**Still Photography
BA(JMC) UNIT 3**

**Topic 1:
Sources of Light: Natural and Artificial**

Introduction

"*Available light is any damn light that is available*"

—W. Eugene Smith
(American photojournalist)

WHAT IS LIGHTING IN PHOTOGRAPHY?

- Photographic lighting is the illumination of scenes to be photographed.

- Lighting assumes a critical part in photography. It can breathe life into a photograph, it can produce impacts, including astounding shadows or outlines, or it might have a particularly negative impact by making unwanted glare and reflections.

- A photograph simply records patterns of light, color, and shade; lighting is all-important in controlling the image.

- In many cases, even illumination is desired to give an accurate rendition of the scene.

WHAT IS LIGHTING IN PHOTOGRAPHY?

- Scientific Definition : Technically speaking light (more specifically visible light) is part of electromagnetic wave spectrum. It is usually refers as visible light which is visible to human eye and responsible for the sense of sight. (source: Wikipedia)
- Well this is the most simple scientific definition of light but if you are still confused about some terms, don't worry, next we will be going to discuss the role of light in photography
- Light in Photography are What the Colours are in Painting In painting there is a canvas (a material where the image will be reproduced), colours (the medium for creating image) and a brush (a tool which is used to apply colours on canvas). In photography you can say that:
- Colours = Light (raw material)
- Brush = Lens (handles the raw material)
- Canvas = Sensor/Film (Physical reproduction medium)
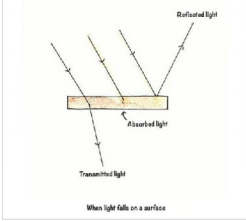
WHAT IS LIGHTING IN PHOTOGRAPHY?

Light in photography is what colors are in painting

Properties of Light

- Reflection/ Refraction/ Absorption
  - When Light Strikes The colour of the objects we see in the natural world is the result of the way objects interact with light. When a light strikes an object, it can be absorbed, reflected, or transmitted by the object. All objects have a degree of reflection and absorption. It is due to selective reflection and sometimes due to transmission that gives colour to different surfaces.
  - All three of the properties have different use in photography industry. Reflection amounts to the ambient nature of natural light. Sun is the only major source in nature but most surfaces reflect light that comes from sun acting as pseudo-sources. It is also used in making reflectors, is the basis of how we see colours and used in bounce off flash. Transmission is the basis of making equipments like diffusers, filters and gels. Absorption is mainly used to block light for subtractive lighting.
  - In natural world, light can also be transmitted by an object with no effect (example: X-rays) however they have no visual effect so no worries.
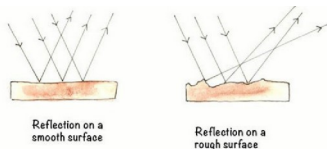
Properties of Light

- Reflection
  - Reflection most common and most used property of light. One of the most common use is when flash light is bounced off the ceiling or a wall to obtain a diffused soft light on the subject. For photography purposes we can classify it into two broad categories: regular reflection and diffuse reflection.
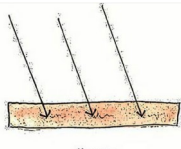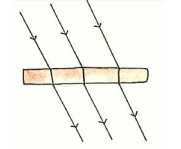
Properties of Light

- **Reflection on a Smooth Surface (mirror)**
  - Light bounces off the surface of a material at an angle equal to the angle of incoming light wave. Example : mirror or glass.
- **Scatter or Diffuse Reflection (reflection on a rough surface)**
  - Light waves bounce off at many angles because the surface is uneven. Example : earth (that is why sky is blue).
- **Reflection on a Smooth Surface (mirror)**
  - Light stops at the object and does not reflect or refract. Objects appear dark or opaque. The energy thus absorbed manifests as heat. Absorption is useful in subtractive lighting techniques. Example : Wood
- **Transmission**
  - Transmission is when light passes through the surface. Filters or gels work on selective transmission.
    - ✔ **Direct Transmission**
      - When light goes through an object and no change in direction or quality takes place. For example - glass or air
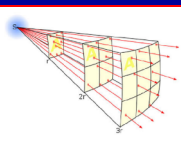
Properties of Light

