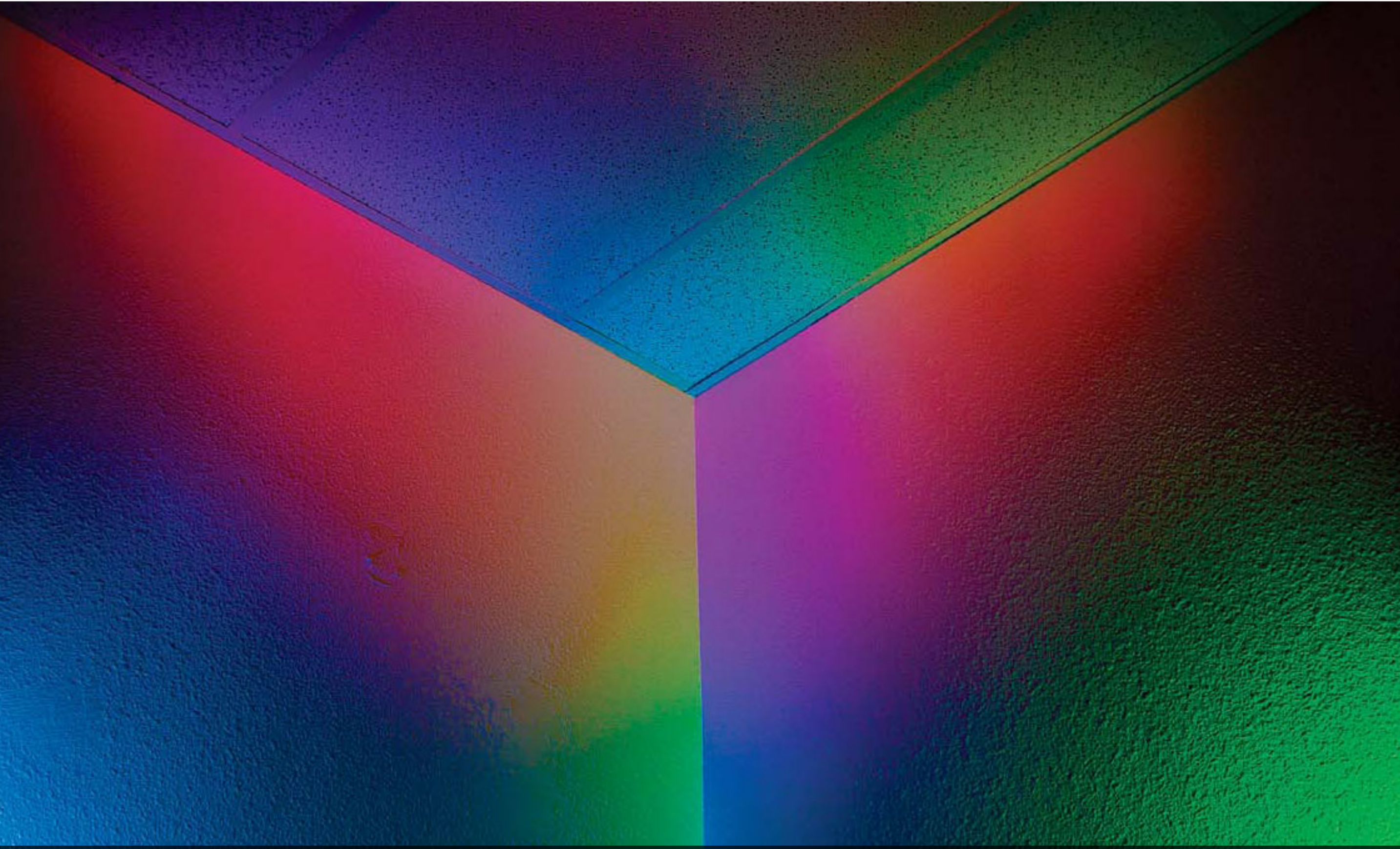
Learning photography is like learning a foreign language. If you stick with it long enough, you will become fluent. Along the way, there are many words you need to know. I've placed the big concepts in the green boxes.

