

Film Lighting

The Ultimate Guide for Filmmakers

 studio binder



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Brought to you by StudioBinder

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Forward

The impetus behind StudioBinder was simple — to create a holistic [production management solution](#) that could handle everything from screenwriting to storyboards, breakdowns, schedules and call sheets.

But once this was done, it became clear that creating the software wasn't enough, we had to educate as well. Navigating the world of advertising, filmmaking, photography, music videos, etc. is a daunting task full of jargon, new technologies, and moving pieces.

The [StudioBinder Blog](#), which hosts over two thousand articles and millions of readers every month, and our [YouTube Channel](#),

which is well beyond 1 million subscribers, were born out of this goal to educate.

StudioBinder's business and educational aspirations have aligned in ways that I am continually inspired by. And it has been a true honor and joy to watch the StudioBinder community grow.

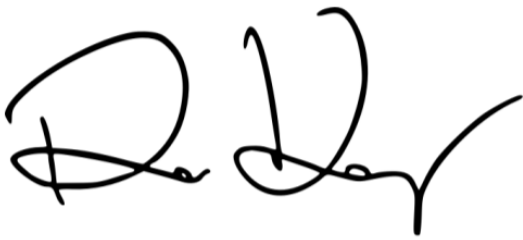
Which brings us to this latest resource: *Film Lighting — The Ultimate Guide for Filmmakers*.

Lighting in film is everything. And while there certainly is magic in the way cinematographers harness light, doing it yourself is no magic trick. The fundamentals of lighting are actually quite straightforward and intuitive.

And once exposed to these foundational principles, you'll have the confidence to make them your own.

How does light behave? How do you light a single subject vs. many? When should you mix light sources (and when shouldn't you)? In this book, we'll answer those questions and more.

The aim of this book is not to simply to recycle the most basic rules of film lighting. It is a starting point from which you can become the next great DP.

A handwritten signature in black ink, appearing to read 'R. Kiraz', with a stylized, flowing script.

Robert Kiraz, CEO
StudioBinder

CHAPTER 1

Introduction

Without light, there would be nothing. This applies to life in general but also to the cinematic medium in particular. In order to capture an image, light is emitted from a source, reflected off a subject and recorded by the camera.

This is common knowledge, of course, but not everyone understands how to wield light, how to shape it, control it, or modify it. That is our goal with this book, to layout the fundamentals of [film lighting](#) for those looking to master it.

This includes the most popular cinematography techniques, the standard gear and equipment required, the most common lighting scenarios, and the attributes of light — how it behaves and how to harness it.

Learning how to control the fundamentals of lighting will allow you to shape light that creates images worthy of the big screen. Although we will be discussing lighting in cinematography, all of these principles apply to lighting in photography as well.

Now, it's time to illuminate everything about illumination.

CHAPTER 2

Lighting Crew

On a film set, there is a designated department to handle the design, setup, rigging and operation of all lighting equipment. These crew members include the [cinematographer](#), [gaffer](#), [best boy](#), and more.

A **Cinematographer**, also called a director of photography or DP, is responsible for the lighting and camera work in film and television. A cinematographer works closely with the [director](#) to determine how the aspects of cinematography such as lighting, [camera angles](#), [camera movement](#), and camera staging can best tell the story of the film.

When it comes to lighting, the DP will scout the set or the location, and work with the director on the overall lighting scheme. That plan is executed by the Gaffer.

A **Gaffer** is responsible for running the Grip/Electric crew and overseeing all the lighting equipment. Also known as the Chief Lighting Technician, the Gaffer works directly with the cinematographer to provide the lights and electricity needed for a given set-up.



Film lighting in action

A **Best Boy Electric** is the assistant to the Gaffer. When the Gaffer gets an order from the DP as to the wishes of the director. The Best Boy can then relay the orders to the rest of the electric crew. From here, they must ensure everything is safe and in order.

A **Lighting Technician** are the workforce of the department. They load and unload lighting equipment, set it up on set, run cables, etc.

A **Generator Operator** is responsible for transporting and setting up the generators that power the lighting. Locations are often unable to provide the power required on their own.

Now that we have a basic understanding of the lighting department, let's discuss their primary focus: light.

CHAPTER 3

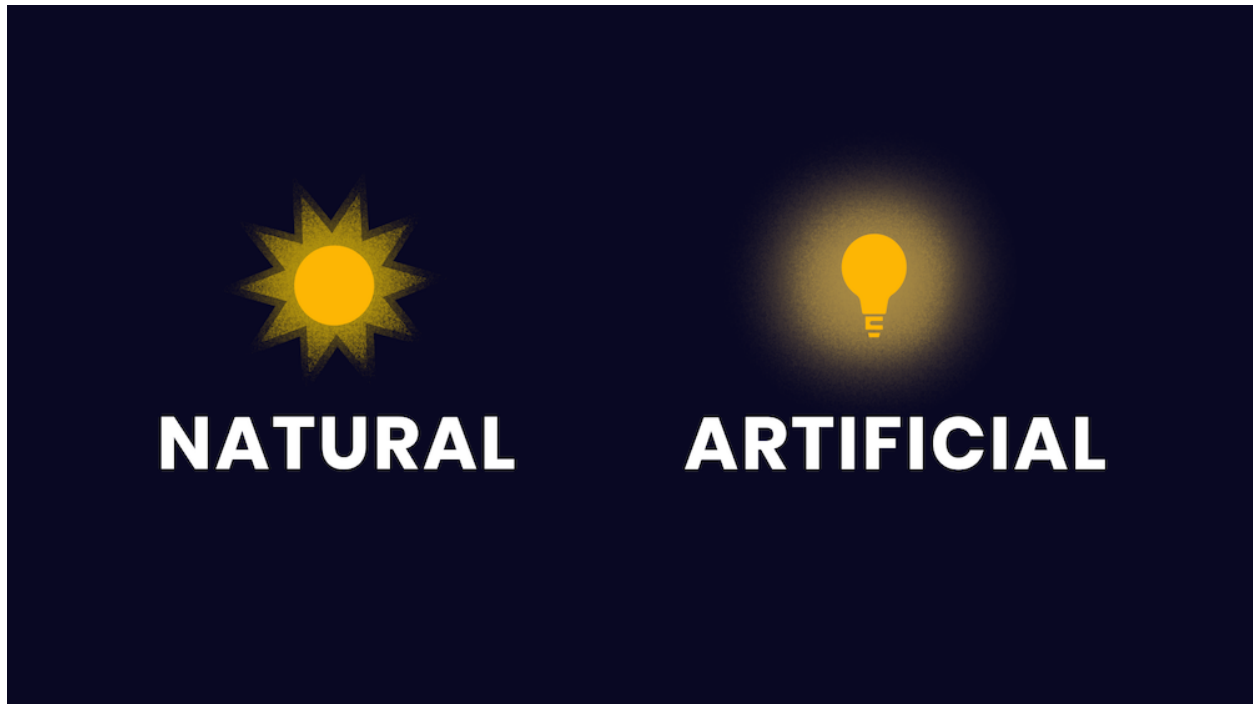
Types of Light

Not all light is created equally. It comes in a wide variety of forms from a variety of sources. So before you start flipping switches on set, it's important to know all the options you can work with.

Light is everywhere but a vast majority of cinematographers won't just walk into a location or walk outside and start shooting. In many cases, the existing light in a location can be augmented but it almost never happens that zero lighting is added or modified.

So, let's start by dividing light into broad categories.

All types of film lighting fall under one of two categories: **natural light** and artificial light.



Natural and Artificial • Two kinds of light

Natural light refers to any source of light that is created by nature. The most obvious example is the sun, and by extension moonlight. But it also includes sources like lightning, fire, or even bioluminescent creatures in the ocean.

Artificial light, on the other hand, is man-made. Streetlights, neon lights, flashlights, LED panels — these are all artificial. The

lights that a film crew lugs onto set and boots up several generators to power? Those are artificial too.

There is no clear advantage to using either natural or artificial light. Many lighting setups include both at the same time. But there are some considerations that tip the scales in one direction or the other.

What are some advantages to using natural light? If you're using sunlight, it is readily available (weather permitting), it's free, and it's abundant.



Full, natural light • Spectre (2015)

If you plan your shoot around the sun's arc across the sky, you won't have to lug a truck full of lights out into the desert.

There are also certain natural lighting scenarios that are difficult to recreate with artificial light. For example, there's nothing like the glow and warm hues of a sunset.



Orange glow • Mud (2013)

The downside of using natural light like the sun is the unpredictability. Weather changes can happen unexpectedly, going from cloudy to sunny in the middle of shooting a scene.

Artificial lighting has benefits of its own. Unlike natural light, it is consistent. You can shoot any time of day and you won't waste any time waiting for the weather to improve.



Consistent artificial lighting • All About My Mother (1999)

Artificial lighting gives you the most control when lighting a scene. But an extensive lighting plan requires an extensive budget, which isn't always possible.

Ambient light is any light the crew did not bring to the shoot. Also known as available light, it's any light that you haven't set up yourself.

Ambient light can be either artificial or natural. This includes natural light or even pre-existing lighting built in and around the location where you're shooting. Depending on the particular budgetary, creative and practical needs of a production, this "extra" light is a good or a bad thing.

By definition, natural light isn't *brought to the set* by a cinematographer. It's there or it's not. This means that it also qualifies as ambient.



Times Square ambient light • Ghostbusters (2016)

To clarify, not all ambient light is natural light, but all natural light is ambient light.

If you're shooting in a bar, ambient light may be coming from a buzzing "open" sign. If you're shooting on the side of the road, the headlights of passing cars would be ambient.

For more, check out our storyboard of [ambient lighting examples](#).

If you're going for a natural or realistic lighting setup, the light itself should be "motivated" or justified for being there.

Motivated light has a logical and/or identifiable source in a scene. If the scene takes place during the day, it makes sense that sunlight would be pouring through the windows.



Motivated sunlight • Bridge of Spies (2015)

No matter if you're using actual sunlight or an artificial source, that light is motivated.

Let's say we have a nighttime scene with a roaring fire but the amount of light is insufficient. Since we have a motivated source, we can add more "firelight" to the scene using additional sources and no one will question where it's coming from.

Let's say you're shooting an interior scene but it's a little dark. But you can't just make the overall room brighter without "motivating" it with a source. So, have the [art department](#) add a lamp to the room, turn it on, and then you've motivated any additional light you need.

This helps sell the illusion that what we're watching isn't an artificial set with artificial lighting — this is a real situation in a real location.

Practical lighting is the technique of using light sources that are seen within the shot.

These light sources are called “practical lights” or “practicals.” This approach to lighting can be achieved with a variety of sources including lamps, candles, TVs, flash lights, or even car headlights.



Visible light sources • Spencer (2021)

Practical light sources are effective at establishing motivated light in a scene and creating a sense of realism for the audience.

Having actual lights in the scene can be both a practical and creative decision. Light arrangements, colored lights, and [bokeh](#)

bring an aesthetic quality to the [imagery](#). At the same time, you get the benefit of having those sources provide actual illumination. It's a win-win!

Take a look at this shot from *Three Thousand Years Of Longing*, shot by DP John Seale.



Practical Light • Three Thousand Years of Longing (2022)

There's a lot of lighting going on here, with a variety of sources and textures. There's two prominently featured practical lights, the lamps which are on either side of Alithea.

The right lamp provides some edge light on her back, and the left provides a diffused red glow on her face – or so it seems. It's likely that the red lamp, while providing *motivation* for a warm light on Alithea's face, is not actually the light providing it.

Then, of course, there's the harsh blue spotlight shining down on the object of Alithea's attention. Like the red light on her face, this light is likely created with a strong source just off frame.

But that's not how we view the light in the scene – we can safely assume that it is coming from the sun through a window in the bazaar. So this light, too, is motivated.

For more, check out our storyboard of [practical lighting examples](#).

Now, let's talk about the attributes of light and how they are controlled and manipulated to create cinematic lighting.

CHAPTER 4

Attributes of Light

Have you ever wondered how to make your films look like the pros? You might feel inclined to blame your camera, your lenses, your budget, but that would be the wrong response. All of the great cinematographers study the [characteristics of light](#).

Most people go through life with a basic knowledge of what light is and how it works. The same cannot be said for filmmakers. We won't get too scientific here but understanding the fundamentals of light are essential.

Let's start with the basics — the four attributes of light, including quantity, quality, direction, and color.

Quantity

The **quantity** of light refers to how much light your source creates. Typically the output of a source is the first decision made when selecting a light. Choosing the quantity of light depends on many factors.

How much power can you use without blowing a fuse? How far is the light from the subject? Where is the scene set? What is the [mood](#) of the scene?

Shooting outside, the quantity of light can vary depending on both the time of day and the weather. For example, the quantity or intensity of natural light is much higher on a clear day at high noon. And much lower on a stormy day or a few hours before sunset as you approach golden hour.

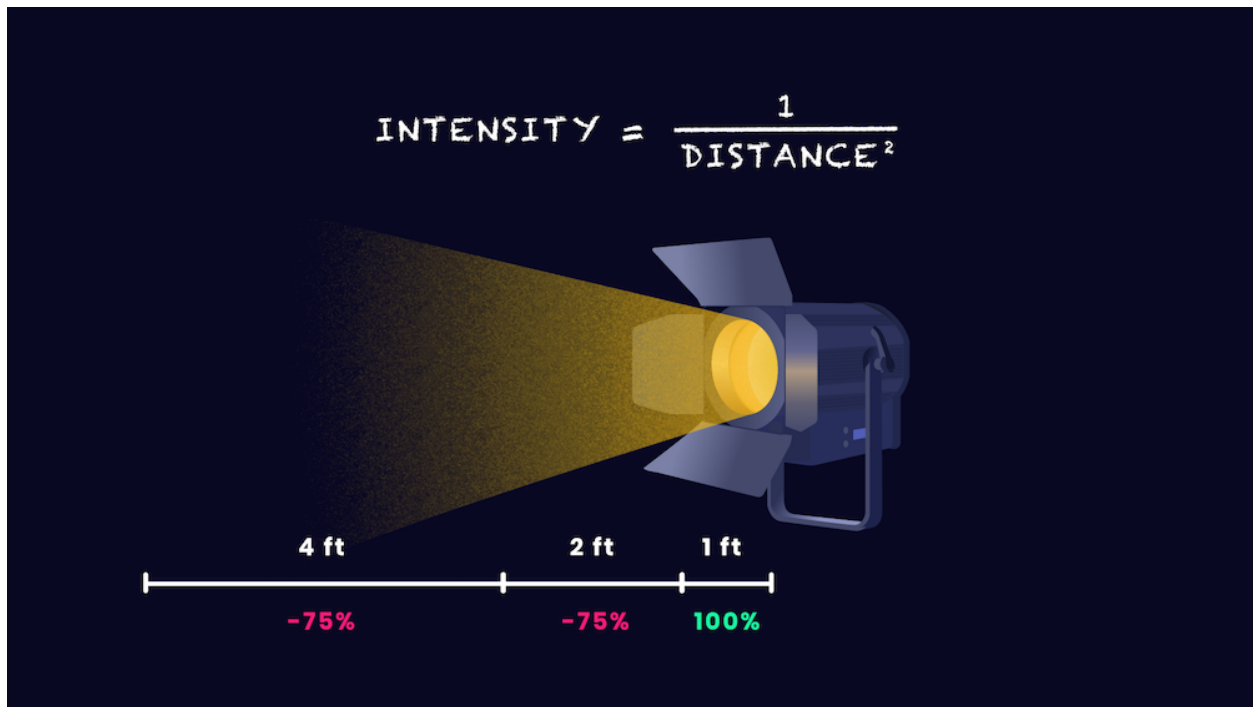


Low light, late in the day • To the Wonder (2012)

The amount of light which reaches the camera is dependent on two main variables: the **strength** of the light source, and the **distance** between the source and the subject.