- **Transmission**
  - Transmission is when light passes through the surface. Filters or gels work on selective transmission.
    - ✔ **Diffuse Transmission**
      - When light goes through a transparent or semi-transparent object with texture. Example : frosted glass Light will be softer, less contrast, less intensity.
    - ✔ **Selective Transmission**
      - When light goes through a coloured object. A portion will be absorbed and another portion will be transmitted Source: through this object.
- **Refraction**
  - Light goes through the object and bends at an angle. Example : diamond (greater angle) or water (lesser angle)

Absorption

Refraction

Inverse Square Law

- Intensity of a point source of light is inversely proportional to the square of the distance. In simple terms if we double the distance, the intensity of light drops to 1/4th. The effect of this law is not particularly visible in sunlight but it is very apparent while using artificial lights especially in studio. Generally speaking it means that light falls off drastically with distance. So while using flash and other artificial sources, distance matters a lot.

Inverse square law
(Courtesy : Wikipedia creative commons)

Light source distance = 1 meter

Light source distance = 2 meter

Properties of Light

- **Color Temperature**
  - The temperature at which a black body would emit radiation of the same colour as a given object. In simple language, colour temperature is the colour of the light. It depends on the source of the light that is producing it.
- **White Balance**
  - When the source of light is not completely white, the whites in the image comes out tinted. For example, a white paper will look yellow in a yellow tungsten light. White balance is adjusting the setting in the camera to compensate for the coloured light. So as the name suggests it is adjusting to get the right white.
  - In most of the cameras there are in-built presets for different type of common lights like tungsten, flash, shade, daylight etc. Sunlight is neutral with a temperature of around 5500K, the temperatures below it contains warm tones (red, orange, yellow) and the temperatures above 5500K belongs to cool tones (blue, magenta).

AWB   Auto WB setting

7000K shade

6000K cloudy

6000K flash/strobe

5200K daylight

4000k fluorescent

3200K tungsten

Custom WB setting

On camera WB settings

Properties of Light

Properties of Light

Properties of Light

Properties of Light

- **Colour**
  - Light consists of seven different colours. When all the different wavelengths belonging to different colours combine, it produces white light. Colour as we see in universe is the result of selective reflection and selective transmission of light. It is in principle effect of the light waves that come from the object to our eyes. These waves can be the result of reflection, transmission or maybe the object is the light source. So that is it we see colours in object due to the light waves coming from them.
- **Quality of Light**
  - Relative size of the light source with respect to subject renders the light source as hard/soft. Hard light has more contrast, accentuate the texture and gives a more decisive feel in the photograph. Soft light in turn has less contrast, it makes the surface look smooth and gives a more moderate feel. In a way you can see hard light as black/ white and soft light as the mid-tones between the extreme blacks and whites of hard light. Diffused light is soft light as light scatters and effective size of light source increases.
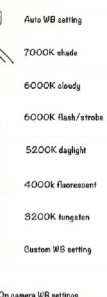
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Properties of Light

- **Hard & Soft Light**
  - This initial segment analyzes a standout amongst the most fundamental issues: the distinction between shooting in a hard and delicate photography lighting.
  - Hard light creates very much characterized, dark shadows and has a tendency to start from a separate light source, which is generally either little or situated far away. By differentiating, delicate light delivers either delicate shadows or no shadows by any means.
  - It can be produced from a few light sources, by diffusing light utilizing some boundary (e.g. a diffuser or even only a sheet of paper), or by reflecting light off various surfaces, so the subject is hit from different edges.
  - In normal lighting conditions, hard light is delivered on a sunny day when there is practically zero overcast cover, and when the sun is high in the sky - which is something that is, for the most part, to be kept away from, especially by amateurs. Shooting in different sorts of climate, e.g. dark days, foggy conditions, or even where there is air contamination, will create delicate light, as the sun's beams are reflected or diffused by the particle noticeable all around

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Properties of Light

Quality of Light

Soft Light
- Create soft shadows.
- Difficult to control as it is not that focused and light spills in all directions.
- Presents form through a range of tones

Hard Light
- Create harsh shadows.
- Accentuate textures.
- Easy to control and shape as it can be easily directed.