For all the other words I think you should know, head straight back to Appendix 1: *Gang Slang For Speedliters.*

GEEK SPEAK

—Random Technical Bits—

A Geek Speak provides technical insights that you'll want to explore if you need to know every last detail. If you prefer to avoid technical jargon, then feel free to skip them.



CHAPTER 3 | MECHANICS OF LIGHT

The Short Version

Light follows some pretty specific rules about how it bounces around the universe. Speedliters don't need to be physicists, but understanding a few basic principles will help you understand why your Speedliting looks or doesn't look how you want it to.

Figure 3.1
Three Speedlites, one each gelled with pure red, pure green, and pure blue, are fired into the corner of my studio ceiling—as a demonstration of the additive primaries. At the center, you can see patches of cyan, magenta, and yellow—the subtractive primaries, which are created when red, green, and blue merge.

COLOR...PRIMARILY

Time to set the record straight on several accounts. First—and contrary to what you learned in kindergarten—red, blue, and yellow are not the primary colors. Second, there actually is no such thing as white light. Don't worry; revealing the truth won't cause the world to implode. It's been this way forever.

Are We Talking About Light Or Pigment?

When talking about primary colors, you need to decide if you are talking about light or pigment—as in "Are you photographing a landscape or painting it?" Light and pigment each have their own set of primaries. Red, blue, and yellow are not found as a group in either.

The *additive primaries* relate to the color of light. They are red, green, and blue. As you'll read in a moment, we can mix various combinations of red, green, and blue light to come up with all the colors in the rainbow.

The *subtractive primaries* relate to the color of pigments (paint, ink, dyes, etc.). They are cyan, magenta, and yellow. Cyan is a bright blue, bordering on turquoise. Magenta is ultra-pink. Yellow is, well...at least they got that right in kindergarten.

> ***Additive and subtractive primaries, which is which? To keep the two groups of primaries straight, just ask yourself what you have to do to get to white.***

If you have no light, it's black, right? So, to create white light, you *add* equal parts of red, green, and blue. When you do, as shown in Figure 3.2, you get light that we perceive as white.

Now what happened in kindergarten when you smeared your red, blue, and yellow fingerpaint all together? You got a messy shade of brown or gray—which would have been black if the pigments had been pure shades of cyan, magenta, and yellow. So, what do you have to do to get from black paint back to white paper? You have to remove (subtract) all the colors. Now you can remember that cyan, magenta, and yellow are the subtractive primaries.

Additive Primaries = Red, Green, and Blue

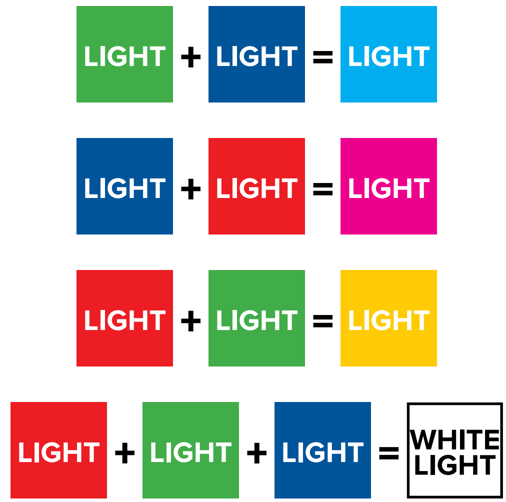


Figure 3.2 *The additive primaries—red, green, and blue—are the primary colors of light. You can remember that the additive primaries relate to light because when added together, they create white light.*

