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# Introduction

*The most difficult thing for me is a portrait. You have to try and put your camera between the skin of a person and his shirt.*

HENRI CARTIER-BRESSON



Â© Tim Meyer

As we start this second edition, it is clear that some things in photographic technology have changed, but the core components of good portrait photography remain the same. Portrait photography is not about you, your cameras, or your lenses; it is about the subject. The most appealing aspect of portrait photography is its ability to convey to others the person captured by the portrait. The portraitâ€™s great gift has always been presenting likenesses for others to recognize and remember.

Most dictionaries define a portrait as a personal likeness, particularly a painting, drawing, or photograph of the face. Using this definition as a basis to make portraits, we need to focus our abilities on creating an image that is recognizable. This simple statement summarizes the driving force behind this book and our approach to making portrait photographs as likenesses of subjects. It does not mean that we reject or will not address other concepts, but that we see portraiture as a conscious act. This differs from documentary and event photography, which try to show the situation, including the people, as they exist without being influenced by the photographer. Portraiture involves controlling setting, pose, and lighting effects.

The language of portraiture involves more than technique. The meaning of a portrait is derived from what the image communicates about the subject. The difference between a good portrait and a driverâ€™s license photo lies in what is communicated about the person in the picture. Technique provides the tools that make the communication possible. But, as with any other language, portraiture does not communicate unless the speaker (the portraitist) has something to say.

In this second edition, we once again present a complete system of portraiture and lighting, and how these ideas are used both in the studio and on location. Further, we describe how a careful analysis of the subject and their pose forms the basis of good portraiture. Our intention is not to eliminate personal style, but rather to demonstrate that style alone does not make good portraitureâ€”just as the latest camera does not guarantee a good photograph.

For our approach to portrait photography, two areas of consideration override all others: lighting and posing. These two areas of content have been expanded in this edition. We firmly believe that the keys to successful portrait photography are how photographers control the lighting and how they work with the sitter. We will address some of the technological improvements in photography, but only to support the other portions of book.

As educators, we believe that there is more to making great images than the technical portions of the process. First, we will go into light and lighting as tools to make the images. Next, we demonstrate how the combination of the setting, the pose, and the photographerâ€™s skill in relating to the sitter can lead to success as a portraitist. While we show specific examples of lighting setups, these are not unbreakable rules, but rather applications of tools that indicate potential solutions.



D. O. Hill and R. Adamson  
(From the collection of David Ruderman)

We approach the technical side of portraiture with a concept called “LD,” or “Light Dynamics.” We define LD as those aspects and attributes of light that make it a useable tool to create portraits. It is the dynamics of light that give us the control to solve potential problems, whether by employing specular or diffuse light, changing the direction of light, controlling light ratios, and much more.

Further, we believe that there is much to learn from the development of portraiture through the centuries. The history of portraits includes not only the way photographers have taken portraits, but also how painters and sculptors have represented people through their media. We will briefly address the history of portrait photography to show how different approaches to portraiture recycle through time.

This will lead us to the second part of the book: working with the sitter to make the best portrait. We describe how to analyze each portrait situation in terms of the particularities of the sitter, the setting, and the potential lighting options. Topics include composition, facial analysis, relating to the subject, and finally, personal style. In both the technical and aesthetic sections of the book, we provide you “the professional, serious amateur, or student” with the ability to make your statements through portraiture.

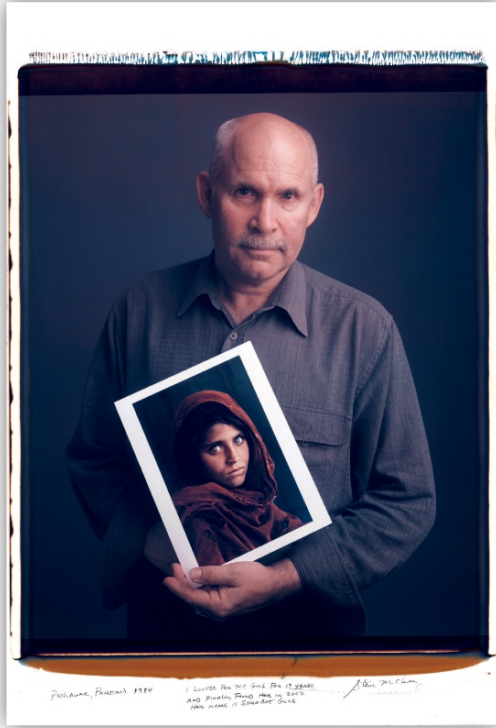
Often, very successful portrait photographers have developed a style or a working method that they use consistently. However, just because one photographer does great portraits with a particular approach does not necessarily mean that your needs will be met by that approach. Our intent is not to say what the style or approach to your portraiture should be, but rather to offer options and encourage you to make good portraits based on your creativity and vision. That brings us back to the central idea mentioned above: portraiture is about the interaction between people: the subject and the photographer. A successful portrait is proof that the skills of the photographer met the needs of the subject.

You will notice as you read this book that we do not concentrate on cameras. Whether the camera is film-based or digital does not affect the portrait as much as lighting, understanding the face, and how the portraitist relates to the subject. While exposure, image structure, the number of pixels, and the size of the grain affect the look of the print, the essence of a portrait is the subject, not the capture technology.

In our discussion of lighting the portrait, we use two interrelated but different approaches. Glenn comes at lighting from a more technical side, while Tim discusses how light affects and helps you understand the subject. Together, we merge LD, the Light Dynamic, with the subject to create the portrait. This presents both the input and output of lighting in the portrait setting.