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Advantages of Lighting

- **LED LIGHTING IS MORE AFFORDABLE**
  - Consider the entire lifespan of the product, it's clear that LED lights are a lot more affordable than other lighting sources usually used in shooting photos (tungsten lights, flash lighting, etc.).
  - This is because they are much longer lasting, and far more energy efficient, i.e. they utilize far less power in order to generate a given lighting effect.
- **THEY USE FAR LESS POWER**
  - LEDs require a lot less power than other lighting alternatives, for example some LED lights require less than half the power of a standard 300 watt incandescent bulb, whilst being three times as bright.
  - Not only does this make them cheaper to use, it also means they are more versatile, as you can plug them into any standard power outlet without fear that they will blow a fuse or trip the circuit breaker, starting a house fire.
- **LEDS ARE A LOT MORE PORTABLE**
  - Unlike conventional incandescent or tungsten based lights, many LEDs come with the option of being battery operated.
  - That means they can be used anywhere — no need for any external wires – which is great if you are shooting in remote or out of the way locations.
- **THEY GENERATE A LOT LESS HEAT**
  - At LED light only heat up to a small fraction of the temp that a standard, 300-watt tungsten light does when used over a prolonged period? It's true. This is a great recommendation for those of you are inexperienced working around lighting and photography equipment.

Types of Lights

- **Natural Light:** Very obviously, everything that glows naturally. The sun, moon, fireflies, etc..
- **Artificial Light:** Man-made lights. The light bulbs.

Different time, different light

Time	Light Intensity	Color Temperature
Sunrise	Very soft	Warm
Morning	Soft	Bluish
Midday	Very harsh	White
Afternoon	Harsh	White / Bluish
Sunset	Very soft	Warm
Twilight	Very soft	Blue

Types of Lights

- **Natural Light:**
  - Light changes throughout the day.
  - Same scene, but different feel at different times.
  - Best time for photography is usually sunrise/sunset.
  - Soft golden light. Also called the golden hour.
  - Use the lights to your best advantage.

Many kinds of artificial lights

Incandescent
The old school bulb, produces warm light.

Fluorescent
Regular Joe you find everywhere. Warm or cold.

Types of Lights

Many kinds of artificial lights

Halogen
Commonly used in cars.
Very bright, very hot.

Flash
Photographer's best friend.

Many kinds of artificial lights

LED Panel
The upcoming new
technology. Getting more
popular.

Strobe
The big guns commonly
used in studios.

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Artificial Lights

What is the big deal?

Just like natural light, each artificial light produces different light qualities.

Type	Light Intensity	Color Temperature
Incandescent	Soft	Warm
Fluorescent	Harsh	Warm / Cold
Halogen	Very Harsh	Almost neutral
Flash	Very Harsh	Almost neutral
LED	Soft	Warm / Cold
Strobe	Very Harsh	Almost neutral

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How to measure light

· **Guide Number (GN): The commonly used quantifier in photography equipment.**
· **Goes by the formula of GN = distance X f-number. Or simply, the higher the number, the more power the light is.**
· **Lumen and Lux: More commonly used in the industry, but it's the same higher number, brighter light.**

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What happens when light falls on an object?

- **Shadow:** We should already know this. Dark area where light is blocked by an opaque object.
- **Highlight:** Opposite of shadow. Bright area where light directly falls on.
- **Core:** Transition between highlight and shadow.

Hard Light vs. Soft Light

- **Hard light:** Harsh lighting that has a very defined core and strong sharp shadows.
- **Soft light:** Gentle lighting that has a smooth core and soft shadows.

Direction and Angle of Light

- Direction of light simply means the angle at which you have placed the source or from which direction the light is falling.
- Direction is one of the most important aspect in lighting. Good directional skill can help you create a great picture with multiple effects.
- When you give lighting from below it leads to various dramatic effects.

Lighting Techniques
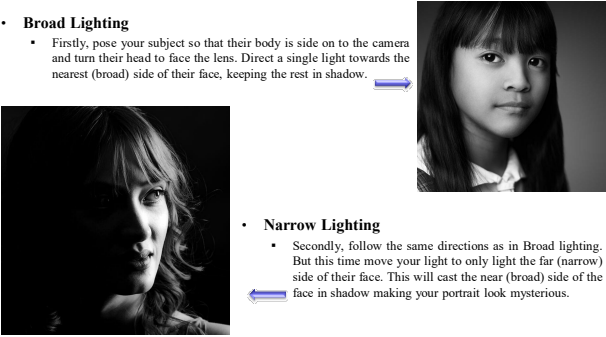
- **One Point Lighting**
  - In this setup or technique there is only one light source. As there is a single source of light, light shines directly on the subject. The light source can be placed in front of the subject because if we place our light in any direction of the subject it will create shadow. It will make half of the image black and other white.