Subtractive Primaries = Cyan, Magenta, and Yellow

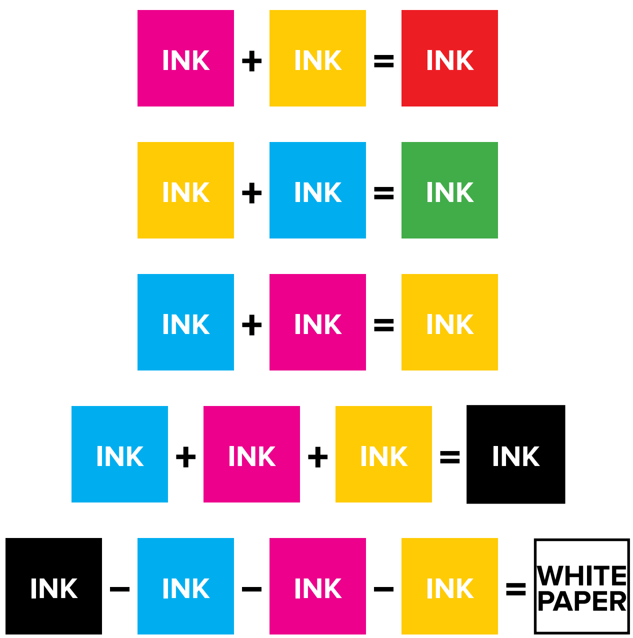


Figure 3.3 *The subtractive primaries—cyan, magenta, and yellow—are the primary colors of inks. You can remember that the subtractive primaries relate to pigment because when subtracted completely, you have white paper.*

TAKING COLOR'S TEMPERATURE

For the most part, as far as I see it, a piece of white paper looks white regardless of whether I'm viewing it by candlelight, noon sun, or in open shade. Yet film or the sensor in your digital camera could record the white of the paper differently. Making white appear white has to do with the *color temperature* of the light source, and how that color temperature is recorded by the camera.

There's A Good Reason To Think About Color Temperature

As Speedliters we'll spend a lot of time talking about *white balance*. What we're really talking about is matching our camera settings to the color temperature of our light sources.

You know that the color of daylight is different just before sunset than it is at noon. This is an example of an easy-to-see difference in color temperature.

Many times the difference in color temperature is more subtle, but recognizing that difference is very important in terms of making a well-crafted photograph. Did you also know that the color temperature of daylight is different when you're looking at something in full sun than when you're looking at it in full shade? In shade, the color of daylight is a bit bluer than direct sunlight because the light in the shady area has arrived there indirectly after bouncing off the molecules in the atmosphere.

SPEEDLITER'S TIP

—Go With AWB: Auto White Balance—

In my opinion, Canon has had great Auto White Balance technology for a long time. Unless I am working under a specific lighting condition, such as incandescent (a type of tungsten) lamps, then I will leave my camera set to AWB. If a small correction is necessary after the capture, I can make it quickly in Lightroom.

The other situation where I will select a specific color balance on the camera is when I want to skew the color balance for creative purposes as described opposite.

Color Temperature Is A Matter Of Degrees

Color temperature is measured on a precise scale that describes the warmth or coolness of the light produced by a given source. The increments of color temperature are *Kelvins*, a.k.a. *K* (it's not proper to say "degrees Kelvin").

Lower numbers, those below 5000K, represent warmer (orange) colors. Higher numbers, those above 5000K, represent cooler (blue) colors. The farther below or the higher above 5000K you go, the more intense the warmth or coolness becomes. Light in the middle of the scale is not particularly warm or cool.

Now don't get confused. The way to remember that lower Kelvins are warm colors and higher Kelvins are cool colors is to think about the color of a candle flame. At its base (the lower part), the candle flame is yellow. At the top of the flame (the higher part), it burns blue.

Getting To White, It's A Matter Of Balance

As Speedliters, we need to know about the color temperature of our light source—either because we need to neutralize its effect or because we want to re-create it.

Unless you want to dive off into the depths of color theory, there are just a few reference points you need to remember about color temperature. On Canon DSLRs:

Shade = 7000K
Flash = 6000K
Cloudy = 6000K
Daylight = 5200K
White Fluorescent = 4000K
Tungsten = 3200K

When you set the white balance on your camera to a specific setting, the camera tries to keep white looking white by adding the opposite color bias to the file. For example, tungsten light is more orange than daylight. So when you change your camera to a tungsten white balance, it actually adds a blue cast to the image to compensate. The difference between Flash and Cloudy is that Flash adds a very subtle shift towards magenta that Cloudy does not.

Creative Manipulation Of Color Temperature

As a Speedliter, always remember that the color temperature of your Speedlites is about the same as daylight. As you'll read in Chapter 20, *Gelling For Effect*, you can use this knowledge for creative purposes.