As soon as light leaves the source, it drops exponentially in strength. This is known as **light falloff** and it is calculated using a simple equation called the Inverse Square Law.

Essentially, this means that every time we double the distance from the source, we lose 75% more light.



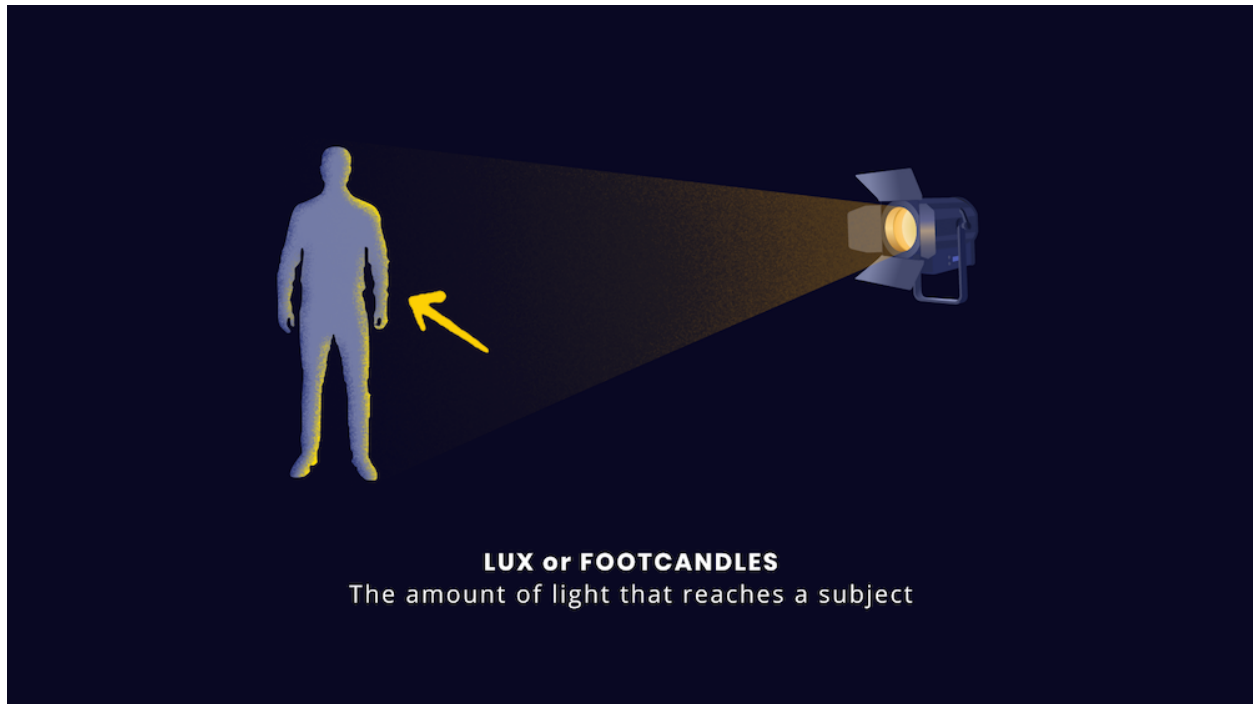
The Inverse Square Law Explained

A light source's strength is measured in **lumens**. A candle puts out approximately 12 lumens while a 100 watt bulb is about 1,600.

But lumens don't always tell the whole story. DP's and Gaffers also need to be concerned with **incidental light**, which refers to how much light actually reaches a subject.

Incidental light is measured in **lux** or **foot candles**. The main difference between the two is that a **foot candle** is a measurement

used in the imperial measurement system whereas a lux is used in the metric system.

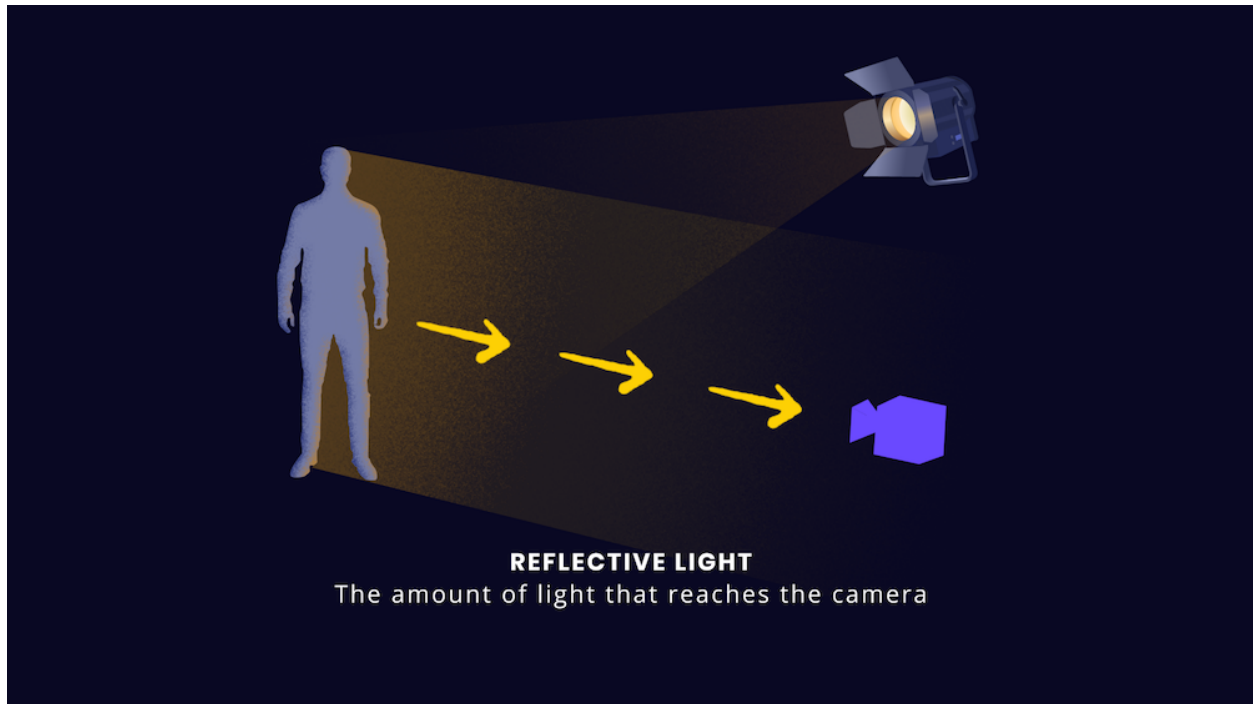


Lux or Foot-candles • Same measurement with different units

One foot candle is one lumen per square foot, or 10.76 lux. This is typically rounded to 10 lux for convenient use and every light in the industry will have specifications listed in both lux and FCs.

Speaking of candles, watch our interview with DP [Claudio Miranda](#) as he explains [how to shoot with candlelight](#).

There is also **reflective light** which is the amount of light that reaches the camera.

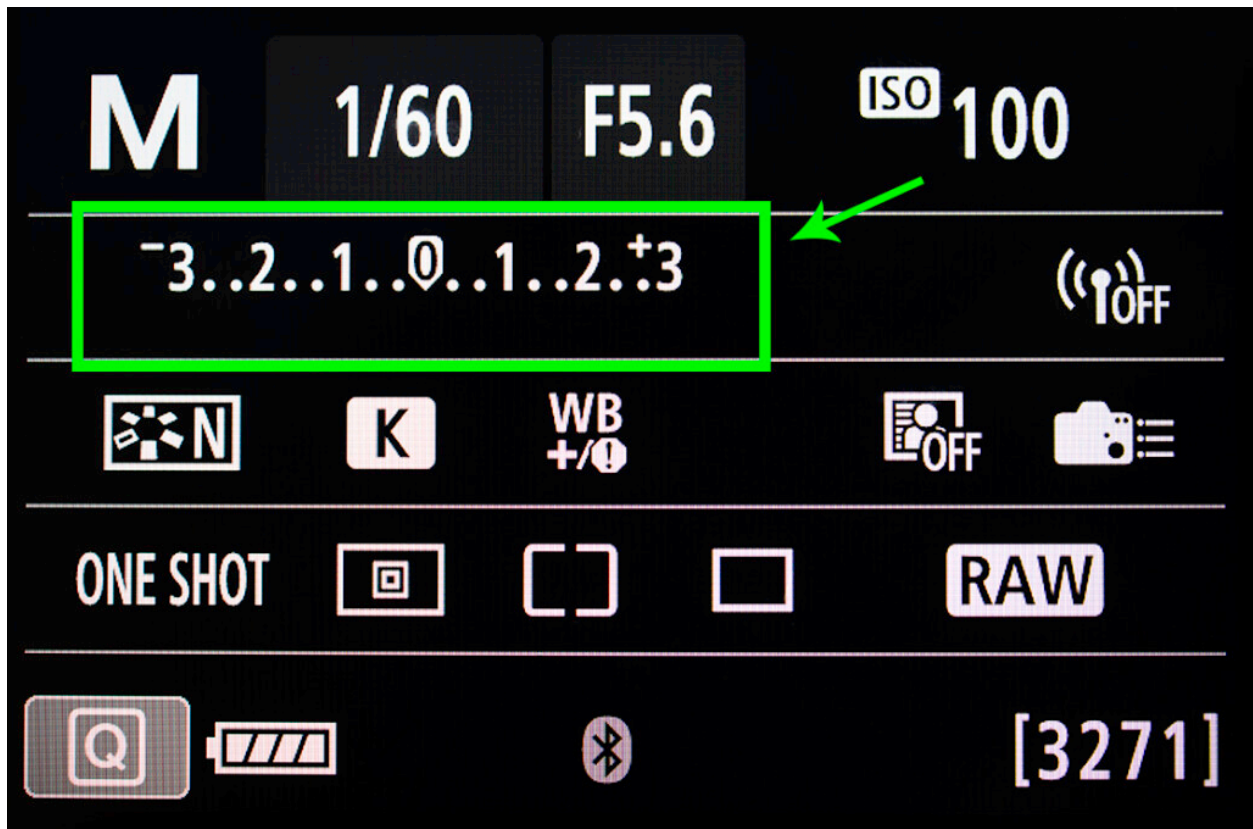


Reflective light explained

The instruments used to actually make these measurements are **light meters** and **spot meters**. A light meter measures the amount of incidental light hitting a subject and a spot meter is used for even more precise measurements of a specific area.

For more, check out our list of the [best light meters](#) on the market.

Many modern cameras have meters built in that measure how much light is reaching the image plane or [camera sensor](#).



Internal light meter • Image by Brendan Williams

ND (neutral density) gels are sheets of plastic that can be placed either on a light or on a window to cut the amount of light. This is done to reduce the intensity of a specific source but if you want to cut the total amount of light reaching the camera, an ND filter can be placed in front of the lens.

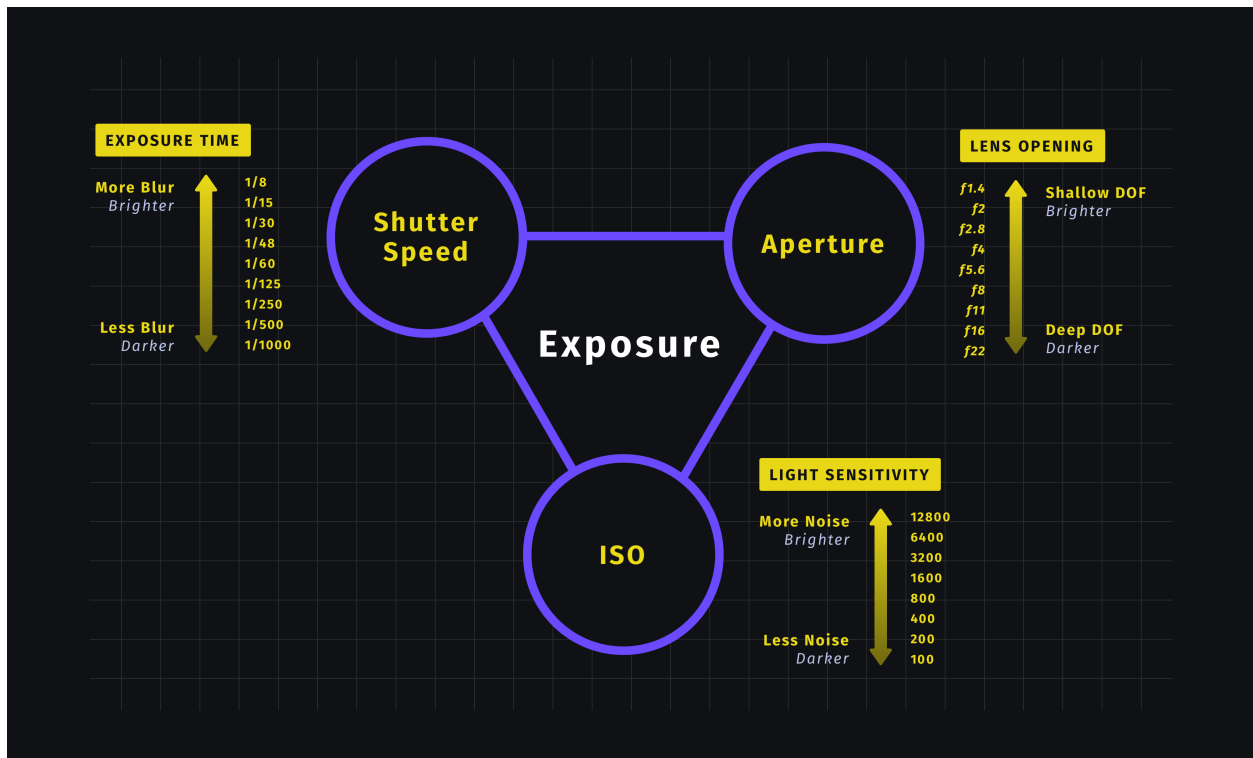


ND filter • Koldunova_Anna / Getty Images

In film and photography, the amount of light that produces an image is controlled in two ways. The first is through the sources emitting light, and the second is how much light the camera captures onto the [film stock](#) or sensor.

This is otherwise known as **exposure**. Exposure is the result of three different settings in a camera/lens system: the [aperture](#), [ISO](#), and [shutter speed](#).

A trifecta of image-making called the **exposure triangle**.