10 One Light Portrait Setups
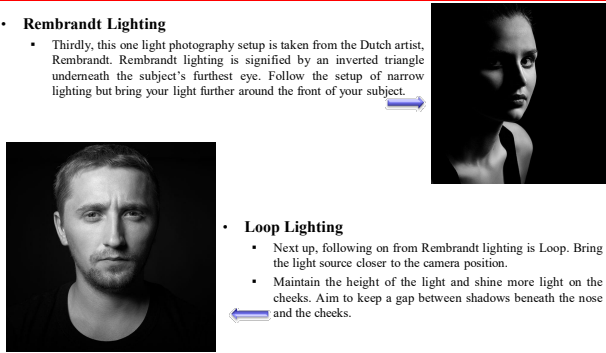
- **Broad Lighting**
  - Firstly, pose your subject so that their body is side on to the camera and turn their head to face the lens. Direct a single light towards the nearest (broad) side of their face, keeping the rest in shadow.

- **Narrow Lighting**
  - Secondly, follow the same directions as in Broad lighting. But this time move your light to only light the far (narrow) side of their face. This will cast the near (broad) side of the face in shadow making your portrait look mysterious.

10 One Light Portrait Setups
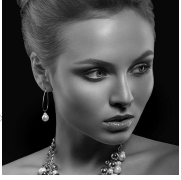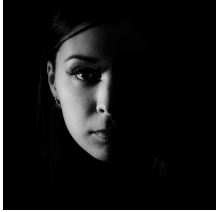
- **Rembrandt Lighting**
  - Thirdly, this one light photography setup is taken from the Dutch artist, Rembrandt. Rembrandt lighting is signified by an inverted triangle underneath the subject's furthest eye. Follow the setup of narrow lighting but bring your light further around the front of your subject.

- **Loop Lighting**
  - Next up, following on from Rembrandt lighting is Loop. Bring the light source closer to the camera position.
  - Maintain the height of the light and shine more light on the cheeks. Aim to keep a gap between shadows beneath the nose and the cheeks.

10 One Light Portrait Setups

- **Butterfly Lighting**
  - Butterfly lighting is more commonly applied to female models, as it is designed to emphasise cheeks, and disguise the neck area. It is a favourite amongst many portrait photographers. Raise the light directly behind the camera position and tilt downwards at 45 degrees.
  - Only aim to create 2 shadows. One underneath the nose, and the other under the chin.

- **Split Lighting**
  - Split lighting is incredibly easy as a one light technique. Start by facing your subject towards the camera and position a light source 90 degrees to their body. It will 'split' the face in half light and shadow. Perfect for telling a dark or sinister story.

10 One Light Portrait Setups

- **Silhouette Lighting**
  - Place your light behind your subject shrouding their face in shadow. Using soft lights will cause 'spill' and features on the broad side may be visible to the camera. Harder lights will give you a cut-out silhouette effect.

- **Clamshell Lighting**
  - This portrait light photography pattern uses a light that falls on the subject from above. But you'll need a reflector under their chin to fill in the shadows for a softer light. The look is characterised by 2 catchlights in each eye and a soft shadow below the subject's chin. When done correctly it'll exaggerate the cheekbones and jawline.
  - Set up a butterfly lighting technique with the light above and behind the camera, but angled down about 45 degrees. Ask your subject to hold a white reflector down by their waist. The reflector will bounce some light back up as a fill.
  - The resulting soft shadows on the cheekbones can slim the face and define the jawline. It's like a giant one softbox lighting setup.

10 One Light Portrait Setups

- **Floor Lighting (or Uplighting)**
  - While you may not see floor lighting as flattering it can be used in portrait photography as a creative way of adding mood, drama and atmosphere in a low key setting.
  - We've all done it with a torch in hand pretending to be Dracula. Position your one light underneath your subject's chin and let the light highlight the eyebrows, tip of the nose and across the cheekbones. The eye sockets will look dark and ominous – but this is intentional to the setup.
  - Using a harsh light source such as a torch will better define the edges of where the one light falls. Soft light may spread too much for this effect. This is a fun one light portrait setup to try with kids.