Here's an example. You just read that the tungsten white balance setting of your camera adds a blue cast to the image. This helps white appear white under the orange tint of tungsten lights. What happens if you shoot under sunlight with a tungsten white balance? (For my fellow old-schoolers, I'll ask: what would happen when you shot tungsten film outdoors?) The whole image has a blue cast to it, right?

Okay. So what would happen if we then came back with our camera still set to a tungsten white balance and lit our main subject with a tungsten light source or, since we are Speedliters, with an orange-tinted (CTO) gel over our daylight-balanced Speedlites? We end up with a good white balance on our subject and a super-blue sky.

Take a look at the three images at right. The differences between them were created by changing the white balance in the camera and by adding a gel to the Speedlite

- Figure 3.4 is in balance with the camera set to daylight white balance and an ungelled Speedlite.
- Figure 3.5 is out of balance. The camera has been changed to tungsten white balance and the Speedlite remains ungelled.
- Figure 3.6 is in balance. The camera is still in tungsten white balance. A CTO gel has been added to the Speedlite which shifts it to the color of tungsten light.

Figure 3.4 *Daylight white balance, Tom (son #1) lit with bare Speedlite. Color balance appears neutral.*

Figure 3.5 *Tungsten white balance and bare Speedlite. Tom has a blue cast due to the color imbalance.*

Figure 3.6 *Tungsten white balance and CTO gel over Speedlite. Tom appears neutral and the sky is a rich blue—known as tungsten blue.*

Figure 3.7 *By keeping the umbrella high enough to come in to Tom's face at a 45°, I was able to keep the reflection out of the large sunglasses.*

Figure 3.8 *When I dropped the umbrella too low, it appeared in the sunglasses. Also note how Tom's face appears flat because it lacks strong shadows.*

INCIDENCE INCIDENTALLY

Knowing that light bounces off an object at the same angle it came in from is a valuable insight for Speedliters. This simple principle helps us create or avoid reflections of light sources in our photos.

Light On The Straight And Narrow

Photographers should always think that light's direction is straightforward. For the vast majority of us who are not advanced physicists, it's safe to say that light travels in a straight line. Einstein and his academic descendants would say that light travels in a wave when it's not acting like a particle, and that it can be bent by gravity. But hey, we're photographers, not physicists, so let's stick with the straight-line approach.

> ***Light will travel in a straight line until it hits something. When it hits an object, light will bounce off it or be absorbed by it—or do a bit of each.***

Mirror, Mirror...

The handy thing about light always traveling in a straight line is that it's easy to predict. When light bounces off an object, it does so at the same angle that it came in at. Technically stated, the *angle of reflection* equals the *angle of incidence.*

An easy way to understand this is to stand in front of a mirror. When you are exactly in front of it, what—actually, who—do you see in the mirror? Now, step a little bit to the side and what do you see in the mirror? Now, step farther to the side and what do you see? The change of what you see in the mirror is a clear demonstration of how the angle of incidence (the light heading in) is the same as the angle of reflection (the light heading out).

Here is a real-world example you will experience again and again as a Speedliter—eyeglasses. If you're doing a headshot and the eyeglasses fill with glare, then you need to change the angle of incidence to remove the reflection. You can move the light source, tilt the head or glasses just a bit, or move the camera so that it does not see the reflection.

Direct Vs. Diffuse Reflection

It's easy to understand how light bounces off a reflective surface like a mirror. What about a matte surface, like a piece of paper? Does the angle of reflection still equal the angle of incidence? More specifically, why are you not blinded when reading a newspaper outdoors in full sun?

The answer lies in the surface of the paper. If you look at it microscopically, you would see that it is rough. The light is still reflecting off at an angle equal to the angle of incidence. It's just that the text of the paper gives it surfaces that face many directions.

The shots at right provide a good example of the difference between *direct reflection* and *diffuse reflection*. Figure 3.9 was lit directly by an incandescent bulb in a silver reflector. In fact, you can see it reflecting in the surface of the olive oil. The liquid surface of the oil and the metallic surfaces of the knife and plate all create direct reflections.

Figure 3.10 is the exact same shot with the addition of a Lastolite Skylite panel between the light and the plate (as shown in Figure 3.11). I'm sure you've noted that the glare on the olive oil, silver knife and gold plate is no longer a problem. The 42″ diffusion panel replaced the 6″ reflector as the light source—sending light from multiple angles rather than just one.