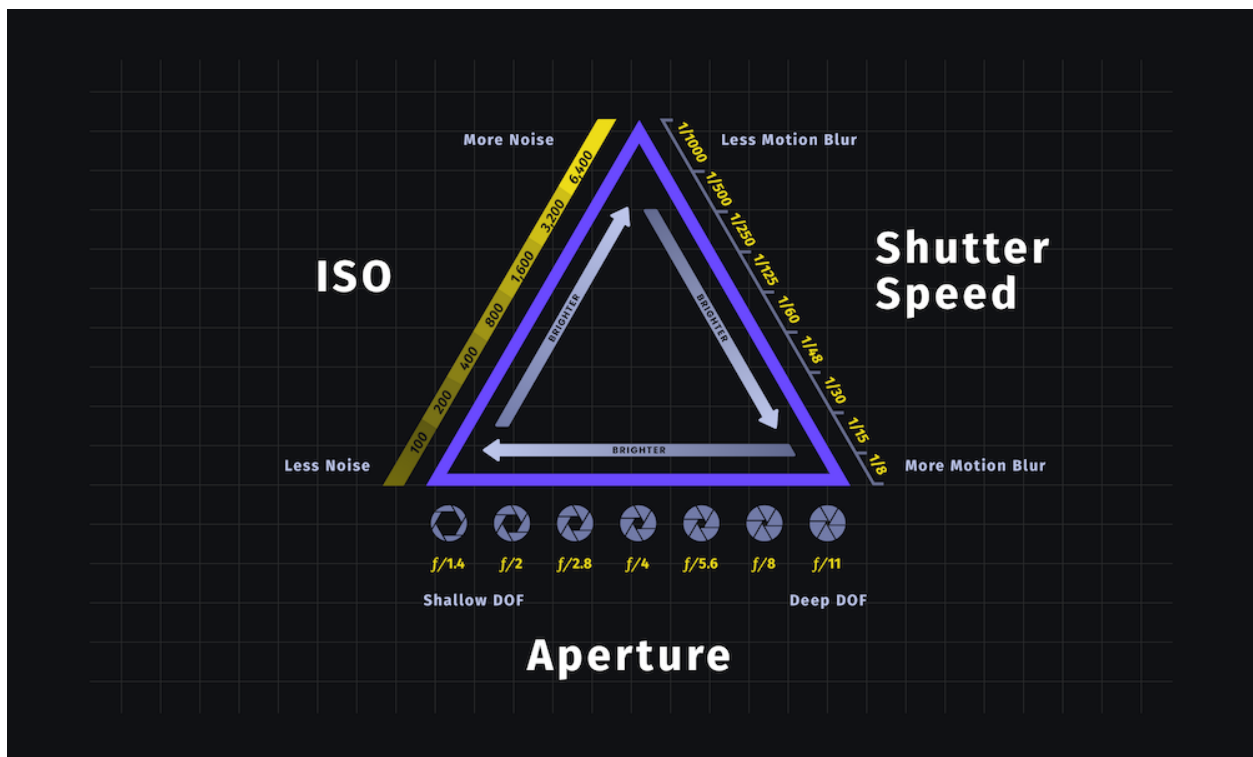
The exposure triangle • Aperture, ISO, Shutter Speed

Aperture is an adjustable portal inside a lens that opens and closes to allow more or less light through. This setting is measured in “stops” (F/stop or T/stop, depending on the camera). The lower the stop number, the more open the aperture and vice versa.

ISO is how “sensitive” the film stock or camera sensor is to light. An analog camera uses stocks of different “speeds” or sensitivities,

while digital cameras can amplify the signal (or the amount of light) hitting the sensor.

Shutter speed determines how long the film or sensor is exposed to the light source. In an analog camera, this is a mechanical “window” that opens and closes, and in a digital camera, this is how long the sensor is “on.”



The relationship of elements in the exposure triangle

The relationship between these settings is interdependent. Change one and it affects the others.

For a full breakdown of exposure, download our other free E-book: [The Ultimate Guide to Exposure](#).

Quality

Beyond the quantity of light, we can also discuss the quality of light. When we talk about light quality, we are really talking about the kinds of shadows that a light source creates.

This can be divided between two types: **hard light** vs. **soft light**.

[Hard light](#), also referred to as specular light, is made of parallel rays of light. Because nothing disrupts or bounces the direct beam of a hard light. A good, natural example of hard light is the mid-day sun, producing specular light with distinct shadows.

Hard light in film can create high [contrast](#), punchy images.



Hard light • Pulp Fiction (1994)

Hard light is better suited for more dramatic or moody scenarios. [Film genres](#) often shot with hard lighting include [thrillers](#) and [horror films](#).

For more, check out our storyboard of [hard lighting examples](#).

[Soft light](#), or [diffused light](#), illuminates more evenly than hard light because the bounced or redirected rays of light are not parallel. This is because the light undergoes **diffusion** — when the light is interrupted and scattered with various [light diffusers](#).

For example, when shooting outside, light cast through fog or light cloud cover makes for a great example of natural soft light. But this kind of diffusion can also be created artificially.



Overcast diffusion • Saint Maud (2019)

Either way, the shadows created with soft light are less distinct and transition gradually.

Soft light is ideal for more pleasant and comforting scenarios. That's why lighter fare like comedies and romantic films tend to use soft light.

Spike Jonze's *Her* is filled with diffused light. Almost every shot avoids harsh shadows or bright spots. It's also a romantic film (mostly) so this lighting style aids that mood as well.



Soft stories, soft light • Her (2013)

The most common way to create soft light is with diffusion. To put it simply, diffusion is the process of placing some sort of translucent material in between a light source and a subject.

This material does not solely block or cut light, but scatters light as it passes through.

The more material or particles that a light source's photons interact with before reaching a subject, the wider the spread of photons and light is on a subject.

Common diffusers include natural mediums like fog, smoke, or dust and man-made devices like soft boxes, silks, sheets, etc.

It's important to note that any diffusion can also decrease the light source's intensity.

A [softbox](#) is a light modifier that confines light into a wire framed box and releases it through a layer of diffusion.

The walls of a softbox are typically reflective to increase the light intensity as it escapes out through the front diffusion screen.

Because of the consistent soft quality of light it produces, softboxes are versatile and used in all types of lighting scenarios. Softboxes ultimately differ in two characteristics: size and shape.



Softbox sizes and shapes • The Neon Demon (2016)

Larger units produce softer light and undefined shadows. Smaller units produce harsher light and sharper shadows.

In addition to size, softboxes are available in a variety of shapes with different levels of falloff.

Rectangular softboxes are great for vertical portraits and compositions because of their vertical length. They can also be rotated for wider, horizontal compositions.

Square softboxes are common in close-up, [portrait photography](#). They are also ideal for smaller studios with limited headspace. A

downside to square-shaped lights is that they have some fall-off when composing vertical shots.

Octagonal softboxes are ideal for fashion and portrait photography as they have a natural wrap around effect. The reflection of an octagonal light in a subject's eyes is circular which also appears more natural.

Strip softboxes have a longer dimension and are ideal for edge or rim lighting. They are great when you need to add a bit of separation to your image to keep it from falling flat.



Umbrellas on a photo shoot • House of Gucci (2021)

Umbrellas are another common type of diffuser, producing a soft, indirect light that is bounced. It is often considered more forgiving, but less versatile. Softboxes tend to have more directionality and control than an umbrella.

Once you have selected the quantity and quality of light you will use, its time to select the angle at which the light hits your subject.

Direction

The angle of light shapes the subject within the frame. In other words, how we perceive their mood and personality is greatly influenced on how they are lit.

A side light will provide depth and texture to a person's face. A frontal light tends to make faces appear flat and uninteresting.

The height of the light impacts the image greatly. Having a light directly overhead can create harsh shadows on the subjects face, whereas under-lighting a subject will appear unnatural, or creepy.



Character informed by lighting • Blade Runner (1982)

A backlight will help separate your subject from the background, and a light focused solely on the background will leave your subject in silhouette.

But light doesn't always require a straight path from the source to the subject. In fact, some of the most interesting setups send light in multiple directions before finally illuminating the character.

The most common way this is done is by “bouncing” the light.

Bounce lighting is a technique in which the light from a strong light source is literally bounced off of a bounce board, reflector, or other light-colored surface.

In the image below, you can see the overhead lighting is being accented by the bounce board sending light back at the actors.



Overhead light with a little bounce • Harry Potter and the Half-Blood Prince (2009)

A light that is bounced causes a bigger spread of light than its original source. It can also diffuse the light onto a subject.

Bouncing light is also a beneficial technique when when shooting in small spaces. For example, if you are shooting in a small bedroom, it may be difficult to set up an additional light.

Instead, use one light and bounce it back from a different direction. You've essentially created two sources out of one!



Bouncing light off a table • Inglourious Basterds (2009)

The image above illustrates how the set itself can provide bounce light opportunities. Notice how the light reflects off of the table and back up onto their face.

Here are some tips when bouncing light.

Bouncing lights off of a wall is a great idea. But be aware of walls that are colorful from either paint or wallpaper. They can change or slightly alter the color of your light and deviate from your desired [color scheme](#). To avoid this, white walls are always the best for bouncing light.

Bouncing lights that produce a lot of heat can be dangerous. Bounce cards and fabric can potentially catch fire if they are subject to high heat.

A related technique is called **book lighting**, which bounces light through diffusion to create the softest light possible.

A **flag** is a piece of film equipment used to block and/or shape light. A standard flag is rectangular, rigid, and made of black, opaque material but they come in a number of sizes and variations. For more, read up on [how to flag lights](#).

Nets and silks also fall under the flag family and are used to soften and diffuse light rather than block or shape it. “Flag” is a noun but can also be used as a verb, as in “can you flag off that light?” Meaning, “can you use a flag to block off that light.”

A floppy is a flag with a folding flap of soft material that provides additional coverage. Cookies, short for cucoloris, are boards with patterns cut into them that add texture to a light. Barn doors are also opaque, but attached to lights themselves to adjust their direction and shape.

The final characteristic of light to discuss is its color.

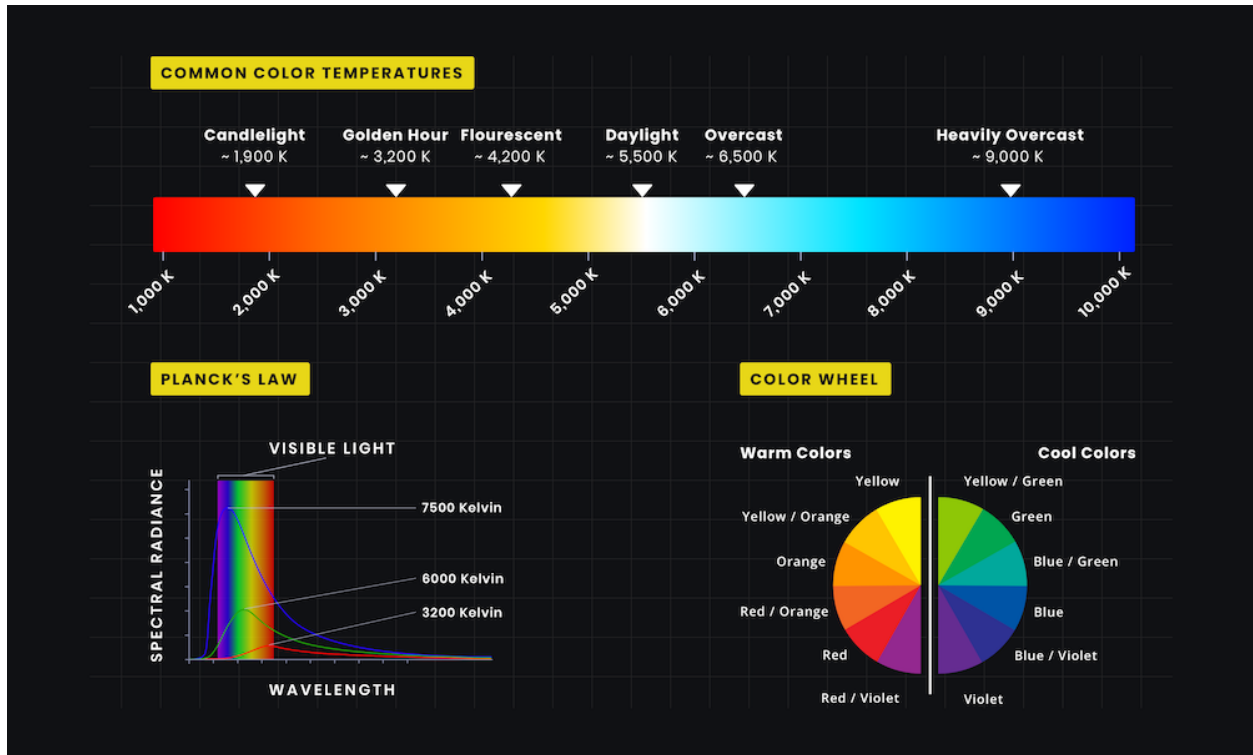
Color

All visible light has color. In fact, pure sunlight contains all colors in the visible light spectrum. Individual colors emerge when light radiates at specific wavelengths and frequencies.

Color temperature is a system that uses numerical values to measure the color characteristics of a light source on a spectrum ranging from warm colors to cool colors.

The numerical values are referred to as degrees Kelvin (K).

We often associate orange with warm and blue with cold but on the color temperature chart, it's the opposite.



Color temperature infographic

Higher values are cooler tones such as blue. Lower values are warmer tones such as yellow. Light sources register a native color temperature. Candlelight registers around 1800K (reddish-orange) whereas daylight registers at 5500-6000K (light blue).

However, the color temperature of a light source can be controlled through various means.

Gels can make a light appear more blue (CTB or color temperature blue) or orange (CTO or color temperature orange).

The color temperature of natural light changes throughout the day. As the sun's position in the sky changes, so does the color of the light. This is just one of many challenges when shooting daytime exteriors (or interiors, for that matter).



Sunset color temperature • Star Wars - The Force Awakens

Once you have a firm grasp on light strength and temperature, your lighting in filming can become far more deliberate. Achieving the look you've dreamt up in your head won't be a guessing game.

By learning each of the four principles of light, and how they convey your story, you will be able to craft a unique image rather than a rote recipe.

For a deep dive on color, download our other E-book: [How to Use Color in Film](#).

In the next chapter, we'll review some of the most common artificial light sources.

CHAPTER 5

Light Sources

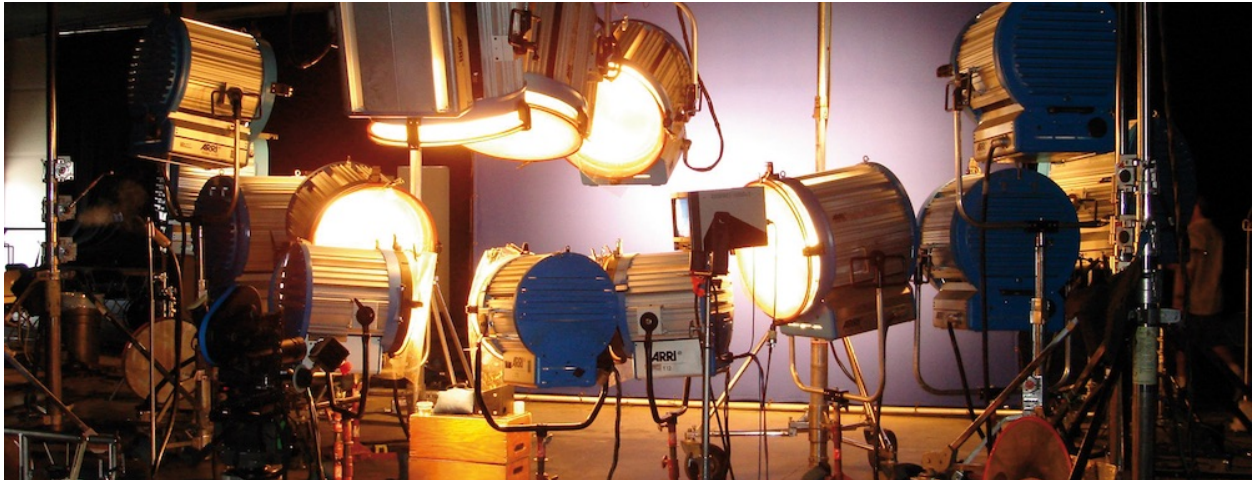
The actual types of lights you use to illuminate a scene matters. The differences in bulbs, temperatures, portability, strengths, and costs all make choosing your lights a thoughtful process.

Does your project take place in a single room? You might be able to get away with one or two lights. If you're shooting a prom scene in a gymnasium, you're gonna need many more sources.

Let's run through some of the most common artificial light sources and their characteristics.

Tungsten light has a temperature registers at 3200K, however the term is often used to refer to warm light sources ranging from 2700-3200K. This makes them ideal for shooting interiors to match the warm temperatures of practicals like lamps.