The look of the book would be less interesting were it not for the many fine photographers who graciously contributed their inspiring images. We also wish to thank the manufacturers and distributors who provided equipment for illustrations and demonstrations. Many of our colleagues, students, and professional associates generously contributed their insights and experiences. Finally, we wish to thank our families who have supported us throughout this project.

# 1 A Very Brief History of Photographic Portraiture



In this portrait from *Behind Photographs*, Tim Mantaoni made portraits of famous photographers with one of their best-known images. Steve McCurry made the portrait of *The Afghan Girl* in 1984; Mantaoni shot his portrait in 2002. Both of these portraits were used on the cover of *National Geographic* magazine. As part of the project, Mantaoni asked the photographers to write their comments about the photograph on the border of the image. © Tim Mantaoni (Courtesy of the artist)

*Peshawar, Pakistan, 1984.*

“I looked for this girl for 17 years and finally found her in 2002. Her name is Sharbat Gula.” Steve McCurry

When we enter a discussion of the history of portraiture, we need to understand that we are looking not only at what has come before, but also at trends that will be used again. An examination of portraiture over the past 2,000 years shows many ideas that are still used in photographic portraiture. We are not saying that the portraiture of the past is what we should do, but rather that the ideas and approaches important throughout history are still finding currency today.

It must also be noted that our approach to portraiture is through Western eyes. The approaches of other societies are certainly valid, but our historic trail winds its way from Egypt through Europe to the Americas.

From prehistoric times, humankind has used pictures to describe, communicate, remember, and celebrate. The portrait was a natural extension of these uses. As societies developed, important individuals soon became the subjects of pictures. Historical portraiture is replete with changes in style and technique as societal conventions dictated how people would be portrayed. During many periods, portraits were idealized to convey the importance rather than the reality of the person.

Our only knowledge of portraiture in antiquity comes from the archaeological record. Sculpture and bronze statues are among the best records of Western portraiture in the pre-Roman era. This record indicates that only the elite upper or ruling class had portraits commissioned. Some of the earliest known portraits date from the first century BC. They were funerary portraits, created by the Egyptians of the Fayum district. Known as “mummy portraits,” they were used to remember the deceased and thus were painted with care to create the best possible likeness. The artists used light to create dimension in these portraits, displaying an advanced understanding of shadowing as well as specular and diffuse highlights.

Many portraits were produced in Europe during the medieval period, but their relevance to photographic portraiture is more ideological than practical. For much of this period, the church dominated portraiture, and likenesses associated the portrayed individuals with God or the church rather than conveying their personas. Since the church served as the preeminent supporter of the arts, its dictums determined a great deal of the content and thus medieval portraiture tended toward ecclesiastic subjects.



Dr. Munro by D. O. Hill and R. Adamson (From the collection of David Ruderman)





Rembrandt's studio had a row of windows on the north side of the room that provided consistent diffuse light. With the subject situated near the east wall, the light would come down at a steep angle from the subject's right side. A white cloth hanging above the easternmost window created overhead soft light. He likely closed the lower shutters on many of the windows to control the direction and overall intensity of the light. After controlling the light on the subject, Rembrandt placed his easel in the center of the studio to choose the point of view. The darkness or tone of the paintings was a choice of the rendering of the scene. (Illustration by Glenn Rand)

We often consider the Renaissance as the height of photorealistic portrait painting. This period brought the use of perspective, light, and shadow to create a dramatic sense of depth and form. Most important from our point of view, the use of light effects in painting was pronounced and continues on today. In addition, the Renaissance painters brought great craft to portraiture, making the quality of the skin important.

Leonardo da Vinci (1452–1519) and other Renaissance painters used a concept called *sfumato* that created softness in their portraits. *Sfumato* comes from the overlay of varnishes and transparent oil paints used to soften the color transitions in facial tones.



Anonymous daguerreotype in case (From the collection of Glenn Rand)

While highlights and shadows produced a feeling of volume in the paintings, *sfumato* softened the skin tones to make them appear more natural and pleasant. Today we can see these effects in photography, as some portrait studios have north light windows and often use softboxes to create soft lighting.

There are four major factors in Rembrandt van Rijn's (1606–1669) paintings that are important in contemporary photographic portraiture. First and most obvious is the lighting, known as *Rembrandt lighting*, which produces a small triangular highlight on the shadow side of the

face. The position of the lighting allows for more texture in the image because the light strikes the subject at a shallow angle. Next, Rembrandt often chose a body position that turned the face slightly away from the light source. This is called “broad lighting” in portraiture. Third, while not directly using a backlight, he employed selective background lighting effects to give his portraits both depth and contour. He also vignetted his images to provide more visual centering on the subjects.

Last, in his studio Rembrandt draped a large white cloth across the ceiling and attached it to the top of the prime window used for lighting the subject. This, along with a series of small windows, directed fill light to his subjects, ensuring that the details on the shadow side of the subject were clearly visible.

Another technique from the Renaissance masters is *chiaroscuro*, which refers to a light-dark contrast that produces volume in the subject. Often confused with Rembrandt lighting, chiaroscuro is an angular light that creates the sense of volume through shadows.

While most people think of portraits as two-dimensional representations, sculptures were often used to represent the likenesses of people. Gian Lorenzo Bernini (1598–1680) utilized marble to create portraits. The three-dimensional nature of sculpture brings life to these stable pieces of polished stone.