Just as important, did you also notice in the upper corners of the photos that the brightness of the tablecloth did not change? It remains the same tone of medium-gray. This is because the textured surface of the fabric provides a diffuse reflection—even when lit directly.

Figure 3.9 *Direct reflection creates glare in the surface of the liquid and metallic surfaces.*

Figure 3.10 *By inserting a diffusion panel in front of the light, the direct reflection has been tamed. Notice also in both shots that the tone of the tablecloth remains the same. Even when lit directly, the fabric provided a diffuse reflection.*

Figure 3.11 *The placement of the 42" Lastolite Skylite panel with diffusion fabric.*

SOFT LIGHT PROVES THAT SIZE IS RELATIVE

When it comes to controlling the look of light you create, the size of your light source should be your first consideration. It's more than possible to make large sources seem small and small sources appear large. Remember that size is relative; it changes as the distance between the source and the subject changes.

Consider Your Shadow's Edge

The sun is the largest object in our solar system, yet Earth's distance from it makes it appear relatively small in our sky. On a sunny day, your shadow has a hard edge. That defined edge to your shadow is created because the sunlight hitting you is coming from a single direction. Another way to say it is that you have a hard shadow because the sun's rays are parallel when they hit you.

What happens to your shadow on a cloudy day? It gets fuzzy or disappears completely. Why? When a layer of clouds moves across the sun, the sunlight hits the clouds and they effectively become your light source. Since they are much bigger—relative to your size—the light hits you from many angles. A shadow created by light coming from one angle is filled by light coming from another angle. The more angles of approach, the softer the shadows become.

Figure 3.12 *Direct sunlight creates a dark shadow with sharply defined (hard) edges. Notice also that the contrast between the black shoes and the glare off the concrete is beyond the dynamic range of the camera. The subtle tones of the stockings and black leather are compressed into a sillhouette.*

Figure 3.13 *The placement of a Lastolite Skylite panel creates very soft shadows because the light is now coming at the shoes from many angles. Notice also that the subtle difference in dark tones between the stockings and shoes has been captured.*

Figure 3.14 *The set after the diffusion panel was placed. The lone Speedlite (at left) was positioned extra high to provide a bit of fill light that fell off sharply.*

Big Is Not Always Big

If you are familiar with a softbox, you know that it is a big light source. When you use it up close, it creates soft light. What happens if you move a softbox far away? Its apparent size relative to the subject becomes smaller.

As the apparent size of a light source gets smaller, the directionality of its light increases. Move a large source far enough away and it will eventually become a small light source. Again, the sun is an example of how distance from a large source can make its apparent size become much smaller.

Making Speedlites Appear Larger Is A Big Part Of Speedliting

Don't fret. Despite the fact that the face of a Speedlite is just a few square inches, there are many ways to make it seem bigger. Here are a few:

- Bounce your Speedlite into a reflective umbrella
- Fire your Speedlite through a satin umbrella
- Shoot your Speedlite through a softbox
- Fire it through a diffusion panel
- Bounce it off your hand, a wall, or a ceiling
- Fire several Speedlites together from different angles

Figure 3.15 *In this shot, the Lastolite Ezybox Speed-Lite was actually just inside the frame. (You don't see it because it was black.) Notice that the neck shadows are extremely soft. Also notice that that there is a dramatic difference between the cheek highlights and the skintones across the collarbone. This chiaroscuro happens when the light source is pushed in very close.*

Figure 3.16 *Moving the softbox out to about 12' reduces its apparent size and increases the hardness of the light slightly. Notice that the shadows on the neck are sharper. Also, because of the greater distance, the light is more even across the face (see pages 48–49 for more information on why).*