A tungsten-halogen bulb, also called tungsten or quartz, is a quartz bulb containing a tungsten filament and halogen gas.



The warm glow of Tungsten lights

Tungsten bulbs burn for hundreds of hours without diminishing or losing their 3200K color temperature, making them an ideal source if you can handle the heat and power requirements.

HMI lights occupy the other end of the color temperature spectrum. HMI is an acronym that stands for hydrargyrum medium-arc iodide and these bulbs burn mercury vapor mixed with metal halides.

HMIs are often used to mimic daylight, as their color temperature ranges from 5600K to 6000K. These lamps also get extremely hot and can be difficult to maneuver.



The cool daylight of HMI lights

Smaller lights that are easier to handle but less powerful include fluorescents and LEDs.

In general, fluorescent lights naturally give off a soft, cool light. Kino Flos are banks of tube lights which have adjustable color temperatures. LED lights offer even more control over color and strength, even though they usually won't achieve the level of brightness an HMI can.

These are the four basic types of lights used today. Knowing these sources and their pros and cons will help you decide what's best for the scene.

Now that we understand the sources a little better, let's talk about the positioning of lights. The placement and intensity of the various lights in a scene create a sort of hierarchy. In this grouping there are three basic positions and roles to explain.

A **key light** is the primary light source for your scene. It is most often placed in front of your subject, often at an angle, and thus illuminates one section of your subject.

The key light's angle can range from 15 and 70 degrees, with 45 degrees being most commonly used. Positioning your key light in this way is by no means required, but it will allow your less intense fill light to favor the camera which, in turn, will give your image a smoother look that is still well lit.

In this shot from *Eyes Wide Shut*, the key light is the glowing orb lamp on the table, angled slightly off-center from where the character is facing. It is also placed *below* the subject, which is uncommon but ideal for this scene.



The perfect light for a clandestine conversation • Eyes Wide Shut (1999)

The key light gives this conversation the right amount of mystery as Nick (Todd Field) shares secrets with Bill (Tom Cruise).

Once you've decided where to place your key light, you can then accurately determine where to place the fill light and backlight.

A **fill light** is responsible for exposing the details of a subject that fall in the shadows of the key light. The fill light is typically positioned opposite of the key light to literally fill in the shadows that the key light creates.

Because the purpose of the fill light is to expose the shadows created by the key, the fill light is typically positioned at a similar angle of the key light from the camera, but on the opposite side. This will allow the fill to expose the shadow side of a subject.

Typically, because fill lights are supposed to bring out the depth and shapes of a shot and avoid creating any shadows, a softer light is typically used as fill lighting.

The strength of the fill depends on what mood you are trying to create with your lighting. Lighting that produces a style that is

bright, cheerful and airy that can be found in commercial work as well as some of the [best comedy movies](#).



More fill light for lighter subject matter • Bottle Rocket (1996)

Weaker key light will produce a higher contrast ratio with sharper shadows and deeper dark tones. This is used to create a mysterious or dramatic tone that is used in films with darker subject matter.

In the example below, the mood in [Se7en](#) is about as bleak as it gets so a strong key light with little-to-no fill fits the bill.



A lack of fill light creates a dark mood • Se7en (1995)

Reflectors and bounce boards are great when shooting outside. When cinematographers shoot exterior scenes with the sun as a key light, they often use bounce boards to illuminate the shadow side of a subject.

Bounce boards and reflectors are also great when you don't need a particularly strong light source. Using a board to bounce light from your key light to a subject's shadow side may be all you need.

Backlight is light that hits an actor or subject from behind, typically higher than the subject it is exposing. Backlighting an

object or actor from the background creates more depth and shape to a subject.

Back lighting is a main component of the traditional [three-point-lighting](#) technique and is what makes a frame feel three-dimensional rather than flat.

When a backlight hits a subject at an angle it is referred to as a kicker or rim light. A hair light is employed specifically to give a character's hair a halo or glow.



A backlit glow • Inherent Vice (2014)

A great example of this can be seen in this still from *Shutter Island*. The back light here creates depth and drama by separating the subject from the background. It also provides a near-supernatural glow that is more impressionistic than realistic.



Separated with backlight • Shutter Island (2010)

Sometimes backlights are used as the main key light of a shot as well. This leads to a silhouette which has a very different effect than back lighting in a three-point-lighting setup.

It can be incredibly dramatic and ominous which is perfect for dramas and thrillers.

Back light within a three-point-lighting setup will help offset the flatness created by your key and fill light. To do this, place your backlight on the same side of your key light.

Then, raise your backlight higher than the subject it is hitting and angle it down at your subject at roughly a 45-degree angle.

So, next time you are lighting a scene and feel like something is missing or the image is too flat, try out back lighting and experiment with all of the great things it can add to a shot.

With our light sources and basic hierarchical positions set, let's move on to some of the lighting styles can be produced. Specifically, those that emphasize the relationship between light and shadow.

CHAPTER 6

Contrast & Style

We use the term “lighting” all the time. But light is only half of the equation to create lighting. Shadows, or the lack thereof, are equally important. The relationship between light and shadow is the core of lighting in photography and cinematography.

One term that we use to describe this relationship is **contrast ratio**. This is the difference between how dark the shadows are versus how bright the highlights are.

We use contrast ratio to measure light/shadow on a subject, but also between the subject and the background.

And since we've already explained how light is measured, the contrast ratio can also be expressed mathematically.



Contrast ratio explained • Image by Kyle Brown

Referencing the above image, a 1:1 contrast ratio on a subject's face means that the key and fill light are equal in intensity. Each stop down from there reduces the fill light by half.

A 2:1 light ratio favoring the key light vs. fill light results in a softer lighting style with minimal shadows and less contrast. This is a typical light ratio used in high-key lighting to create a cheerful and upbeat mood in a scene.

A more drastic lighting ratio, such as 8:1, has the complete opposite effect.

A cinematographer usually determines their light ratio based on the mood they want to create. By using less fill, they can create harsh shadows and more contrast. By using more fill, they can create soft lighting and a brighter shot.

With this ratio in mind, we can discuss two fundamental styles of on either end of the spectrum — high-key and low-key lighting.

Both low-key lighting and high-key lighting are defined by the contrast, or lack thereof, created in a shot from the use of a fill light and a key light.

High-Key Lighting

High-key lighting is a lighting style that results in a brightly lit frame with soft lighting, minimal shadows, and low contrast. This

lighting style uses minimal shadows with a majority of the frame composed of highlights.

The result of this bright lighting style is a cheerful, airy, and positive mood that is often utilized in sitcoms, comedies, and commercial work.



High-key comedy lighting • Moonrise Kingdom (2012)

However, as the film and television industry grew so did technology and [production budgets](#). Filmmakers utilized high key for more than just saving time. They used it to create a mood.

For example, take this shot from *500 Days of Summer*. The frame is bright, full of highlights, and very few shadows or contrast.



Bright and cheery high-key lighting • 500 Days of Summer (2009)

Even if you have not seen this particular scene, you can tell from the brightness and aesthetic of the shot that the scene is cheerful and more upbeat.

The key vs fill light in this setup is almost or equal to with a ratio of nearly 1:1. This eliminates almost all shadows.

Of course, there are always exceptions to these film lighting rules. An unsettling horror film like *Midsommar* can also be shot with

high-key, low contrast lighting, making it that much more disturbing. Director [Ari Aster](#) and DP Pawel Pogorzelski clearly knew how to use our expectations related to lighting against us.



Bright but not so cheery high-key lighting • Midsommar (2019)

Another benefit of this type of lighting is that it creates a standard, unified look for an entire set. This reduces the need to adjust lighting between every setup.

For more, check out our storyboard of [high-key lighting examples](#).

Low-Key Lighting

Low-key lighting is a lighting style that accentuates shadows, high contrast, and dark tones. The visual aesthetic of low-key lighting is usually achieved by using hard sources and key lights with minimal fill light.

Low-key lighting is often used in thrillers, dramas, and horror films because of the mysterious, dark, and dramatic mood the style creates.

If you've seen *Apocalypse Now*, you know how lighting can enhance psychological and emotional aspects in a film.



Dark night of the soul • Apocalypse Now (1979)

But where did this style of lighting originate? We can actually trace this high-contrast style back a few centuries before film was even invented.

Chiaroscuro is an Italian term used to describe the technique of using light and dark in artwork, particularly in painting. It originally comes from the Renaissance art movement, and combines the Italian words: “chiaro” meaning “clear” or “bright,” and “oscuro” meaning “obscure” or “dark.”



The Calling of Saint Matthew (1599-1600) • Caravaggio

Caravaggio, Leonardo da Vinci, and Rembrandt were some of the most famous painters during the Italian Renaissance, and were well known for using chiaroscuro lighting in their paintings; but perhaps none were better at it than Caravaggio.

With chiaroscuro, foreground elements tend to be lit while the backgrounds were often left dark. But at least there still enough detail in the background to give the image depth.

Chiaroscuro remained an important part of visual art until the early days of cinema.

The Cabinet of Dr. Caligari, widely regarded as one of the first movies of the [German Expressionist movement](#), was largely responsible for revitalizing chiaroscuro lighting.

The twist here is that the “light and shadow” weren’t created with light. Instead, they were painted onto the sets, and designed within the costumes and make-up.

See the image below of the eponymous Dr. Caligari, his exaggerated make-up, and the painted backdrop behind him.



Cinematic chiaroscuro • The Cabinet of Dr. Caligari (1920)

Chiaroscuro continued to be an important part of cinema through the [Golden Age of Hollywood](#).

Hardboiled detective movies, such as [The Maltese Falcon](#) carried this moody and dramatic lighting into the criminal underworld.



Film noir defined by light and shadow • The Maltese Falcon (1941)

The low-key lighting style that helped define [Film Noir](#) continued to influence future filmmakers not only because of how this lighting looks, but because of how it feels.

Sometimes, the light that bounces off walls may be unwanted when trying to shoot a higher contrast shot. This is where negative fill becomes a part of fill lighting.

Utilizing black flags, duvetyne, or other black fabrics can eliminate any unwanted light. The trick is to block off the unwanted light from your subject to create a “negative fill.”

Typically in a low-key lighting setup, a cinematographer utilizes little to no fill light at all. If a fill light is used to create a bit more depth and dimension, the key light vs. fill light falls somewhere around 8:1 in favor of the key.

For more, check out our storyboard of [low-key lighting examples](#).

In the next chapter, we’ll look at techniques used to light the most important part of any image: the subject(s).

CHAPTER 7

Lighting People

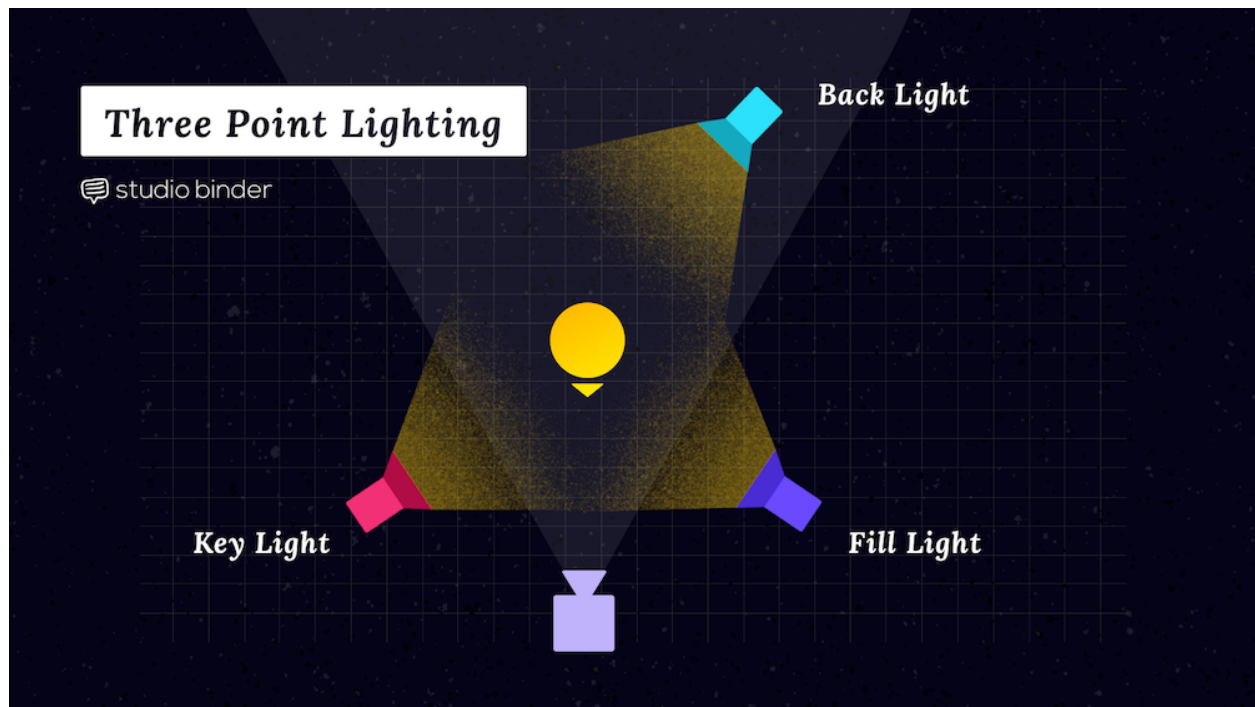
A subject can be lit from 360°. That means there are countless options for any one lighting set-up. The question then becomes — what is the ideal lighting for this character in this moment?

If you're dealing with a stylized aesthetic, there are no “rules” of how to light a character. But if you're presenting a grounded, realistic story, there are restrictions.

Let's start with a style of lighting that lays the groundwork for “cinematic lighting” by using light and shadow to make a 2D image appear to be 3D.

Three-Point Lighting

Three-point lighting is all about creating a three-dimensional look. By placing three light sources at strategic points around the subject, each light source illuminates a separate dimension of the subject and creates an image with greater representation of height, width, and depth.



Standard three-point lighting setup

Keep in mind, this is the most basic lighting setup. For some experienced cinematographers, “three-point lighting” is a dirty

word. That's because it's a starting point, a template that suggests a lack of effort or visual personality.

Imagine a painter using only pure primary colors. There's nothing "wrong" with it but the colors would lack personality, nuance, and textures. The art would lack "artistry."