- **Overhead Lighting**
  - While you may not see floor lighting as flattering it can be used in portrait photography as a creative way of adding mood, drama and atmosphere in a low key setting.
  - We've all done it with a torch in hand pretending to be Dracula. Position your one light underneath your subject's chin and let the light highlight the eyebrows, tip of the nose and across the cheekbones. The eye sockets will look dark and ominous – but this is intentional to the setup.
  - Using a harsh light source such as a torch will better define the edges of where the one light falls. Soft light may spread too much for this effect. This is a fun one light portrait setup to try with kids.

Lighting Techniques

- **Two Point Lighting**
  - This lighting setup includes Key and Fill light
  - Key Light: The first light set is usually the key light. It's positioned thirty to forty five degrees from vertical. The lighting angle is the best for people with normal features. The key light is focused on the subject by putting the bulb in the "full spot" position with center beam.
  - Fill Light: Fill light is added on the side of the camera opposite the key light. Fill light should be about half the intensity of the key and back light. It should also be softer, producing no harsh shadows. Often a broad, scoop or soft light is used instead of a spot light.

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Lighting Techniques

- **Three Point Lighting**
  - Three-point lighting is the standard form of professional lighting in video production and still photography. It involves using three light sources placed in three different positions.
  - By playing with the size, distance, intensity, and position of these light sources, including their degree angle, it is possible to control how light and shadow fall on a subject, creating different moods.
  - Three-point lighting is a traditional method for illuminating a subject in a scene with light sources from three distinct positions. The three types of lights are key light, fill light, and backlight.

Three Point Lighting

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Lighting Techniques

- **Key light:**
  - This is the primary and brightest light source in the three-point lighting setup. It gives a scene its overall exposure.
  - Photographers typically position this main light slightly off to the side of the camera and the front of the subject, on a light stand at a 45-degree angle to the camera, which creates shadows on the opposite side of the subject's face, giving it dimension and depth.
  - The primary light creates the mood of a scene. Depending upon its position and the supplemental lights used in the overall lighting, it can create a high-key image (evenly, softly lit and atmospherically upbeat) or a low-key image (high contrasts, deep shadows, and very moody).
- **Fill light:**
  - Mirroring the key light on the opposite side of the camera, the fill light literally fills in the shadows that the key light creates on a subject, bringing out details in the darkness.
  - Typically, this secondary light is less bright than the key, and photographers control the overall feel of their shots based on how much they dim or lighten the fill light.
  - A dim fill light, where the fill ration is high, creates a high-contrast, while a brighter light with a lower, more balanced ratio gives the subject a more even look.
  - The second light isn't always a light: it can be a reflector, a bounce card, a wall, or anything that bounces back some light onto the subject to fill in the shadows. Together with the key light, the fill light determines the mood of a scene.
- **Backlight:**
  - The third source in this lighting technique, the backlight (also known as the "rim light" or "hair light") shines on a subject from behind, completing the light setup.
  - This creates a rim of light or outline around their head that pushes the subject away from the background and gives a sense of depth. Typically, photographers position the backlight directly behind the subject or high enough to be out of frame, opposite the key light, and pointing at the back of the subject's neck.

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How Is Three-Point Lighting Used?

- There is no set formula for how three-point lighting is used. This often depends on the scene, the subject matter, and the overall mood that a cinematographer or photographer wants to evoke.

- Good lighting creates a more interesting and dynamic image where the subject is seen with more dimension and where the cinematographer has more control over shadows.

- The lighting setup helps bring dimension to characters. Three-point lighting also helps shape a subject to bring out the best or worst of them.

- By placing a soft key light slightly off center with a 2:1 fill ratio, a cinematographer creates a soft, flattering look that also tends to hide blemishes in the skin when your subjects are people. This soft lighting is called "high key lighting" and creates an optimistic, upbeat, youthful, light, and airy mood that is common in sitcoms and comedies.

- If a cinematographer opts for a higher fill ratio, like 8:1, the key light casts sharp-edged shadows that contrast sharply with the light. This is "low key lighting," which creates a dramatic, mysterious, unsettling, and alienating mood and can display a range of deep negative emotions. As such, it is common in dark dramas, thrillers, horror, and film noir.

5 Tips for Setting Up Three-Point Lighting

- **Establish your light's "motivation."**
  - Before you begin setting up your lighting kit, you have to know precisely what look you want to achieve and why. Lighting setups are never random. The source of light in your scene needs to make sense based on the environment that your characters exist in. Is it an overcast sky? Sunset? A dark alley? Once you have established the motivation, you can proceed to place and adjust your light kit to achieve that effect. (You may also want "unmotivated" light. In horror, having unnatural light gives the sense that something is off and unsettles viewers. You must still establish that beforehand.)