Technology also became part of painting during the late Renaissance. While optic projections were common knowledge, at this time there is evidence that the camera obscura and mirrors were used to produce the paintings. The use of optical tools for painting can be regarded as a precursor to photography.

In 1839, portraiture changed from the portrayal of reality to the actual capture of reality. In that year, both Louis Jacques Mandé Daguerre (1787–1851) and William Henry Fox Talbot (1800–1877) introduced their processes for photography: the daguerreotype, a mercury/silver amalgam on a polished metal plate; and the calotype (Talbotype), a salt silver paper negative process. After seeing the daguerreotype process, the painter Paul de la Roche (1797–1856) said, “From today, painting is dead.” While he was wrong, parts of the world of painting did change—and none more than portraiture. Portraits that took many hours of sitting and many more hours of painting became much faster and easier with the advent of photography.

At the beginning of photography, the insensitivity of the materials necessitated bright light settings and much longer sitting times than today. In Scotland, the artist David Octavius Hill (an established painter) and Robert Hill Adamson (a camera operator) produced early portraits using the calotype process. At the same time, Albert Southworth and Josiah Hawes licensed and used the daguerreotype process in the United States. These pairs of artist and technician spoke to the complexity of the new photographic processes—the beginnings of a support system to make successful portraits.



Anonymous ambrotype – Mrs. Caldwell (From the collection of Glenn Rand)

In the 1850s, Nadar (Gaspard Félix Tournachon) became one of the big names in portraiture. Part of the reason for notoriety could be because he had his name in large red letters displayed across the front of his studio. Nadar was so popular that other portraitists sought to embellish their reputations by using his name.

Soon, highly sensitized materials reduced exposure times down from 30 minutes with early daguerreotypes to a matter of seconds. With the collodion process, photography took a great leap and introduced a more accessible form for the individual. One of the prominent portraitists who emerged during this time was Julia Margaret Cameron (1815–1879). Her portraits set the standard for moving to a descriptive method that mixed the likeness with emotion captured in the sitter. The story goes that when she took her famous portrait of her friend Sir John Herschel, she asked that he wash his hair but not comb it so that she could portray him the way she envisioned him.





Anonymous tintypes (From the collection of Glenn Rand)

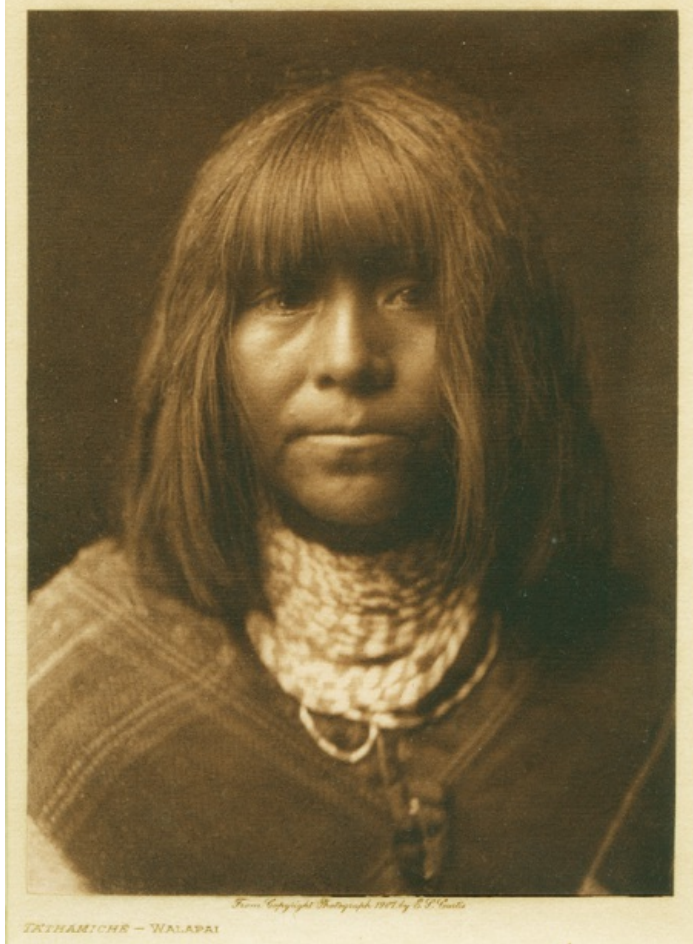


Anonymous cabinet photograph, Jenny Atkins, Kiev, Ukraine, ca. 1900 (From the collection of Glenn Rand)

As the collodion process became prominent, portraitists increased in number. Two practices they employed were widespread: ambrotype-based processes (ambrotypes and tintypes) and card photographs (cartes-de-viste and cabinet cards). Ambrotypes are lightly exposed glass plates that use a black backing to allow silver from the developed negative to reflect the light. The reflected light becomes the highlighted areas of the image, and the black backing becomes the shadows. The ordinary presentation of ambrotypes was the same as daguerreotypes, in small padded cases, which made portraits accessible but still costly.

The less costly tintype ignited a boom of photography. More rugged than an ambrotype, the tintype uses the same concept with the dark surface of the tin functioning as the black backing. Tintypes gained popularity starting at the time of the United States's Civil War and continued into the early 20th century. There were so many tintype portrait studios that prices went down to a penny an image. These portrait studios for the masses have their counterparts today in school photographers and high-volume portrait outlets with their standard lighting and poses. Cabinet photographs, along with the related cartes-de-viste, were also important to the growth of portrait photography. These were cards and sets of cards made in a studio, which was set up with standard painted backgrounds and props.