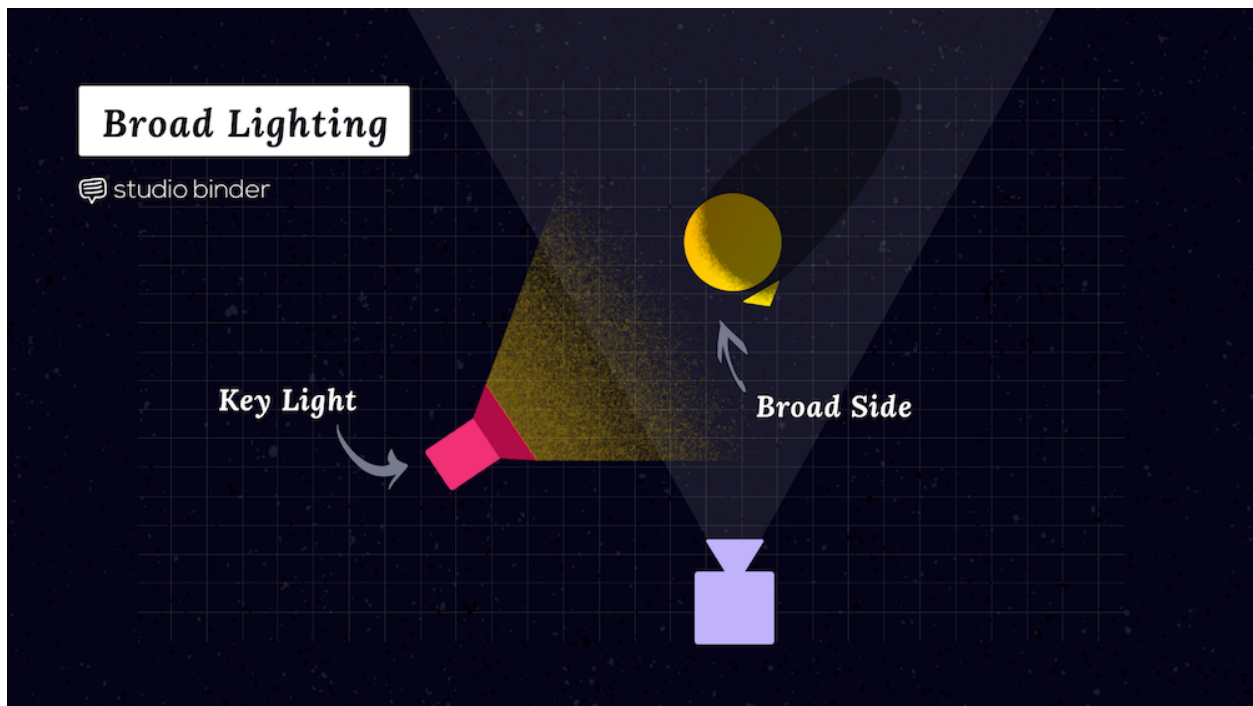
So, if you're just getting started, embrace the foundational aspect of three-point lighting. Then gradually find ways to achieve the same goals of shadow, dimension, and separation using more advanced setups.

Portrait Setups

When lighting a subject, they are either facing the camera directly, or their head is slightly angled — showing more of the left or right side of their face.

In this scenario, you have a choice to make: do you position the key light on the "broad" or "short" side?

Broad lighting is a lighting setup where the area of a subject's face that is facing the camera is lit more brightly. The term "broad lighting" comes from lighting the broad side of a subject's face.



Broad lighting

Broad lighting is typically less flattering for a subject because it widens the face. However, it's beneficial to use subjects that have a more narrow face and want the look of a wider face.

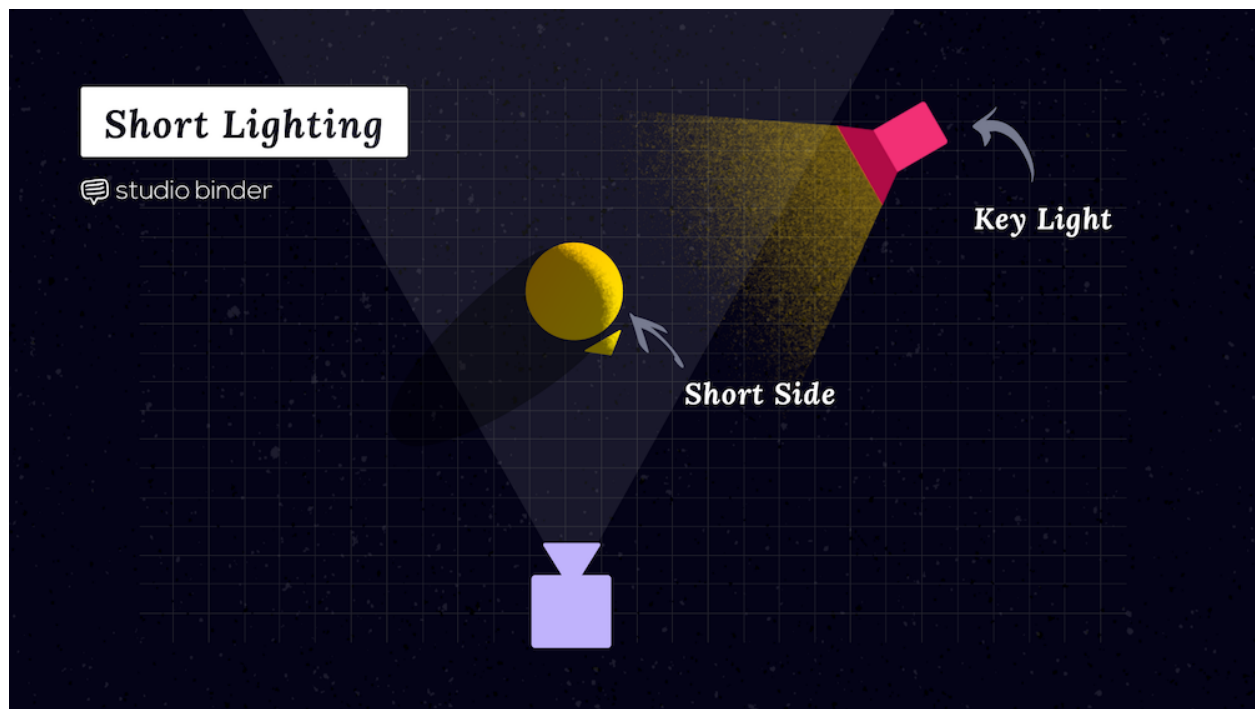


Broad lighting example • Blue Jasmine (2013)

Because this lighting casts a shadow on the far side of a subject, it can be much less dramatic. When we see more of a character's face, they can feel more open and vulnerable. Short lighting, on the other hand, can have the opposite effect.

For more, check out our storyboard of [broad lighting examples](#).

Short lighting is a lighting technique used primarily in portrait photography in which the far side of a subject's face is lit relative to the camera.



Short lighting

This leaves the near side of the face darker or entirely shadowed. Executing this lighting technique well has just as much to do with the angle of the subject's face and the positioning of the camera as it does with the light itself.

Again, how much we actually see of a character's face works on a subconscious level. It's all theory, of course, but it is a theory that is put into practice all the time.

Of course, to find the right balance, you'll need to experiment.



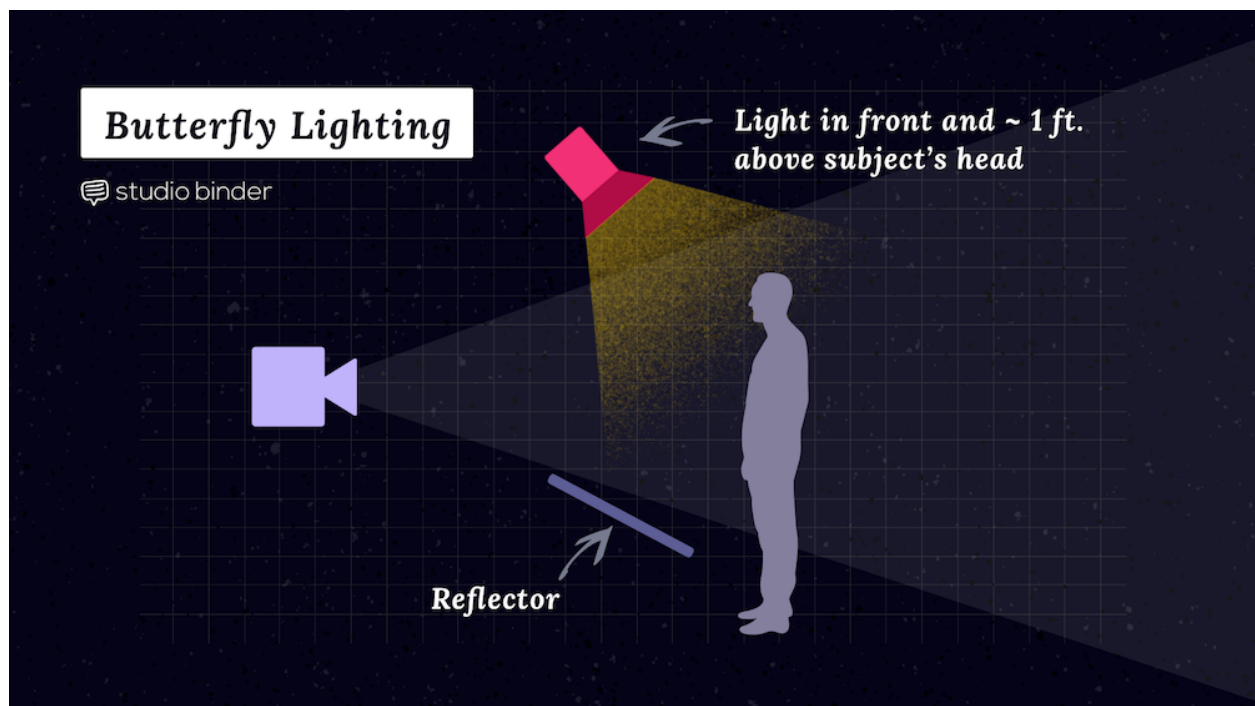
Short lighting example • The Killing of a Sacred Deer (2017)

The result of short lighting is more shadow and contrast on the broad side of the subject. This makes short lighting more dramatic. Short lighting is also more forgiving when it comes to face shapes as it does not accentuate the wideness of a face as broad lighting does.

For more, check out our storyboard of [short lighting examples](#).

Now let's look at some portrait setups when the subject is facing the camera more directly.

Butterfly lighting is a lighting pattern used in portrait photography where the key light is placed above and pointing down on the subject's face. The steeper the angle, the more intense the shadows.



Butterfly lighting (aka Paramount lighting)

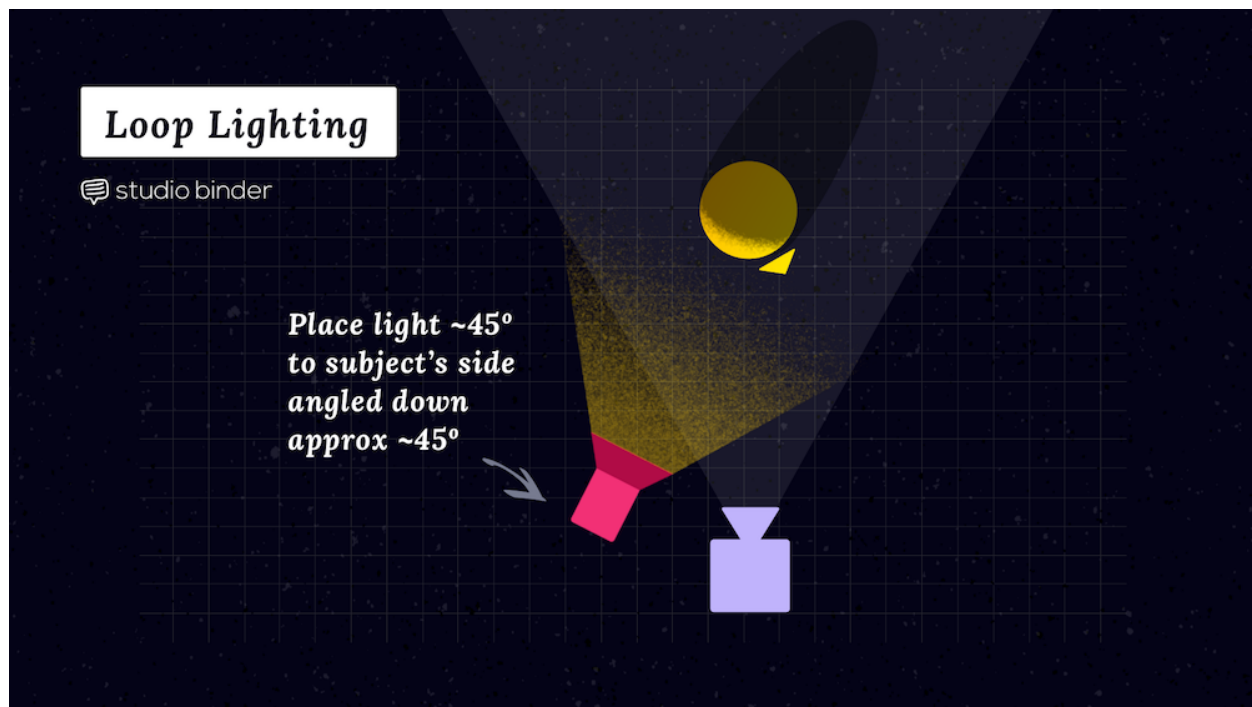
This creates a dramatic shadow under the nose and chin that looks like a butterfly. It's also called 'Paramount lighting,' named for the Hollywood studio and how they lit their most glamorous and beautiful actresses.



Iconic butterfly lighting on Marlene Dietrich • Shanghai Express (1932)

Butterfly lighting dates back to some of the earliest glamour shots. Specifically, a German actress named Marlene Dietrich became closely associated with this flattering lighting.

Loop lighting is a lighting pattern that creates a circular shadow on the subject's face just under and to one side of the nose.



Loop lighting setup

This kind of lighting is great for standard headshots. If you start with butterfly lighting and then move the position of the light just a little to the side, a nose shadow will be cast on the opposite side.

You can achieve this by placing the key light 45-degrees to the side of the subject and raising it just above their eye line.



Loop lighting in Hellraiser (1987)

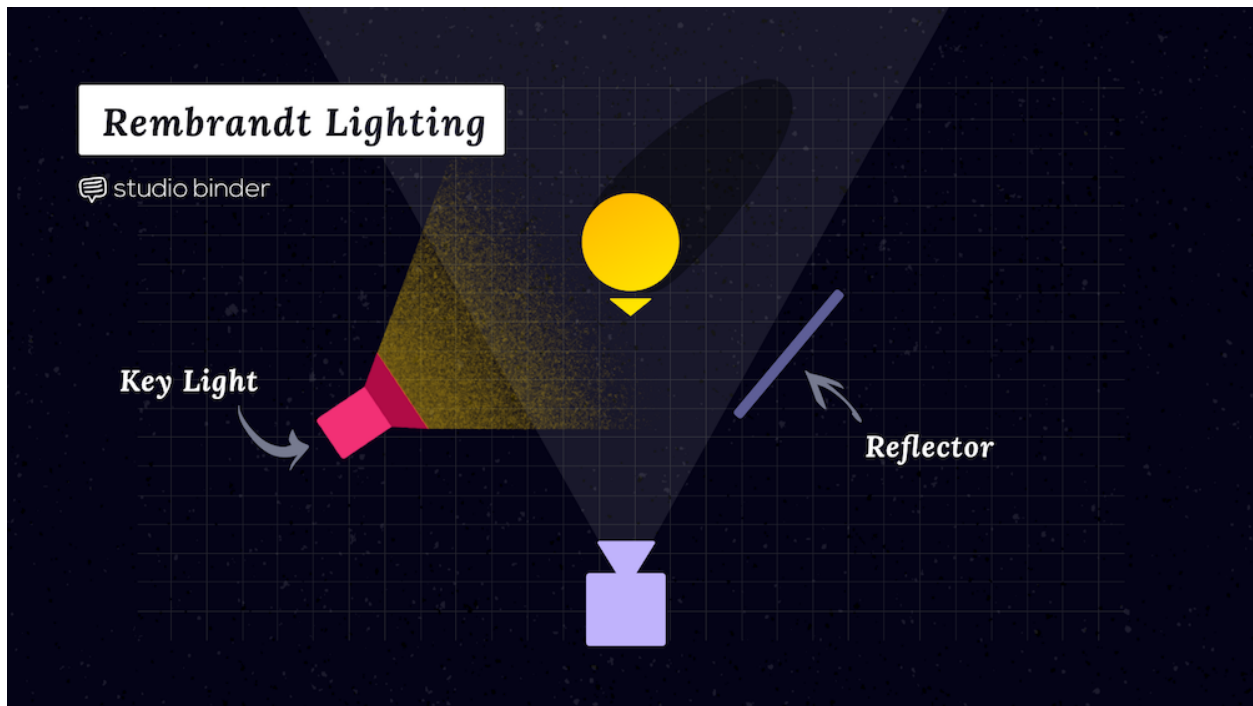
Loop lighting is one of the most common lighting setups used in portrait photography because it is flattering for most faces.