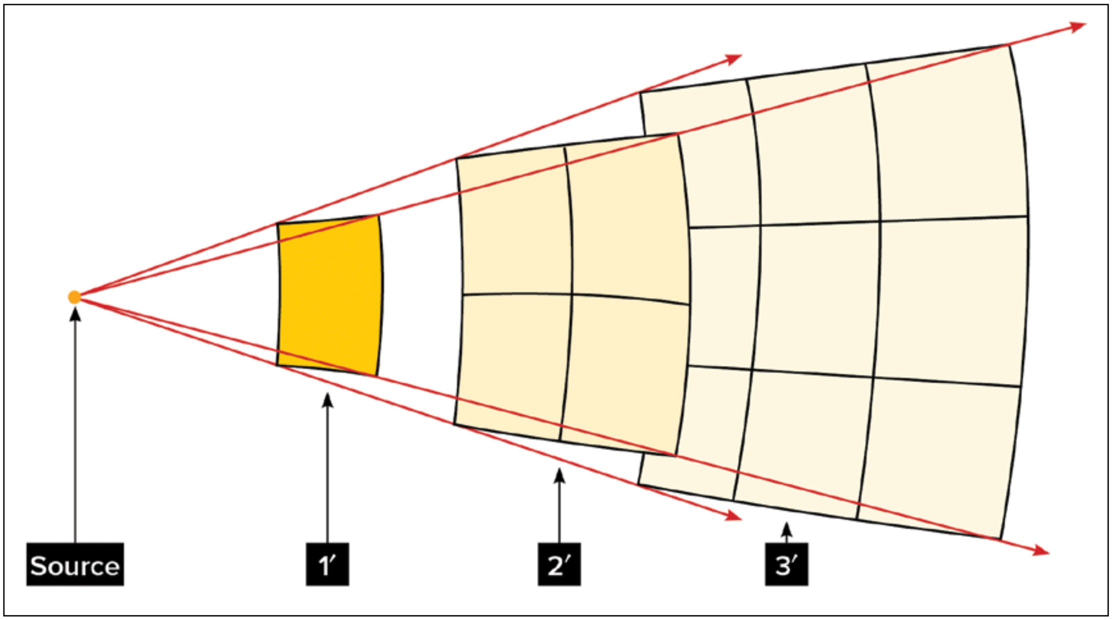


Figure 3.17 *The Inverse Square Law, as intimidating as it may sound, helps photographers understand why light gets dimmer as it gets farther from the source. In the illustration above, the intensity of the light at 2′ is ¼ as bright as it is at 1′. Likewise, the intensity of the light at 3′ is ⅑ as bright as it is at 1′.*

FALLING OFF, OR HOW TO LOVE THE INVERSE SQUARE LAW

Do not repeat after me: "The intensity of light from a point source falling upon a subject is inversely proportional to the square of the distance from the source."

The Inverse Square Law has intimidated and befuddled more photographers than any other aspect of our craft. You don't have to understand the math. You do need to know what it means.

A Way To Visualize The Inverse Square Law In Action

Put yourself in this image. You are in a huge, empty room. No. Bigger than that. I mean really huge. There is no light, except for a lone light bulb magically shining in the middle of this huge space. Equally magical is your ability to move anywhere in this room you want with ease. Yes, I mean you can fly.

So, fly up to the bulb and pull out that handy 12″ square white tile you've been carrying around in your pocket. Take a look at how bright the tile is when you are close to the bulb. Now, fly a good distance away. You can barely see the tile.

Being the curious sort that you are, you fly to the bulb and away from the bulb in all directions. You discover that the phenomenon is the same no matter what direction you head. Near the bulb, the tile is bright. Far away, your tile is hidden in darkness.

What happened to the light? You've just witnessed the Inverse Square Law in action. As light spreads out, it gets dimmer.

The funny thing is, because of the way our eyes are wired to our brain, we don't always see the loss in brightness because our pupils dilate as the light dims—so the appearance of brightness remains. Your camera works differently. Unless you open up the aperture, slow the shutter, or increase the ISO, it will record the light as being dimmer.

Figure 3.18 Your white tile with the magic light bulb 1′, 2′, and 3′ away.

The Inverse Square Law Is Trying To Tell Us Something

What happened to the light from the magic bulb as you moved away is that it spread out. As it spread out, the photons got farther and farther apart. When there were fewer photons hitting your tile, it looked darker and darker as you moved away from the light source.

The Inverse Square Law tells us how much darker the tile will be as you move away. Here we go with a little math. If you think of the math as a shot at the doctor's office, it won't hurt that much. You know, "just a little prick."