Ta-Tamiche, Walapai, 1907 by Edward S. Curtis  
(From the collection of Glenn Rand)



Prof. Adolf Hengeler, 1910 by Frank Eugene (1865–1936)  
(From the collection of Glenn Rand)

Also at this time, painters started using photography to aid in their portrayal of the human form and in the creation of portraits. Eugene Delacroix used a photograph of Jean Louis Marie Eugène Durieu to create his famous painting *Odalisque*. Franz Vin Lenbach had photographers from around Europe make images that he would then convert into painted portraits. In France, Anthony Samuel Adam-Salomon used consistent lighting mimicking the Renaissance that has since been called Rembrandt lighting. Franz Hanfstaengl also began retouching negatives during this period.

As photographic technology progressed, particularly with the introduction of dry plates, photographers were able to move away from the staid portraiture that long exposures required. This also allowed them to leave the confines of the studio and/or the portable darkroom. With this freedom came both an expansion of the settings for portraits and wider approaches to using portraiture. While Matthew Brady (1823â€“1896) had a studio, many of his most powerful portraits were made on the battlefield. At the beginning of the 20th century, Edward S. Curtis (1868â€“1952) and August Sander (1876â€“1964) used their portrait skills to produce ethnographic studies. Curtis traveled throughout the United States, producing many portraits of Native Americans along with other documentary images. Sander left his portrait studio to document the people of Westerwald, near Cologne, Germany. He used the same skills and approaches from his portrait studio for this project that he continued through the rest of his working life. In the 1960s and 1970s, Irving Penn (1917â€“2009) traveled around the world with a translucent white tent, creating a portable studio to make his ethnographic portraits that became â€œWorlds in a Small Room.â€ The work of these photographers and many others expanded the vernacular as well as the applications of portraiture.

From the advent of photography, â€œlearnedâ€ societies and professional organizations were established that became important to the development of portraiture. Among them are the Royal Photographic Society (1853), the Professional Photographers of America (PPA, 1880), and more recently, the BFF, or Bund Freischaffender Foto-Designer (German Professional Photography Association, 1969). These groups and others, such as todayâ€™s Wedding and Portrait Photographers International (WPPI), the Society for Wedding and Portrait Photographers (SWPP), and Arbeitskreis Portr t Photographie International (APPI), offer conferences and educational workshops that establish standards, share styles, debate aesthetics, and bestow certifications. Many nonmembers mimic the styles from practitioners within these societies.

As photography matured in both technology and aesthetics, portraiture changed as well. One trend that emerged in the late 19th century was pictorialism. This photographic movement was fathered by individuals who left the formal societies to form the Brotherhood of the Linked Ring and later the Photo-Secession. These groups attracted some of the luminaries of photography, including Alfred Stieglitz (1864â€“1946), Edward Steichen (1879â€“1973), and Clarence White (1871â€“1925). A critical attitude toward soft, romantic, and impressionistic photographs permeated this movement, with portraits returning to the dark, tightly focused images reminiscent of earlier times in portraiture. Through publications such as *Camera Work*, portraits were given an equal footing with other photographic art. The effect was to give photographers more freedom to approach portraiture, which resulted in changes to settings, lighting, and the overall approach to the subjects. A prime example is Edward Weston (1886â€“1958), who originally had a studio but who made many of his iconic portraits in natural light from angles that challenged traditional approaches to the portrait.

Three photographers, who were active well into the 20th century, had a great impact on the direction of portraiture. First was Sir Cecil Beaton (1904â€“1980), who became the portraitist to British royals and celebrities. He moved away from the studio into the environments of his subjects. While he worked in a sitterâ€™s environment, for the most part he used formal poses. Beaton moved with the developing technologies, adopting the latest photographic tools available to him.

The second of these three major portraitists was Yousuf Karsh (1908â€“2002). Karsh moved to Ottawa, Canada, and opened a studio there. Though known for his studio portraits, he also produced photographs on location. One of his most famous images is of Sir Winston Churchill in his wartime office. Karsh used a specific lighting ratio that became part of his style. Throughout his career, he was known for his large-format (8 x 10 inch) black-and-white photographs.

The last of the three great mid-century portraitists was Arnold Newman (1918â€“2006). Starting in the 1960s, he became known for environmental portraiture. While he produced many of his images outside the studio, he did not accept the environment as it existed. Instead, he rearranged objects and lighting to produce an image that dealt with the sitterâ€™s persona as well as their likeness.



 © Judy Host (Courtesy of the artist)

A prime example is his portrait of Alfred Krupp for *LIFE* magazine. Through his use of lighting, Newman communicated his feelings about Krupp, a Nazi arms manufacturer.

Crossing this period was the work of George Hurrell (1904–1992). Hurrell went to work in Hollywood and made photographs of movie stars. He used specular lighting, chiaroscuro, and tenebrism (strong spot lighting) to create a “heroic” style, the opposite of the more natural approach of Karsh. Hurrell and other celebrity portraitists had a great deal of impact on how portraiture grew visually.

Several schools opened to train photographers that featured strong portrait course work, including Brooks Institute and Rochester Institute of Technology. However, education was not the sole purview of institutions of higher education; for example, the PPA’s Winona School of Photography offered courses by luminaries such as Joe Zeltsman. Other established photographers, like Monte Zucker, Frank Cricchio, and William McIntosh, shared their ideas about posing, lighting, and running a profitable business through workshops and conferences. Zeltsman promoted a set of standards for posing and Cricchio advanced the ways portraitists approached their lighting, while McIntosh was well known for his business practices and elaborate formal location portraiture.