Rembrandt lighting is a technique utilizing one light and one reflector or two separate lights. It's a popular technique because it creates images that look both dramatic yet natural.

The set-up for Rembrandt lighting is quite simple. Position your key light about 50 or 60 degrees to one side and slightly **above** the subject, not on eye level.

You can adjust the light as necessary until you see that signature "Rembrandt triangle" appear under their eye.

Place your reflector (or a fill light) on the other side of the subject about three or four feet away at eye level and at a 45-degree angle.



Rembrandt Lighting

It's predominantly characterized by a triangle of light underneath the subject's eye on the fill side of the face. This is known as the Rembrandt triangle.

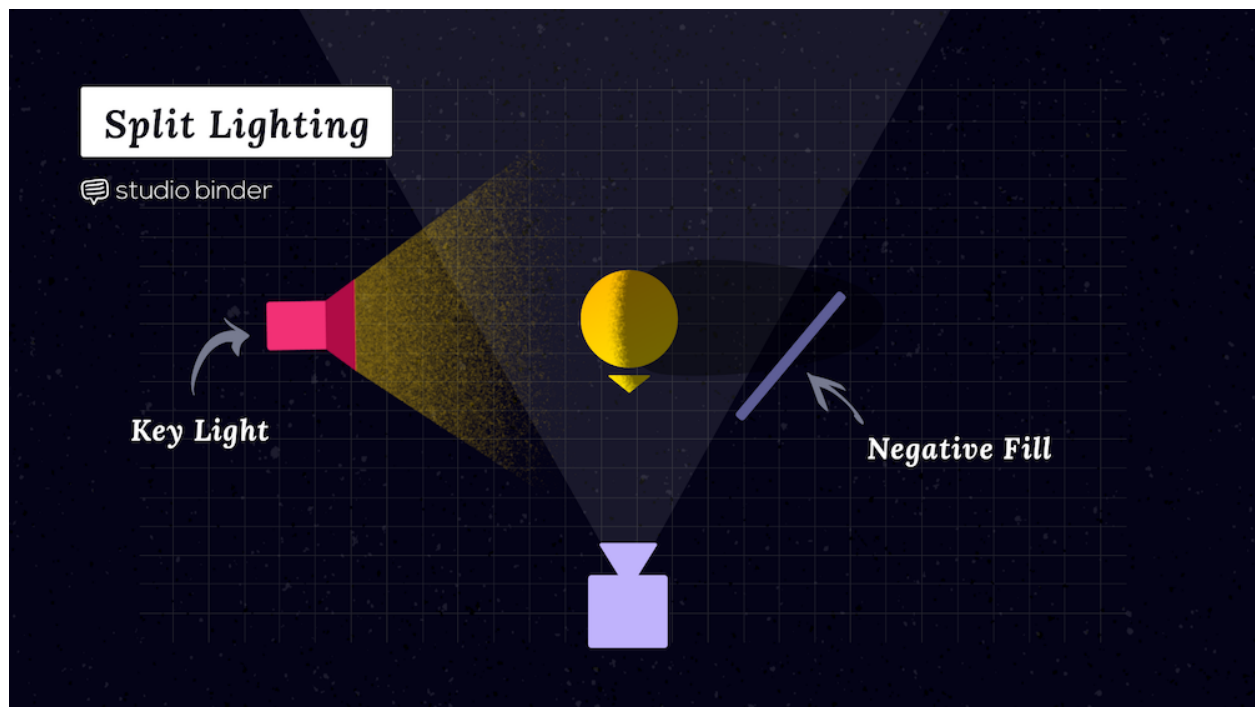


The signature Rembrandt triangle • Elvis (2022)

Traditionally, the triangle should be no wider than the subject's eye and no longer than the nose. But many filmmakers eschew this rule slightly.

Split lighting is a lighting technique that lights up half of a subject's face while leaving the other half in a shadow, essentially “splitting” the face.

This effect is achieved by a light source that is perpendicular to the subject illuminating directly from one specific side.



Split lighting setup

This is a super easy look to achieve, just place the light on the side of your subject. To ensure that the opposite side is left as dark as possible, you might create some negative fill with a flag.

Or you can also adjust the amount of information on the shadow side when editing.

If you don't want to leave the far side in complete shadow, feel free to add a reflector or board to bounce light onto that side. It will make it look a little less dramatic.

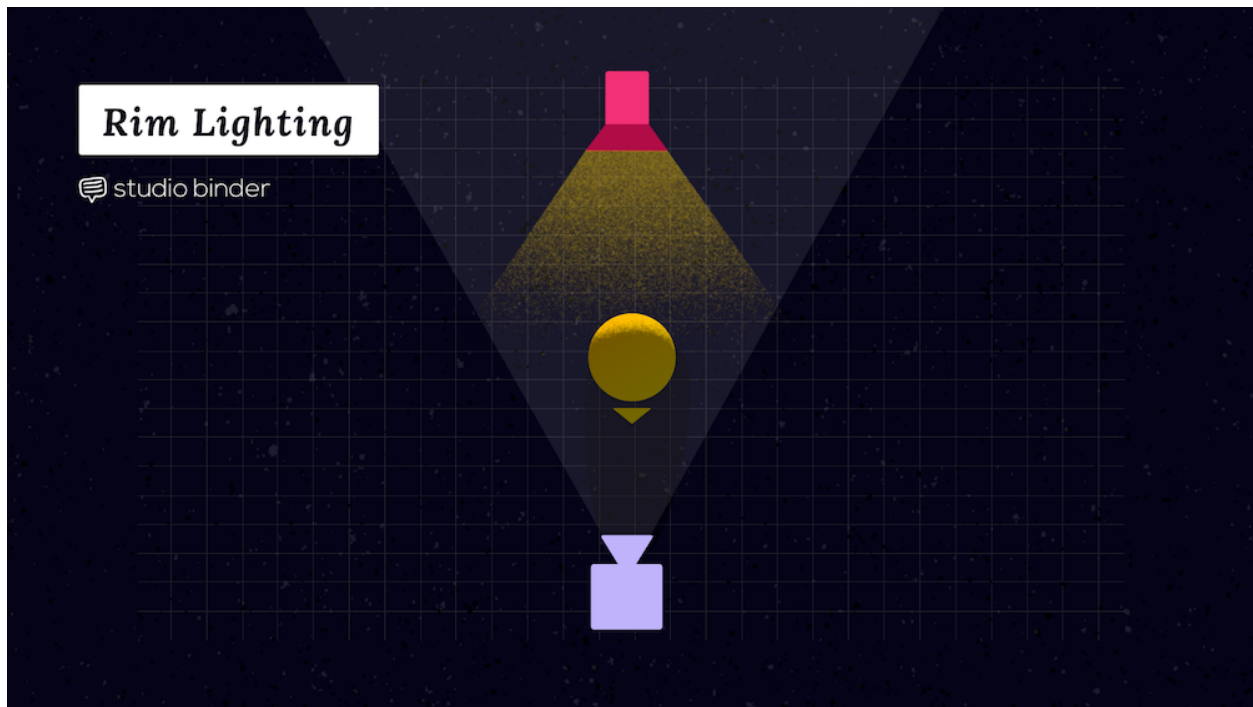


Ominous split lighting • No Country for Old Men (2007)

A downside from the sharp contrast of the perpendicular light source, is that nose shapes become more pronounced. This can be unflattering for models with larger or more pronounced noses.

Rim lighting is a technique that works really well in sports photography. It's dramatic and even a little heroic looking, where the light is literally outlining the subject.

It also provides a clear separation between the character and the background. This is especially useful because the dark side of the subject is facing the camera — so if the background is also dark, we wouldn't have that ideal separation to create depth.



Rim lighting

For this, just place the light right behind the subject. The only thing here is that your subject will be **underexposed**, so you'll have to add an additional light to see more of your character.

A small fill light can be added on the camera side or a reflector could be used to bounce the rim light back onto the subjects.

Here's a great example from *Burn After Reading*, one of the **Coen Brothers** best movies.



Precise rim lighting • Burn After Reading (2008)

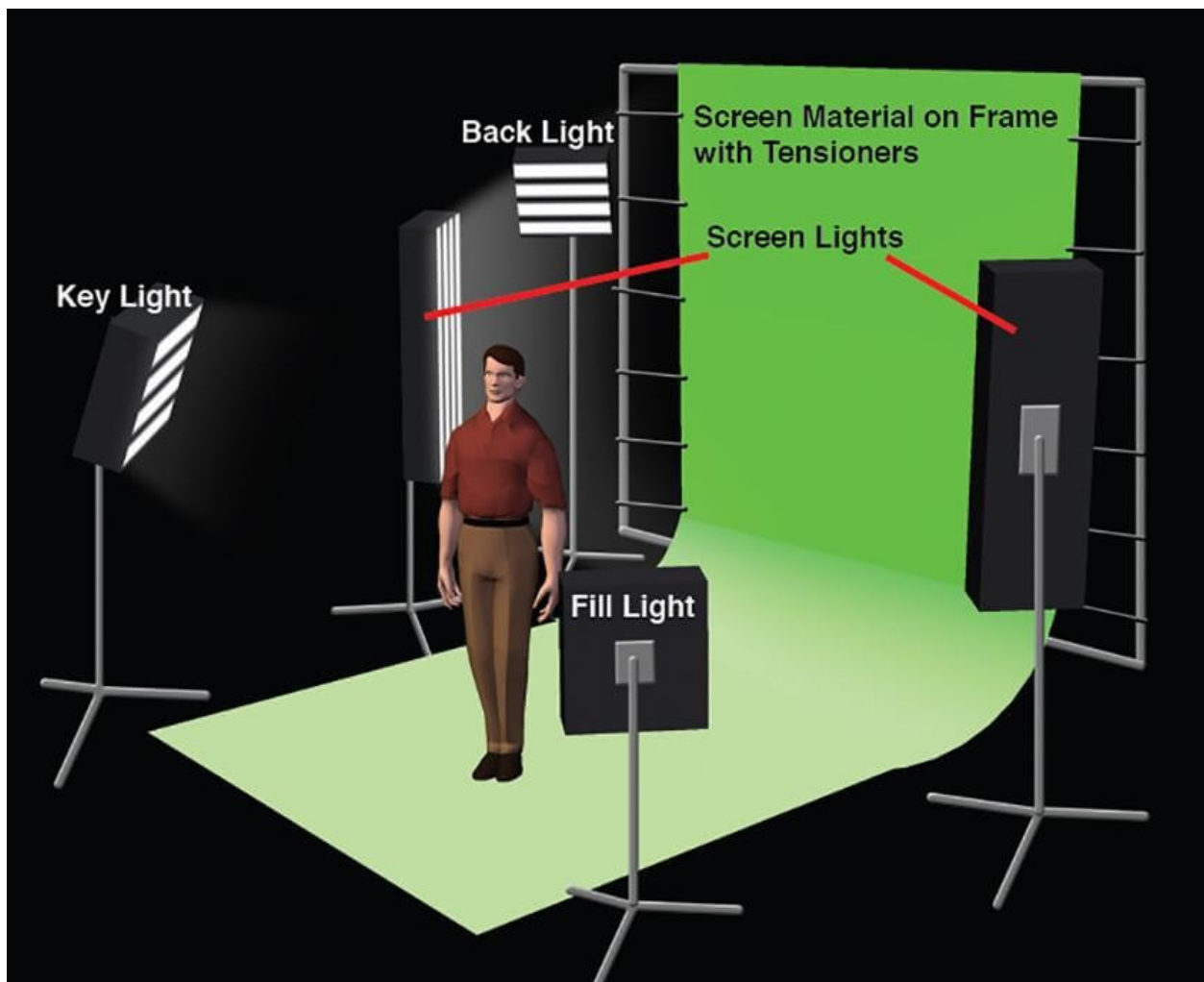
Green Screen Lighting

Lighting a green screen shot can be tricky but it's far from impossible. The biggest thing to remember is that the screen itself needs strong, even light. Usually, this involves two sets of lights (one for the screen, one for the subject) but there is an alternative we'll get to in a second.

Ultimately, it doesn't matter a great deal what specific lights you get. You just want to make sure they're exactly the same. Different

lights have varying color temperatures. This leads to an uneven color balance.

In the setup below, you can see the “screen lights” behind the subject solely dedicated to providing strong, consistent light on the screen. Then the subject has their own three-point lighting setup that ensures they still have dimension and depth.



Green screen lighting setup

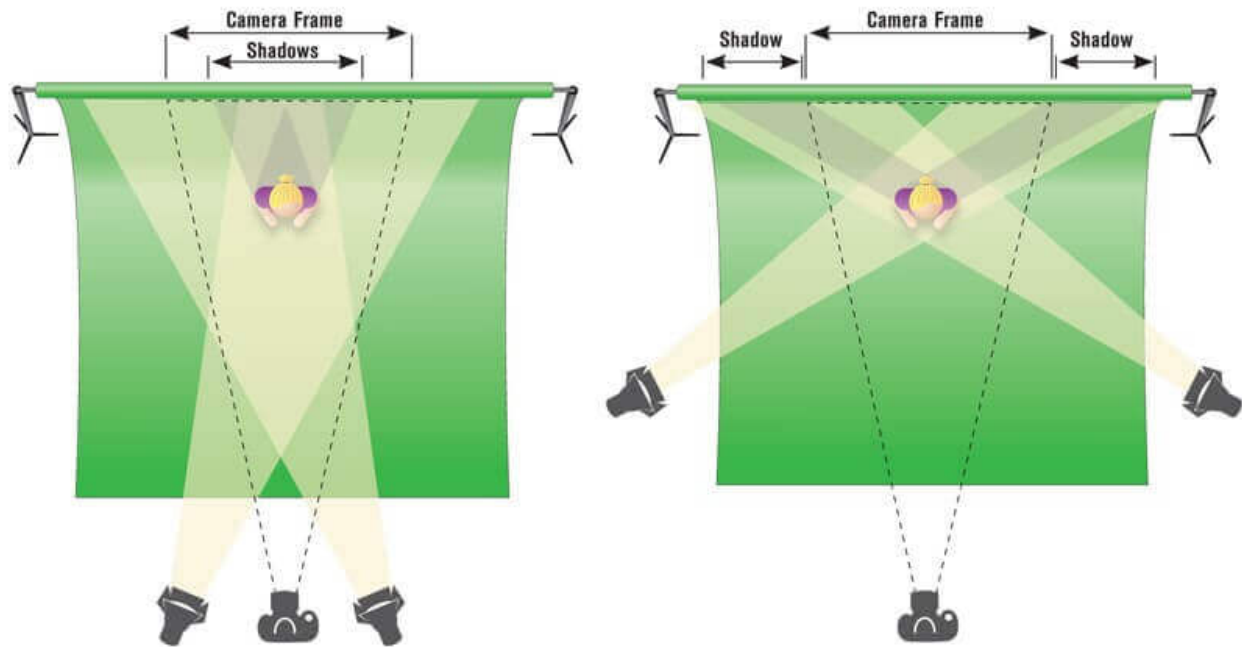
Remember, though, that the lighting on the subject needs to match whatever background you will be compositing it with. This includes a consistent direction, color, quality, and quantity.

One key consideration to remember is to keep enough distance between your subject and the screen. This will help avoid “green light” from bouncing back onto your subject and compromising the [chroma keying](#) process. In general, your subject should be about eight feet away from the green screen.