- **Consider light source size and distance.**
  - The size of a light source relative to the subject size determines how "hard" (sharp, distinctive edges) or "soft" (smooth, feathered edges) your shadows will be. A smaller light source creates harder, distinct edges, while a bigger one softens the shadows. In studio lighting, if you want a softer look, you place enlarging modifiers such as an umbrella, softbox, or another diffusion between the light source and the subject. Due to this relative size condition, the distance of the light source to the subject will also affect shadow softness. If you put the source closer to the subject, the shadows will be softer. The shadows will be harder if you pull the light back from them, making the relative size to the subject smaller.

5 Tips for Setting Up Three-Point Lighting

- **Consider the intensity of your light source.**
  - "Brightness" is the measure of a light source's intensity. You measure it in lumens with a light meter. With LED lights, fluorescent lights, and incandescent lights, you control the output intensity, which affects the look of your scene. Brighter light will create harsher edges and shadows.

- **Consider the position of your light sources**
  - Where you place your lights relative to your subject and the camera determines where shadows fall. This relates again to sensibly creating an environment—if your key light represents the sun, it should accurately reflect the angle and height of that source. How you position your fill and backlight affects whether there are deep, moody shadows or an optimistic, even light cast across your scene.

- **Test your setup.**
  - After you have determined your lights' motivation, their size, distance, intensity, and position, set everything up so you can see exactly how all the lights work together and whether or not their effect is precisely what you intended it to be. If it is not, make adjustments until everything is perfect.

4 Types of Lighting Modifiers

- **Softbox** – A large wrap around 'box' that has a hole one side for your light to fit through. The opposite side is translucent, and the inside is reflective for the light to bounce around and pass through the front panel. It's a quick and effective way to soften direct light.
- **Umbrella** – This will be familiar if you've ever walked into a photography studio. Umbrellas can be used to pass the light through or reflect back into the room.
- **Snoot** – A snoot is a conical tube that filters light to create a tight spotlight effect. Think about the opening title sequence of a James Bond movie looking through the barrel of a gun – that's similar to the snoot lighting effect.
- **Grid / Honeycomb Grid** – Grids can be placed over a softbox to filter the light slightly (but with minimal effect from our experience. It's designed to stop the light spreading as wide after being diffused by the softbox. The smaller the pattern on the grid the stronger the effect will be.

Lighting Accessories

Types of light

- **Strobes**
  - A studio strobe, sometimes referred to as a monobloc or monolight, is a dedicated flash unit. Strobes generally use cords, though more battery-powered offerings are brought to the market every day. Power output between models can vary greatly; cheaper strobes offer about as much power as cheap, third-party flashguns, while class-leading strobes are some of the strongest lights in the business. For this reason, strobes are the most common studio light used by professionals.
- **Continuous lights**
  - Continuous lights serve the same function as strobes, but they don't flash. Instead, they are high-powered, constant lamps that can (usually) be fitted with modifiers. While associated with video, continuous lights still have their place in stills photography. LED lights are currently flooding the continuous light market, and many of them are viable options for stills shooters.
  - Note that continuous lights are sometimes referred to as hotlights – because they tend to get very hot. Be careful with modifiers that sit close to the bulb, as they present a fire hazard. (This does not apply to LED lights.)

Lighting Accessories

Types of light

- **Flashgun/speedlight**
  - Flashguns are small lights that mount on top of your camera. They are highly portable, and some come with reasonably high power outputs. Although flashgun versatility is ultimately limited by size and power output, they are still an extremely useful tool for any photographer interested in off-camera lighting. They're also less expensive than dedicated studio strobes.

Light functions

- **Key light**
  - The key light is a main light; you use it to create the overall lighting effect. Generally, the key light is the brightest and most prominent light in your scene.
- **Fill light**
  - A fill light is positioned in reaction to the key light. It reduces the intensity of shadows created by the key light, thereby decreasing the overall contrast in your scene.
- **Rim light/backlight**
  - Rim light illuminates your subject from behind, generally with the goal of separating the subject from the background. Often, rim lights are positioned so that only a sliver of light is visible on the sides of your subject.
- **Background light**
  - Background lights point away from the subject to light the background. Not all studio lighting includes background lights, but like rim light, it's a nice way to create subject-background separation.
- **Hair light**
  - Hair lights are used in portrait photography to add emphasis to your subject's hair. They can also be used to help bring up the exposure of your subject's head if it is blending into the background.
- **Ambient light**
  - Ambient light refers to any light present before the addition of your studio lighting. It comes from lights in the room, daylight from a window, cracks above the door, etc.