During the latter part of the 20th century in the United States, many working professional portraitists affected the look of the field. Philip Charis incorporated the styles of Rembrandt, John Singer Sargent, and Sir Joshua Reynolds. Leon Kenamer moved his portraiture out of the studio and into natural settings, combining the use of natural light with the use of light shapers. Joyce Wilson rejected the staid regulations of the formal photographic societies to personalize her approach, making portraits that she saw as artistic rather than formulaic.



In this portrait, the use of the inserted face in the upper-right corner balances the image through similarity of form to add visual weight and interest to the right side of the image, opposing the dramatic arm positions of the subject at the left third  
© Arthur Rainville (Courtesy of the artist)



© Julia Sparks Andrada (Courtesy of the artist)

The sharing of images through publishing has been important to the development of portrait photography. Magazines like *Professional Photographer* and *Rangefinder* in the United States and *Professional Imagemaker* in Europe have brought images to large numbers of photographers and have encouraged the sharing of style and technique.

Today we find that portrait painters borrow from the world of photographic arts. The makeup ideas of commercial photographers such as Douglas Dubler and the posing concepts of Annie Liebovitz drive some contemporary approaches to portraiture. Furthermore, the art world is absorbing diverse approaches to portraiture, as seen in the projects of Bettina Flitner. As Joyce Wilson said of the history of photographic portraiture, “There will always be something new.”



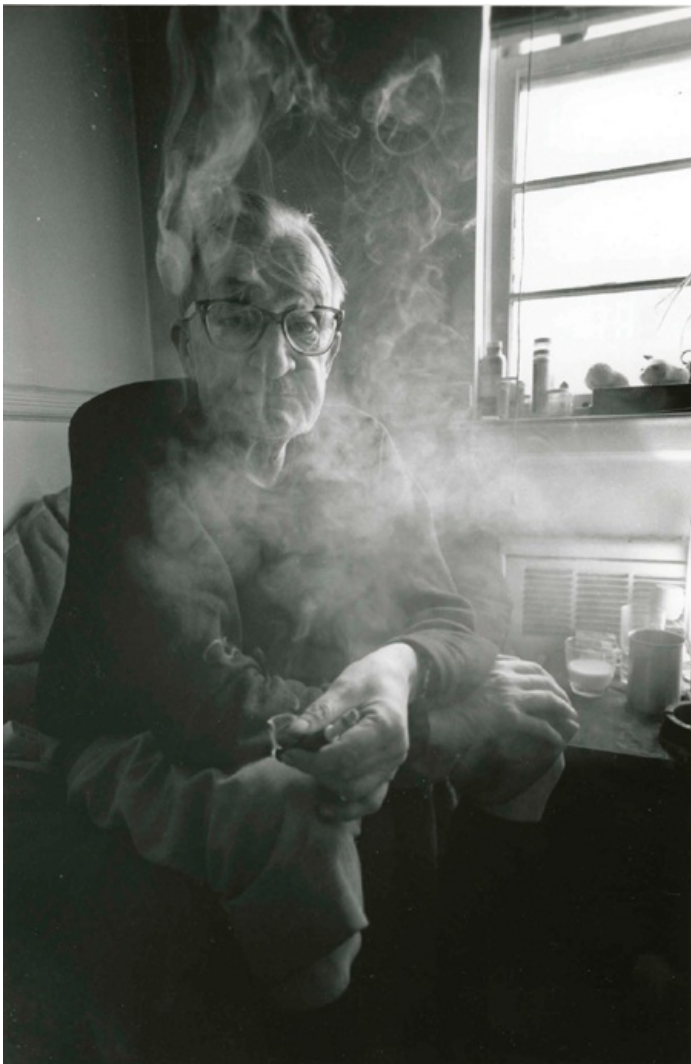


Yoji Yamamoto © Elinor Carucci (Courtesy of the artist)

## Styles

The history of portrait photography is a good starting point to view the ways in which these images are used. Roughly speaking, there are two approaches utilized in choosing to make portraits: for commercial purposes and for fine art. Beyond the issue of reliably getting paid for a portrait, the only difference between commercial and fine art portraiture is whether the portrait is made for the client or for self-assignment. Beyond that distinction, all the tools, controls, and approaches are the same.

While the photographer controls both formal and informal portraits, a candid portrait is an image that is not captured in a deliberate way. While the intent of a candid portrait is the same as other portraits—to capture a likeness of the subject—the method is about photographing the subject naturally without any posing, styling, or adjusting of the setting. This usually means that artificial lighting (other than on-camera flash) is not used and that the photographer, in effect, “steals” a moment of the subject’s life.



Alexey Brodovitch © Benedict J. Fernandez (Courtesy of the artist)



Art Buckwald in Paris, 1961 Â© Douglas Kirkland (Courtesy of the artist)

An environmental portrait differs from a candid portrait in that the photographer controls both the subject and environment. The environmental portraitist selects the setting for the portrait as well as controlling posing, lighting, and styling of the image. The concern with an environmental portrait is as much with the setting as with the subject, because the intent is to use the location to enhance the viewerâ€™s understanding of the subject.

Ethnographic portraiture is about the subjectâ€™s cultural, national, or ethnic identity. These portraits may rely on any approach, but the end result is more about the circumstances of the subjectâ€™s life than their likeness. For these reasons, the subjectâ€™s attire can be a very important element in the portrait.