Once you have your subject set, it’s time to light the green screen. Each light should be the same distance away and at the same angle. This is the best way to ensure even lighting across it.

But if you don’t have dedicated lights for the screen, it’s not the end of the world. There actually is a technique that will allow you to light both the subject and the screen simultaneously.

You'll notice in these two diagrams that Setup #1 (left) will cast shadows from the subject, while Setup #2 (right) keeps the shadows outside the camera's [field of view](#).



How to avoid shadows on a green screen

That being said, you would have to settle on a high-key image since the lights on both sides would need to be equal strength. But if you're stuck with only two lights, that's a compromise you have to be willing to accept.

CHAPTER 9

Lighting Scenarios

There are countless possible scenes and lighting scenarios. Each has a different context, emotional temperature, or dramatic goal — with an individualized lighting plan to support it.

However, if we boil these possibilities down, there are four main categories: daytime vs. nighttime, and interior vs. exterior.

Again, there's no one correct way to approach any of these scenarios but there are some considerations to be made to help your general approach. Let's start with daytime interiors.

Day Interior

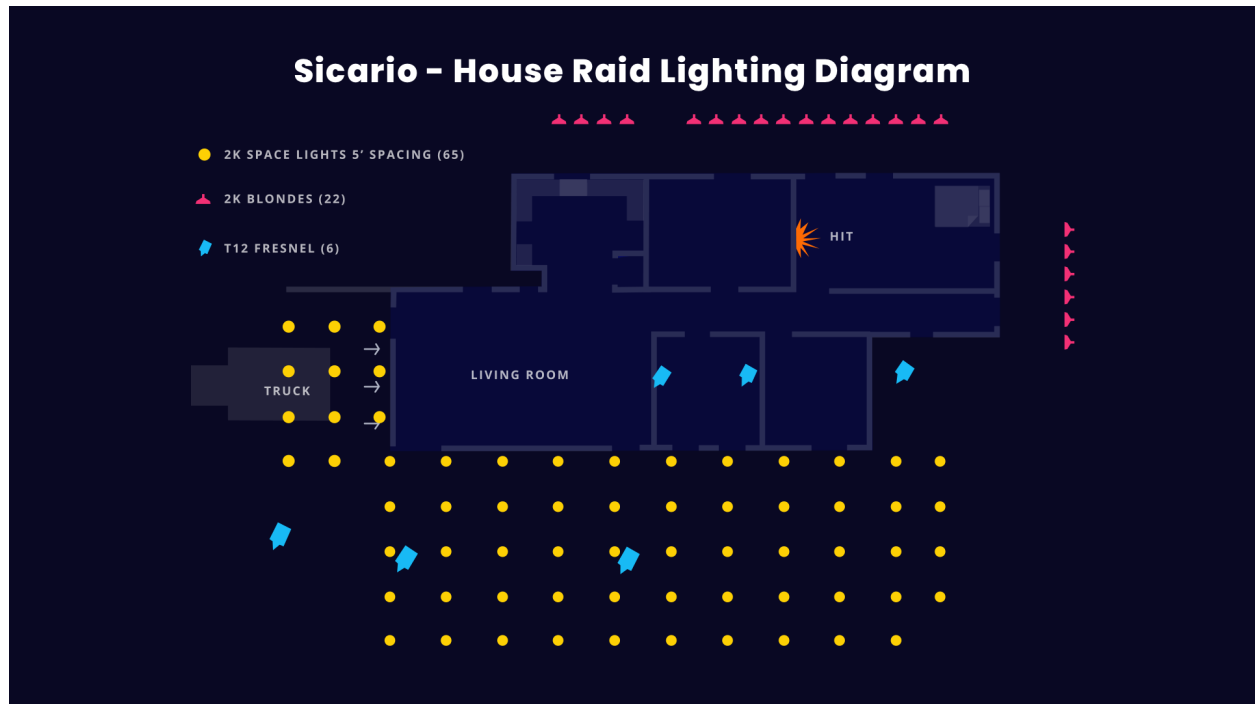
Natural light is obviously a great light source for outdoor photography. But it is also a great way to expose your indoor photography as well. As natural light pours into a space through windows and doors, it is shaped in interesting ways. Depending on the location, light through a window can be all you need.

In fact, this is how DP [Roger Deakins](#) shot the house raid scene from [Sicario](#). A vast majority of light inside the house comes from sources placed outside, shining through the windows.



Daytime house raid in Sicario (2015)

Here's Deakins' lighting diagram for that scene. As you can see, there were dozens of lights involved, not necessarily at the same time for each shot however.



Sicario House Raid Lighting Diagram

Another strategy for shooting day interiors is to use practical lights. In particular, when you have a location or set in which a majority of the scenes will be shot, take the extra time to build lighting into the set. This will allow a lot more freedom and time within that space to shoot.

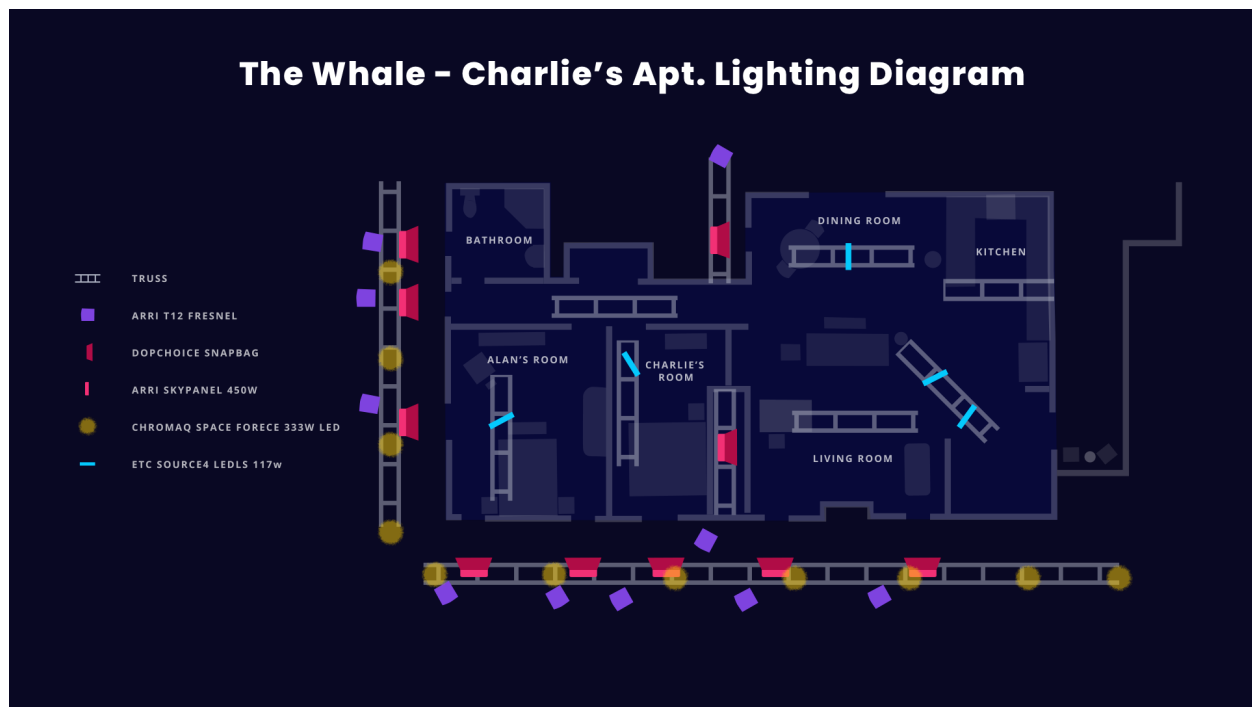
An example of this can be found in *The Whale*, shot by Matthew Libatique. Charlie's apartment is a primary location and the set was designed to function with as many practical lights as possible.

Here's a BTS look at the set with a combination of practical lights providing motivation for non-practicals.



Charlie's apartment interior • The Whale (2022)

Here's the lighting diagram for the set. You can see that much of the “exterior” light was set up outside the set, while a few non-practical lights are positioned strategically throughout.



Lighting diagram for Charlie’s apartment

If you have the means to add “daylight” through the windows, HMIs are the way to go. Daylight registers at 5600K, making it a much cooler color temperature than the natural color of tungsten.

Although LED’s have made massive advancements in recent years, they are often either too expensive or not bright enough to imitate the sun shining through a window.

By carefully applying CTB gels or a blue dichroic filter, tungsten light transforms into much “cooler” daylight. Balance your

camera's sensor to neutralize your tungsten interior, and you will have created a realistic day interior without sunlight.

Day Exterior

No matter your budget, all filmmakers have access to one of the strongest key lights in the world: the sun. It enables us to create cinematic shots with minimal lighting equipment. Natural light is also a key component of shooting any daytime exterior shots.

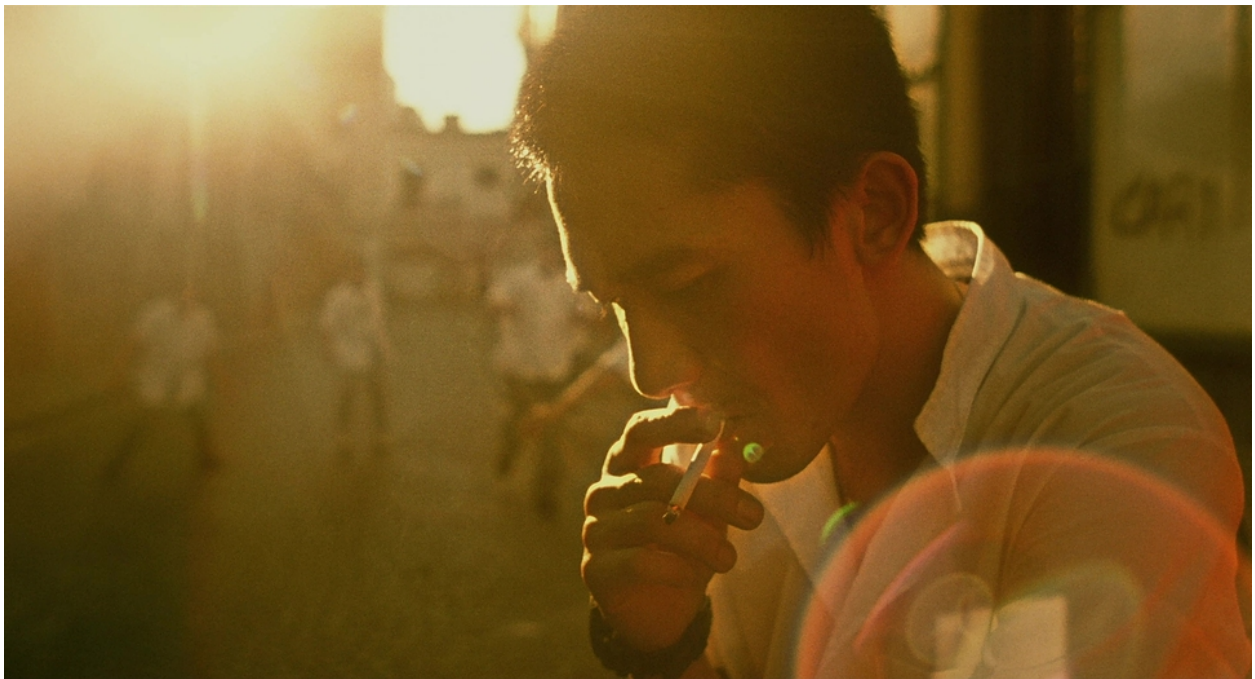


The power of the sun • Raiders of the Lost Ark (1981)

There are downsides, however, to using the sun as a natural key light. The sun may lead to **overexposed** shots if shooting midday or close to high noon. The quality of the sunlight can also be inconsistent due to its dependence on the weather.

There are a few techniques that can help cinematographers utilize the sun as a key light.

The most cinematic technique is shooting at the first hours of sunrise or last hour of daylight also known as **golden hour**. Shooting at these times provides a hard but colorful light.



Golden hour in effect • Happy Together (1997)

Sometimes cinematographers use reverse key lighting with natural light by having the low sun behind the subjects with a bounce, reflector, or additional light filling in their front side. This allows for a frame to partially include the glow of the sun in the frame while still properly exposing their subjects.

Although the quality of the light allows for a much more cinematic shot, the time constraints of shooting at golden hour can make it an inefficient light source. For more, check out our storyboard of [magic hour lighting examples](#).

Another technique cinematographers use for shooting with the sun as a natural light source is to wait for overcast weather. The clouds of overcast weather diffuse the sunlight and make for a softer lighting style.

Although the quality of the light is softer with overcast weather, it can also be inconsistent depending on the cloud coverage.



Overcast provides great diffusion • Dune (2021)

When shooting exterior shots, it is a good idea to use the sun as a backlight. The sun can often be too harsh of a light to be a source, but can be utilized as a backlight depending on the sun's angle.

If you plan on using natural light, it's imperative to invest in a good reflector. We can't immediately control the direction of natural light. However, a reflector allows us to bounce natural light in the direction we need it.

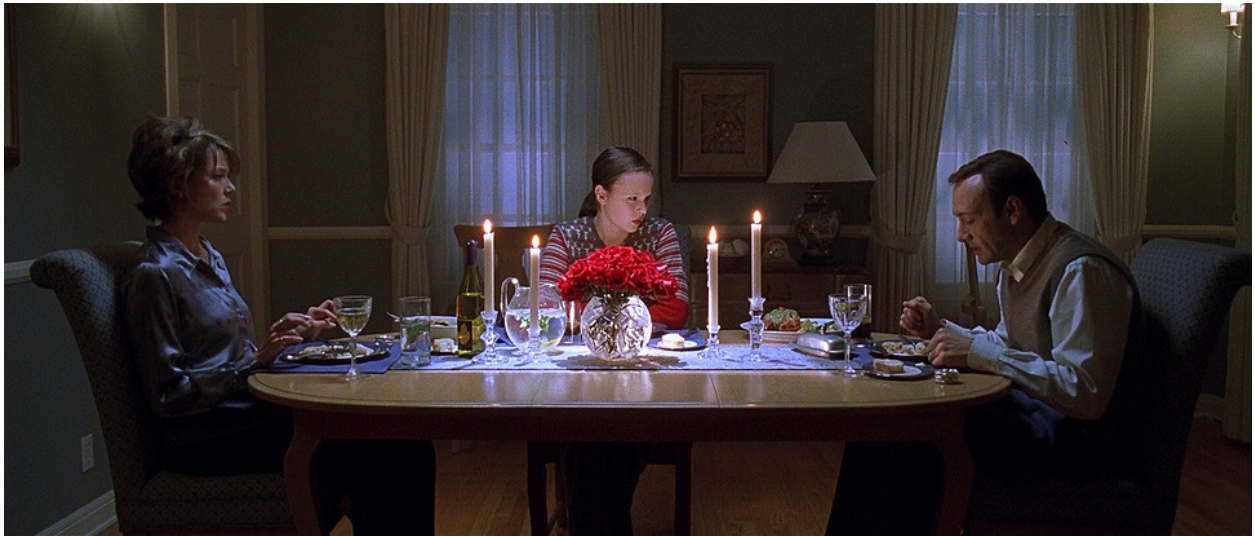
As you can see, most of these tips are ways to work with natural light and not entirely against it.

Night Interior

Shooting inside a set or location at night provides a lot of opportunity to play with color temperature. This could involve bold colors from neon sources or by mixing different colors in the same shot.

One of the most common combinations is the warmth of tungsten light (candles, lamps, etc.) mixed with cool “moonlight.” This creates imagery with dynamic color contrast yet still motivated.

Let’s look at this still from *American Beauty*.