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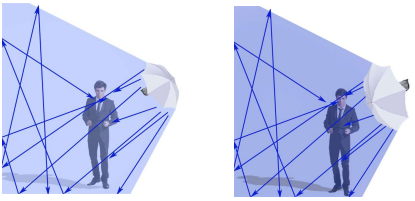
Modifiers

- Modifiers go between the light source and your subject, with the goal of changing the quality or intensity of the light. A modifier might harden the light, it might soften the light, it might reduce the light, or it might create unique lighting patterns.
- **Umbrellas**
  - Umbrellas look like, well, umbrellas, except they're not designed for rainy-day use. Instead, photography umbrellas come in silver or white and are attached to your light via a mount. By pointing a studio light into the umbrella (which reflects the light back to your subject, as displayed in the photo below), you create a much larger, softer light source. Umbrellas are technically directional, but they can have a lot of spill, and they certainly aren't the easiest modifier to control.
- **Translucent umbrellas/shoot-through umbrellas**
  - Translucent umbrellas don't reflect light like the umbrellas discussed above; instead, they're made of a diffusion material that softens the light. Simply point your light into the a translucent umbrella to get a beautiful, even result (though with practically zero directionality).

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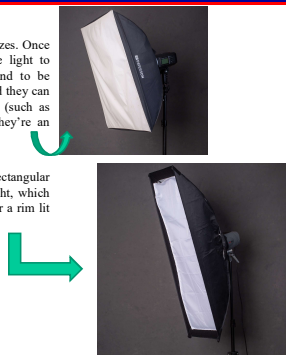
Types of umbrella light shapers

- There are a few types of umbrellas you should consider:
- Silver/gold reflective umbrella: These babies throw light everywhere. They are great for lighting large groups of people. The silver umbrella will give you a slightly cooler light while the gold umbrella creates warmer light. Both produce a slightly harder result than the white reflective umbrella.
- White reflective umbrella: This umbrella creates soft light with slightly less spread and contrast than the silver and gold reflective umbrellas. Because the style of light allows people to move around a lot while staying in a consistently even source of light, white umbrellas are great to use when you are shooting groups and couples under pressure, such as for an event.
- White shoot-through umbrella: These are perfect as your first light modifier, as they diffuse and spread light quite evenly.

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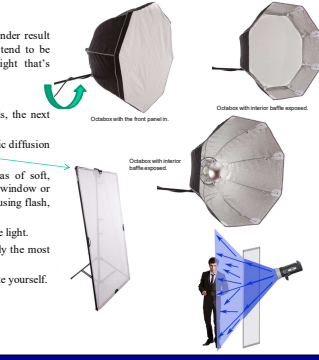
Modifiers

- **Softboxes**
  - Softboxes come in a variety of shapes and sizes. Once mounted, a softbox shapes and softens the light to become more flattering. Softboxes also tend to be quite directional, they are easy to control, and they can even be adjusted with additional modifiers (such as grids). Softboxes are highly versatile, so they're an ultra-popular studio accessory.
- **Strip boxes**
  - Strip boxes are a special type of long, rectangular softbox. They produce a narrow beam of light, which is great for lighting a subject from behind for a rim lit effect.

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Modifiers

- **Octaboxes**
  - Octaboxes are special octagonal softboxes; the rounder result is useful for shaping portrait lighting. Octaboxes tend to be quite large, creating especially soft, flattering light that's perfect for portrait photography.
- **The scrim**
  - After you've ditched your umbrella training wheels, the next step is to work with a scrim panel.
  - A scrim is a square or rectangular frame with a fabric diffusion material stretched across, like this:
  - Scrims are a really cool way to create large areas of soft, diffused light as if you're shooting next to a large window or have clouds over the sun. And they're great for diffusing flash, continuous light, and sunshine.
  - Remember: The larger the light source, the softer the light.
  - In fact, of all the light modifiers, a scrim is probably the most versatile and a must have in your kit.
  - This is a piece of equipment that you can easily make yourself.