To a certain extent, both commercial and fine art portraiture are without differences. A publication might use a portrait by Douglas Kirkland for commercial purposes, and the same portraits in a gallery might be viewed primarily as fine art. Depending on the end use, commercial and fine art applications may wish to use any type or style of portrait. This is a good point to close this brief overview of photographic portraiture. In the end, portraits are always about the subjects, their likenesses, their personalities, and their lives.



Tuareg Bilal Â© Douglas Dubler (Courtesy of the artist)

## 2 Light Dynamics and the Portrait



Joyce Wilson said of this image, “I had just finished with the assignment when the light from the setting sun caught my eye. With the atmosphere and the girl’s dress, there was the feeling of a fairy tale. But it was the light that caught my attention. To maintain the vision, I needed to capture the flare.”

© Joyce Wilson (Courtesy of the artist)

### LD... Light Dynamics

The approach we have chosen is to deal with LD, or light dynamics, rather than present single solutions or methods to make specific portraits. Taking this point of view allows us to discuss both the physical realities of light and its effects on the subject. It also removes us from a simple “This is the way I do it” methodology to a discussion of how to solve lighting problems regardless of which side of the lighting equation they come from. The problems we find will not always fit within simple patterns. Through light dynamics, we build an understanding of our primary tool, the light and its effects, and how it makes successful photographs possible.

For portraiture, the key issue is that the way the light interacts with the subject’s hair, clothing, and skin determines the success of the portrait. It will be seen in the texture or lack of texture on the skin, the volume and form of the face, and the separation of the various areas of the picture. Therefore, we see control of the light dynamics as the way to make good portraits. The other aspects of good portraiture—pose, expression, and environment—will be dealt with later in the book.

Light dynamics are what make portraits possible. This has always been true with painting, and it is true now with digital portraiture. Photographers as well as painters use light to make portraits come alive and have form and volume through the addition of highlights and shadows. While light dynamics enliven portraits, we seldom see the light source itself. When light is visible in a portrait, we generally see light that is scattered, reflected by small particles in the air (dust, humidity, etc.), or emanated by an incident source. These types of effects are likely to be used for accents. In most situations, we see simply the effects of the light in the subject’s highlights and shadows.

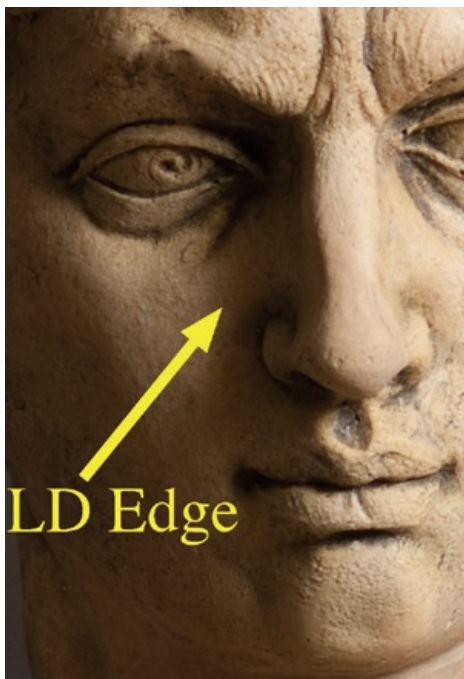
There are four light dynamics that define the quality of the light used in portraiture:

1. Highlights and shadows
2. Intensity
3. Direction of the light
4. Color bias

Whether we create the light quality ourselves or find the light in a natural setting, these four factors control the light used to make a portrait.

While the lighting examples in this chapter show the dynamics of shadows very well, they cannot truly show the complexity of highlights. Highlight dynamics are difficult to see when reproduced on the printed page because of the limited range that the printing process is able to generate. Also, we put more emphasis on shadows early in the book because they are the determining factors in defining the shapes and features in the portrait.





The light dynamic can be seen in the transitions between the lit and shadowed areas of the portrait. This is the Light Dynamic Edge (LD Edge).

## Specular or Diffuse

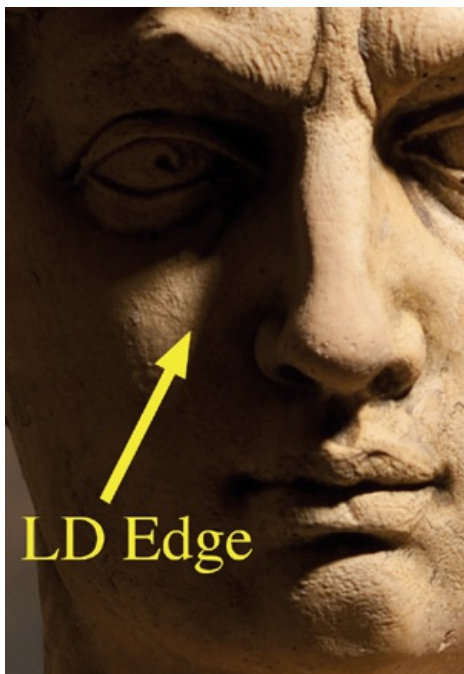
Of the four light dynamics affecting the look of light in an image, the most important is the highlights/shadows dynamic that make up a portrait photograph. To begin, we analyze the quality of light in terms of its specular or diffuse nature. We think of specular and diffuse light as opposite ends of a spectrum. At the one end is an exceptionally specular light, a point source. At the other end is very diffuse light, like a thick overcast sky. Along this spectrum we describe the character of the highlights and shadows and the “Light Dynamic Edge” (LD Edge) between the highlights and shadows. We also describe specular light as hard, crisp, or harsh and diffuse light as smooth, soft, or broad. How these light dynamics interact with the skin, hair, and shape of the face control the look of the portrait.