Contrast and conflict • American Beauty (1999)

The warm tungsten interior clashes with the cool light leaking through the windows. Notice how the warm candlelight seems to only illuminate Jane (aided by an off-screen top light), while her parents are left in the colder moonlight.

To achieve the look, motivate your light by imitating the light given off by real sources. For the remainder of your set or location, light with daylight-balanced lights or put CTB color gels on your tungsten-halogen lamps.

LED lights balanced for daylight make for a great option to imitate soft moonlight, however, if dimmable LEDs with high [CRI ratings](#) (color rendering index) can be cost prohibitive.

Using a dimmer with LEDs can lead to flickering, that's why it is recommended to use tungsten-halogen lamps with CTB gels for cost-effective, high-quality creation of moonlight.

[Stanley Kubrick](#) makes heavy use of contrast in *[Eyes Wide Shut](#)*.



Serious moonlight • Eyes Wide Shut (1999)

Notice that the light coming through the window is a deep blue, while the light from the hallway is a warm orange. Cinematographer Larry Smith was not using actual moonlight through the window, however.

To create a more stylized moonlight, they used gels on the lights to achieve a color temperature that was far bluer than it would actually be. But since the film is focused on a dreamlike aesthetic, this exaggerated lighting actually adds to it.

The other creative avenue to explore with night interiors is bold color choices.



Strong yet motivated color • Rocketman (2019)

There is a lot more “motivation” for these kinds of color choices. It’s almost a free pass to play with colored lighting. But just remember that you can go too far in a way that doesn’t balance out with the rest of the film.

Watch our video breakdown of DP [Darius Khondji’s cinematography style](#). In particular, how his use of green and gold provide an “outside-the-box” strategy for color contrast.

Night Exterior

Shooting outside at night has its own set of considerations. On one hand, you have a “blank slate” in terms of lighting. Starting from scratch, you have complete control of the quantity, quality, direction, and color of light.

You also have the luxury of the consistency of a black sky. Unlike the constant adjustments required to accommodate the arcing sun or changes in weather, night is night for hours and hours. From a scheduling perspective, shooting at night has its advantages.

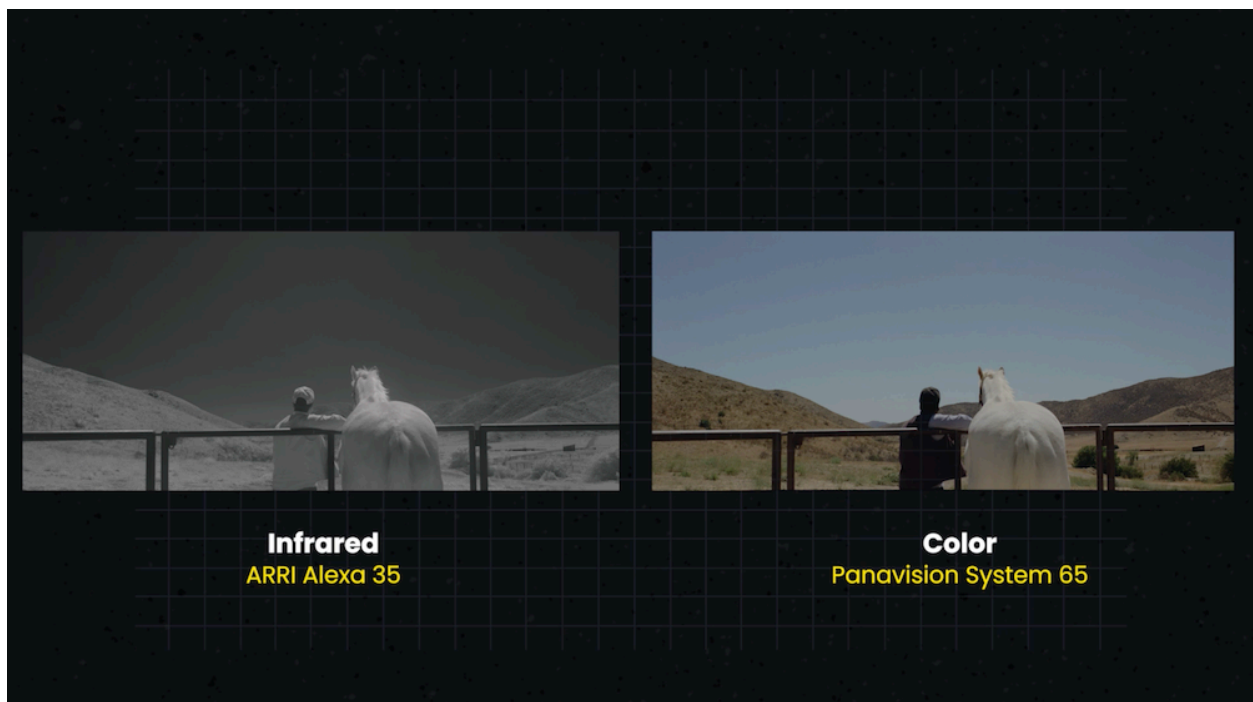


Moonlight in Moonlight (2016)

The flip side of that coin is that you still need light. A lot of it. Especially if you're shooting large areas.

One interesting example of how this was avoided is *Nope*, shot by [Hoyte van Hoytema](#). They actually shot “day-for-night,” meaning they actually shot during the day and made it *look* like night.

Essentially, they shot two images with two cameras simultaneously, one color and one infrared, and combined them in post. The result is an eerie darkness that has an unsettling amount of clarity in it.



Day-for-night in Nope (2022)

Watch our [cinematography breakdown](#) of *Nope* for details on how this was done. And read our tips for [how to shoot day for night](#).

Of course, not every production can afford this kind of setup. But there are plenty of ways to tackle nighttime exterior scenes.

One technique is to use a large overhead source, often to act as moonlight, to cover a large area.



Balloon lighting a night exterior • Prey (2022) BTS

Above is an example from *Prey* using a lighting balloon.

Even if the goal isn't to mimic moonlight, it's a good idea to get a base layer of exposure. For example, say you're shooting in a dark forest. You'll want to "overlight" it to make sure the camera registers and captures everything.

Then, in editing, you can easily darken the image to your desired level. But if it was too dark on set, you won't have that option.

This is especially important if you're shooting a character — you'll be kicking yourself when editing if their big [close-up](#) is too dark.



The perfect amount of image and shadow • The Northman (2022)

And this doesn't mean you should simply raise your ISO to make the image brighter. That will introduce more **film grain** or noise, possibly degrading the image quality.

No matter how good your camera is in **low light scenarios**, visual information can be lost in the dark. It might be strange to shoot a “dark forest” that’s “brightly lit” but you’ll be glad you did.

CHAPTER 10

Conclusion

In cinematography, lighting is perhaps the most important instrument. It is a fundamental that supersedes just about everything else in capturing professional-looking images.

A well-lit scene shot with a cheap camera will almost always beat out a poorly-lit scene shot with a great camera.

Hopefully it is clear that cinematic lighting is not as elusive as it may seem. You don't need expensive gear to get that image in your head onto the screen. You don't need a Hollywood budget to get a Hollywood look.

Now that you know the basics, it's time to play. Try these techniques out, make mistakes and learn from them, and along the way you'll develop your own personal relationship with light.

Every shot in every scene is different, requiring its own lighting decisions. With these fundamentals, you can experiment and make them your own. The best cinematographers know the rules, they just don't necessarily play by them.

For additional breakdowns and techniques, visit our YouTube channel's [Cinematography Techniques playlist](#).

CHAPTER 11

Glossary

Ambient light — any light that exists in a location that the crew does not add or provide.

Aperture — the adjustable opening in a camera lens that dictates how much light passes into it.

Artificial light — any light that emanates from an artificial light source, often powered by electricity.

Barn Doors — adjustable metal flaps on a light to help shape and control the direction of light.

Beadboard — a reflector with an uneven surface to further diffuse the bounced light.

Bokeh — any out-of-focus element but usually used to describe points of light that appear as glowing dots or shapes.

Book Lighting — a technique where light is bounced into diffusion before hitting the subject.

Bounce Lighting — a technique where light is bounced off various surfaces onto the subject, usually to fill in shadows.

Broad side (aka Smart side) — when the camera is positioned on the opposite side of a subject's face from the key light.

Chiaroscuro — a style of lighting defined by extreme contrast between light and shadow to separate subjects from the background while giving depth and dimension to the image.

Color temperature — the color of light emitted at a particular temperature.

Contrast ratio — the ratio that measures the difference in brightness between two parts of an image, often both sides of the subject's face or between the subject and the background.

C-stands — all-purpose stands that can be used to hold lights, diffusion, flags, or any other piece of gear in a fixed position.

Daylight — the color temperature we associate with pure sunlight, typically around 5,900K.

Diffusion — a technique of placing translucent material in between a light source and the subject for the purpose of scattering and softening the light.

Diffusion paper — translucent paper that can be attached to the front of a light to create diffusion.

Dimmer — a device that adjusts the power to a light source to lower or raise its intensity.

Director of photography (aka Cinematographer) — the person in charge of capturing the images on a film set, including the camera, lens, and lighting setup.

Dynamic range — the range between the darkest and brightest parts of an image that a particular camera can capture while still registering visual information.

Egg crates — a lattice structure placed on a light to help control and focus light.

Exposure — the amount of light that hits the camera's sensor or film stock.

Eyelight — a small light dedicated to adding a glint to the subject's eyes.

False color — a monitor that colors the actual image with colors determined by the IRE scale so you can see exactly what the exposure levels are in the image itself.

Foamcore — a reflector with a smooth surface to bounce light.

F-stop — aperture settings that either double or halve the amount of light with each “stop.”

Flags — opaque material, usually black, to block or shape light from unwanted areas of the shot.

Fluorescent lights — a type of light that uses electrical current to excite the mercury vapor inside the tube, usually producing soft light.

Gaffer — the person working directly under the Cinematographer to help plan and execute light setups, including the necessary gear and lighting equipment.

Gel — thin, plastic, colored sheets placed in front of a light source to manipulate the color temperature.

Hard light — light that hits the subject directly from the source, creating sharp shadows.

High key lighting — when the subject and background are lit relatively evenly.

Histogram — a monitor that graphs the brightness of an image with brightness on the y-axis and the number of pixels along the x-axis, also using the IRE scale 0-100.

Incidental light — the light that hits the subject.

Inverse Square Law — a scientific law that measures how much light is lost at specific distances from the source with an equation: intensity equals one over the distance squared.

ISO — short for the International Organization for Standardization, but in photography and cinematography is the light sensitivity of film stock or the equivalent “sensitivity” in digital sensors.

Kelvins — the unit of measurement used to describe color temperature.

Kino Flos — a bank of tube lights coming in a variety of color temperatures and can be placed in inconvenient places like on a wall or the ceiling where traditional lights would not fit.

LED lights — a grid of tiny lights with a vast array of color and intensity settings that also produce much less heat.

Lens flare — a visual artifact that occurs when a light source hits the camera lens directly, the shape and color of which depends on the lens and its construction.

Light — a portion of the electromagnetic spectrum that is perceivable by the human eye.

Light falloff — the loss of a light's intensity the further it gets away from the source.

Light meter — a handheld device that is used to measure incidental light hitting a subject or background for the purpose of determining exposure settings on the camera.

Light stands — metal stands designed to hold lights in position.

Low-key lighting — when the subject and background are lit unevenly with greater contrast.

Lumens — a measurement of how much light a source produces.

Lux or foot candles — a measurement of how much light hits the subject (lux uses the metric system while foot candles use the imperial system).

Magic Hour (aka Golden Hour) — the time of day (just before sunset and just after sunrise) when the sunlight is softer and more colorful.

Motivated lighting — when a light source on-screen justifies additional lighting of the same direction and color temperature.

Natural light — any light that emanates from a natural light source (sun, moon, fire, etc.).

Neutral Density Gels — thin, plastic sheets placed on lights or windows to cut the amount of light coming from the source.

Practical lighting — when lighting sources are built into the set that provides illumination.

Reflective light — the light that reflects off the subject and is registered by the camera.

Reflector — any material used to “bounce” light from the source onto the subject.

Scrim — a wire mesh insert placed in front of a light to reduce its intensity without adjusting the color temperature.

Short side (aka Dumb side) — when the camera is positioned on the same side of a subject’s face as the key light.

Silk — stretched, translucent material used to diffuse larger light sources.

Soft box — a box that wraps around a light with a translucent front to create diffusion.

Soft light — light that is diffused before hitting the subject, creating soft shadows.

Spill — unwanted light that “spills” onto a subject or background, often remedied with flags.

Spot meter — a tool that pinpoints a particular spot in an image to determine the exposure.

Shutter speed — the speed at which a camera's shutter opens and closes to determine how long the film or sensor is exposed to light.

T-stop — lens setting similar to f-stops that accurately measures how much light actually hits the film or sensor.

Tungsten light — the color temperature we associate with incandescent light, typically around 3,200K.

Watts — a measurement of how much power a light source requires.

Waveform — a monitor that measures the amount of overall brightness in an image displayed in a 1:1 relationship (top left of the waveform = top left of the image) using the IRE scale 0-100.

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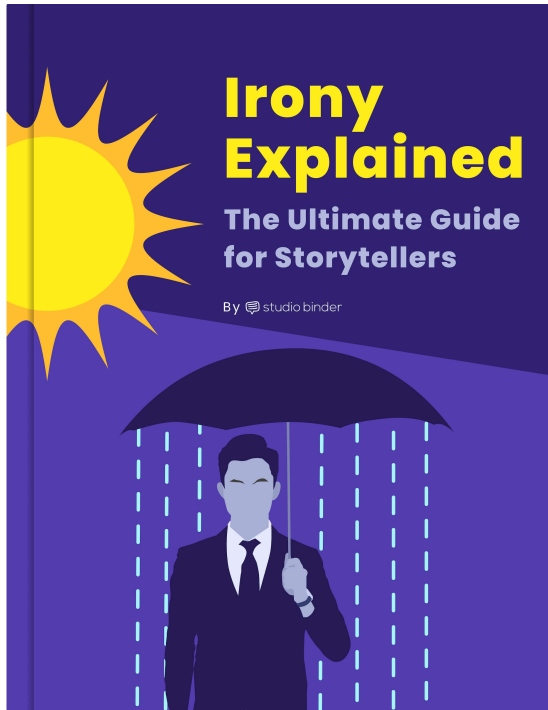
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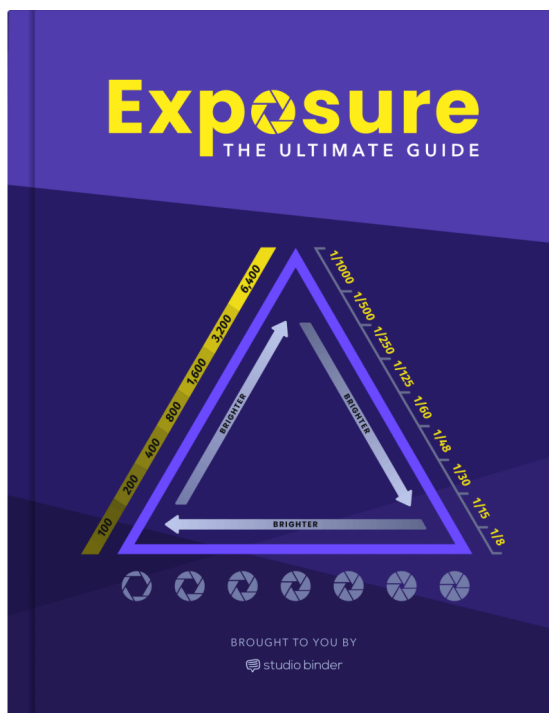
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