Specifically, if you look at the 12″ x 12″ white tile when it is one foot from the light and then look at it when it's 2′ from the light, you will see that it is one-fourth as bright. Move the tile out to 3′, and you'll see that it is one-ninth as bright as it was at 1′. I know, the numbers sound crazy.

There's a reason that the difference from 1′ to 2′ away is one-fourth as bright and not one-half as bright, as you'd expect: the light has to spread vertically as well as horizontally at the same time. You can see this happening in Figure 3.17 on the opposite page.

So the photons that were hitting your 12″ x 12″ tile 1′ from the light spread out to a 24″ x 24″ square when they are 2′ from the source. As they moved another foot away, the photons spread out to a 36″ x 36″ square. At every step of the way, the photons spread farther apart. As photons spread apart, light gets dimmer.

SPEEDLITER'S TIP

—The Subject-To-Light Distance Matters Most—

This may sound a bit strange—the distance between your subject and the lights is what determines the exposure, not the distance between the subject and your camera.

Now, I should say that I'm assuming that you did not skip over Chapter 0, *Quick Start Guide To Speedliting*. So you know how I feel about on-camera flash. Put another way, I'm making the assumption here that the main light source hitting your subject is not parked on top of your camera.

Let's say that I have two Speedlites, each on their own stand, on either side of my subject. I get everything dialed in for a nice, tight headshot. I'm standing, as you can see below, just a few feet from the subject.

Then, for the heck of it, I back up 15′ and take another shot. You'll note that the Speedlites on the stands are still where they were—only the camera has moved. So, I zoom in and take virtually the same headshot at the exact same exposure. See, there's no need to change the exposure if the distance between the subject and lights does not change.

So why, if I'm shooting in an automatic mode, like Av, does the camera sometimes think that it needs to change the exposure when I move my position? Well, it's not because I changed position—it's because I changed the composition. When I moved, but zoomed back to the previous crop, then the exposure did not change. If I make a significant change to the scene, then the camera sees new data when metering.

THINKING ABOUT FLASH-TO-SUBJECT DISTANCE AS STOPS

Here is the Inverse Square Law in action: when you double the distance between the light and the subject, the illumination is one-fourth as bright. So, in terms of stops, what is the difference in brightness when a light is 3′ versus 6′ away? It's two stops.

Did you say one stop? Remember, every time the light is cut in half, that is a one-stop change. One-fourth as bright is a two-stop difference because the brightness is cut in half twice. Full power x 50% = ½ power (first stop of reduction). Moving on, ½ power x 50% = ¼ power (second stop of reduction).

1.4—The Photographer's Magic Number

Since you've hung in this far, would you like to know how far you have to move a light to get a one-stop reduction in light? The quick answer is 1.4 times your current distance. Huh? It has to do with the square root of 2, which is 1.412421.... If you're not a math fan, just remember the 1.4 part.

So, if you measure the light 1′ from the source, then at 1.4' it will be one stop dimmer. Using the round numbers that photographers are so fond of, you'll be at the next full-stop reduction at 1.4′ x 1.4, which is 2′, then 2.8′, then 4′, then 5.6′, then 8′, then 11′.... Have you picked up on the pattern? They are the same intervals as full-stop apertures on your camera. I've laid it out to scale for you just below in Figure 3.19.

Figure 3.19 (below) The F-Stop Yardstick will help you visualize how quickly or slowly light falls off. For instance, if your subject's cheek is 1' from the light, then at 1.4' (about 17"), the light will be one stop darker. At 2', the light will be two stops darker.

The F-Stop Yardstick

Here is another reason to memorize the whole-stop increments listed on page 23 in Figure 2.4—you can used them as a yardstick (meter stick for my friends overseas). Memorize the whole f-stops and apply them to any increment you want—inches, feet, or meters. You will have a valuable lighting tool for making important decisions.

The F-Stop Yardstick, shown below, will help you visualize how quickly or slowly light falls off. You can see that if your subject's cheek is 1′ from the light, then at 1.4′ (about 17″), the light will be one stop darker—that's a change in distance of only 5″. Conversely, if your subject is 11′ from the light, then it takes another 5′ for the light to fall off one stop.