The LD Edge determines the feel of the portrait and defines the volume and shape of the face away from the contour. The specular/diffuse dynamic affects the light ratio of the portrait because of the amount of fill in the shadows. This particular issue will be dealt with in detail in [chapter 5](#).

Whether a point source light, focused light, collimated light, or light modifier, specular light occurs when light strikes the subject with few or no angular differences or crossing light rays. The light emanates from a point source, from far away, or in parallel rays. The characteristics of this light produce small, intense highlights on the surface and well-defined, dark shadows.

We can create specular lighting with a bare bulb or any focused light using lenses or a focusing mirror and either continuous light or electronic flash. The specular highlight, or hot spot, falls off to the shadow relatively quickly on a textured surface. This lighting creates a distinct LD Edge that defines the surface shape where it divides the illuminated surface from the shadow. The more specular the light, the sharper and better defined the LD Edge. It must be said that when light acts on a surface, it might create a complex highlight containing various amounts of specular light mixed with diffused highlights. This issue will be addressed later in the book.

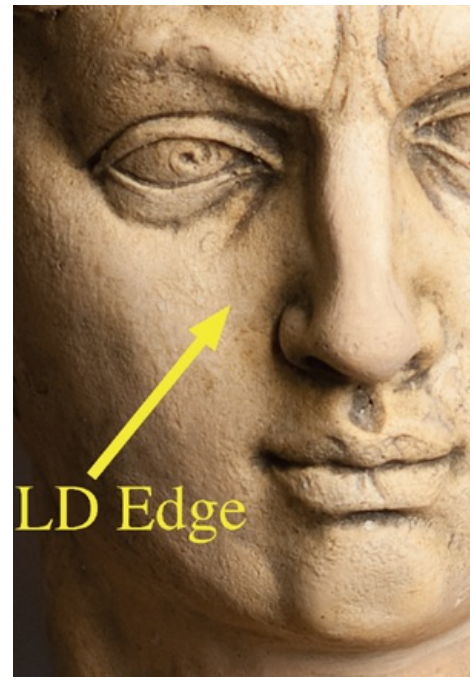
Because the shadows created by a specular light are dark with a crisp LD Edge, they can become visually important parts of the portrait. With most portraits, the LD Edge is not seen on the background or other objects, but if a shadow from a specular light appears on nearby surfaces, it will be well defined. In that case, the closer the shadow-catching surface is to the casting part of the subject, the sharper the cast shadow.





With specular lighting, the light dynamic shows with the dark and crisp shadows and the well-defined LD Edge

A diffuse light dynamic exists when the light produces numerous angles of illumination on the subject. Light can be diffused from a source that is scattered by a diffuser panel or reflected from a large surface such as an umbrella. Some atmospheric conditions, such as overcast skies or fog, naturally create diffuse light. Diffuse light reaches around edges, spreads out highlights, and allows light into shadows, thereby softening the portrait and reducing the contrast. The light on the subject displays open shadows that decrease the darkness and enlarge the highlights. With larger highlights, the fall-off to the shadow will be smooth and gradual, with a less distinct LD Edge. Just as diffuse and specular light are on opposite ends of a spectrum, diffuse light effects are the reverse of specular light effects with a lower lighting ratio.



With diffuse lighting, the light dynamic shows with the open and soft shadows and the weakly defined LD Edge

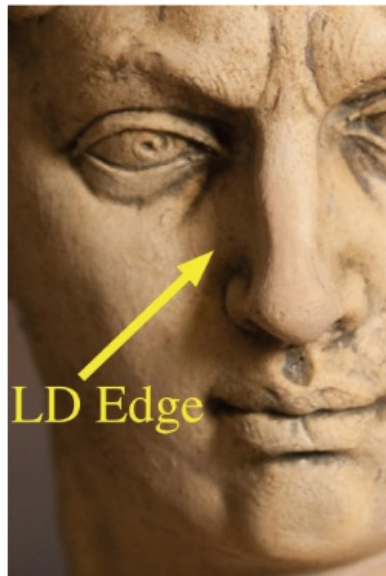
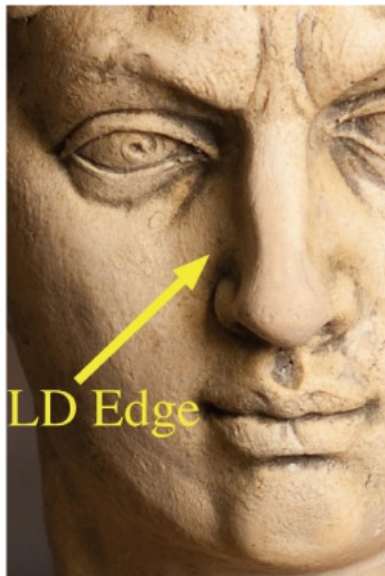
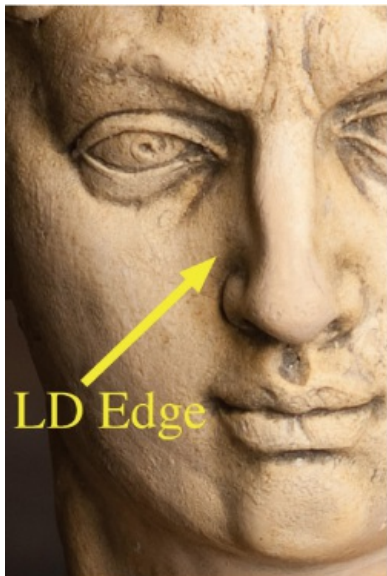
The diffuse quality of light is a combination of the size of the light and the distance of the diffusing medium from the subject. The largest light source available to a photographer on Earth is the sun; it is a specular source on a clear day because it is so far away. Only when conditions scatter the light, such as an overcast sky, does sunlight become diffuse. A large softbox close to the subject creates diffuse light, but that same light becomes specular the further away it is from the subject.