Octabox with the front panel in.
Octabox with interior baffle exposed.
Octabox with interior baffle exposed.

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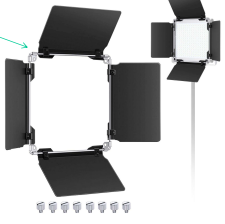

Modifiers

- **Reflectors**
  - Not to be confused with handheld reflectors (discussed below), reflective modifiers mount directly to a studio strobe. They channel the light in a specific angle for very directional light. Reflector light is very hard, and most reflectors are designed to take a variety of grids.
- **Snoots**
  - Snoots are modifiers designed to focus your light in a very narrow beam. They make great hair and background lights.

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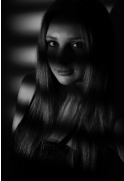
Modifiers

- **Barn doors**
  - Barn doors are fitted with two to four flaps; these allow you to block and shape the light to create different effects. For instance, barn door flaps can help you focus your light on a specific aspect of your subject (such as the hair), or they can be used to prevent (flag) the light from hitting a certain spot.
- **Beauty dishes**
  - Beauty dishes are directional modifiers that sit somewhere between soft and hard light. They are great for beauty photography, fashion photography, and portraiture. They often come with grids and diffusion socks to give you extra options.
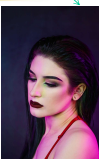
Modifiers

- **Grids/honeycombs**
  - Grids are modifiers for your modifiers. You place them on a reflector, softbox, or beauty dish to further narrow the beam of light – to ensure the light is only falling on your subject (or on some other, desired location).
- **Gobo**
  - A gobo goes in front of a light source and changes the shape of the light. A gobo might simply narrow the beam, or it might create complex patterns.
  - (Confused? Imagine a Venetian blind with light streaming through. Now imagine the pattern on the wall. The blind is acting as an effective gobo and shaping the light!)

Modifiers

- **Color Gels**
  - Gels are colorful, translucent sheets that fit over your light. Thanks to gels, your lights can produce just about any color imaginable (for all sorts of creative effects!).
- **Portable reflectors**
  - Not to be confused with reflective modifiers (above), reflectors allow you to reflect light back onto your subject. They are a way to create fill light without a second dedicated light source. Reflectors come in many shapes and sizes, from the ubiquitous 5-in-1 reflectors to fancy tri-flectors sometimes used in beauty portraits.

Modifiers

- **Flags**
  - Flags are used to block (or flag) light from falling on certain parts of the scene. You can use a flag to stop excess light falling on your background, or you can use a flag to reduce the exposure on specific parts of your subject. For example, I sometimes use flags to underexpose everything from the neck down in close portraits. This helps ensure that the face is the main focus of the image.

Studio Accessories

- **Light stands**
  - Light stands are designed to hold your light sources. Make sure your light stands can handle the weight of your heaviest light (note that a high-powered, dedicated strobe requires a lot more support than a speedlight!).
- **Dolly**
  - Dollies are highly useful; they're light stands, but equipped with wheels!
- **Boom arm**
  - A boom arm is a light stand that you can position at any angle, from completely vertical to completely horizontal. Boom arms are a great way to get your lights up high and to place your lights at angles a traditional light stand can't manage. You can mount different varieties of boom arms to other light stands, as well as permanent fixtures like walls.
- **Reflector stand**
  - These are dedicated stands designed to hold a reflector in place (e.g., under your subject's chin).
- **Background/backdrop**
  - A backdrop is the surface behind your subject. Backdrops can range from paper and vinyl rolls to bare or decorated walls to pieces of painted canvas.

Studio Accessories

- **Clamps**
  - Clamps and other fastening devices come in all shapes and sizes. You can (and should) use clamps liberally; backgrounds, flags, reflectors, gels, and many, many other things need to be held in place during photo shoots. For example, bulldog clips are indispensable for holding up canvas backdrops, while double-headed clamps can attach to a table and hold a flag or reflector (as pictured below):
- **Rails**
  - In bigger studios, you might see lights fixed to fittings on the walls and ceiling. These rails allow you to move your lights around a space without the hassle of a light stand. They also keep cords out of the way of you and your subjects.
- **Triggers**
  - Triggers allow a camera to communicate with lights and ensure that flashes fire while the shutter is open. They range from very basic models with just one function to complex devices that allow for full control over the settings of multiple lights.