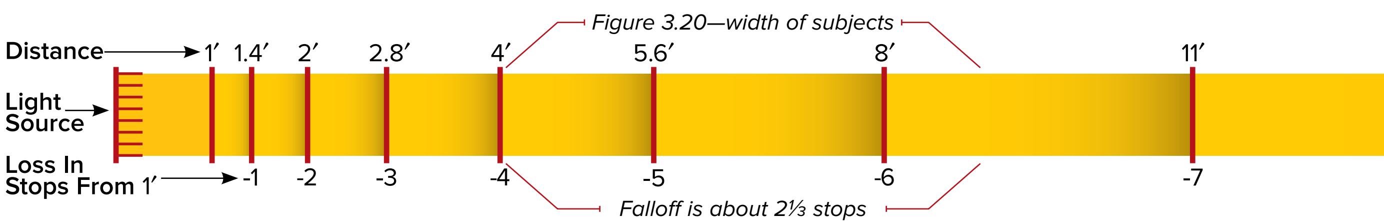
Putting The Inverse Square Law To Work...Creatively

If you remember nothing else about the Inverse Square Law, remember this:

> ***The closer your light source is to your subject, the more dramatic the falloff will be. Likewise, the farther you place your light from the subject the more even the light will be.***

Figure 3.20 (opposite, top) *Conscripted once again, my three boys—Tom, Vin, and Tony—demonstrate the F-Stop Yardstick. In this shot, the lone Speedlite is 4' from Tom. As you can see, when the light finally gets to Tony, it has dimmed considerably. If you check the F-Stop Yardstick below you can see that the falloff from 4' to 9'—the width of the lads—is more than 2-stops across.*

Figure 3.21 (opposite, bottom) *For this shot, I pulled the Speedlite out to 16'—which reduced the falloff to less than a stop. I did have to increase the power of my Speedlite by 4 stops to accommodate the falloff between it and the boys. This was a fair trade for the improvement in the light.*



GEEK SPEAK

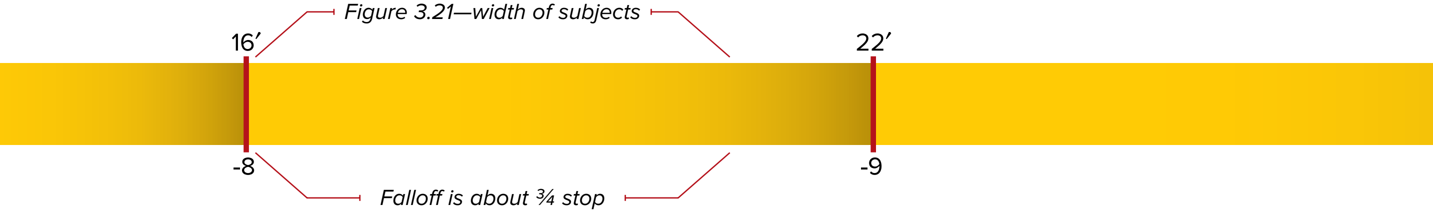
—Proving That 1.4 Is The Magic Number—

You can prove for yourself that 1.4 is the photographer's magic number with a tape measure, a Speedlite, a flash meter, and two stands.

Set your Speedlite up on one stand and your flash meter on the other. They should be at the same height. Stretch out a long tape measure and center the Speedlite over the end. Now center the flash meter at 1′. With your Speedlite in Manual mode at full power, fire away. I used the non-cord mode on my Minolta Flash Meter IV. If the reading is too high for the meter, either lower the ISO setting on the meter or lower the power on the Speedlite. I worked the power down so that at 1′ the f/stop on the meter was f/64.

Now move the flash meter stand and center it on each of the intervals listed on the F-Stop Yardstick. Fire the Speedlite at the same power level as before (consistency is really important for this demonstration). The flash meter reading will drop in one-stop increments. You've just proved that a 1.4x increase in distance equals a one stop decrease in light.

For best results, I suggest that you do this in an open field at night rather than indoors so that you're getting the light directly from the flash and not off a wall.



INDEX

C

D

E

F

G

H

I

J

K

L

M

N

O

P

S

T