Â© Joyce Wilson (Courtesy of the artist)



Because the sky was clear, the sun cast strong, specular shadows  
 © Tim Meyer



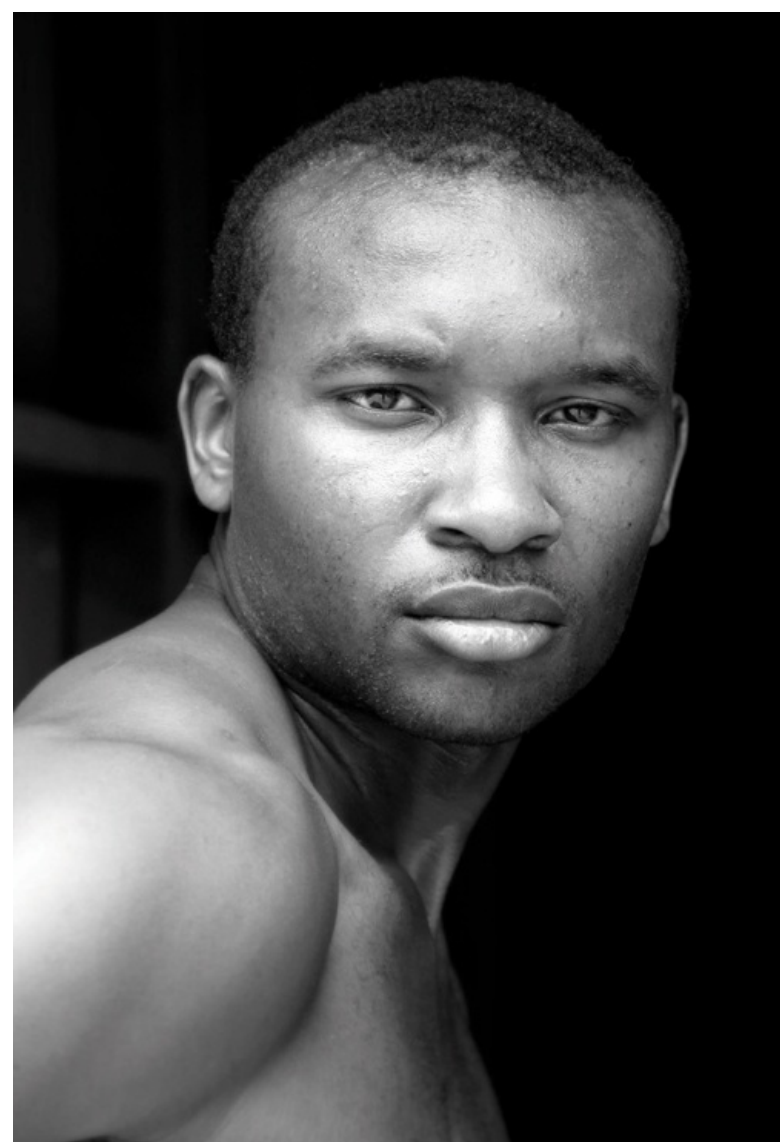
As the light source, a small softbox, is moved from 29 inches to 58 inches and finally to 118 inches, the LD Edge becomes more defined and the shadow becomes darker

If the intensity and direction of the light are constant, specular light appears more harsh and shows off texture better than diffuse light. Diffuse light produces a softer look with more detail in the shadow areas. Skin textures in a portrait look smoother in diffuse light, while skin defects are more noticeable in specular light.

We can also use the terms “diffuse” and “specular” to discuss surfaces and reflections. In a portrait, a specular surface might be shiny, such as oiled or wet skin. This surface will reflect hot spots from lighting equipment with very little light visible on other areas of the subject. Even with a diffuse light, a specular surface will have crisper reflections. On the other hand, a diffuse surface spreads the light energy over a larger area and creates soft highlights. Powdered skin is an example of a diffused surface, and under specular light its LD Edge will be well defined. Effects on the skin are often complex, mixing varying amounts of diffuse and specular light. These effects can be controlled by various lights and

modifiers and will be discussed later in the book.

To conclude this discussion, the quality of light that can be used for portraits possesses complex capabilities. Depending on the available lighting equipment, highlight and shadow characteristics can be modified from diffuse to specular.



In this portrait, the subject's skin shows a specular characteristic. The highlights show this quality even though the skylight used for the portrait is diffuse.

© Matthew Scott Drake (Courtesy of the artist)



The two details show the effect of moving the light from 29 inches to 58 inches from the subject. The light has approximately two stops less intensity at twice the distance.



# Intensity

Next, we will discuss how light intensity affects the quality of light. First, the intensity of the light establishes the key light (main light) and exposure for the portrait. The intensity of the fill, used to lighten the shadows and determine a lighting ratio, is the second light dynamic.

Intensity is not determined by the specular/diffuse dynamic of the light. Though the intensity of a lighting unit decreases as the light goes through a diffuser screen, once the light is scattered, its intensity is controlled by the distance from the subject. The closer the light, the greater the intensity. The Inverse Square Law predicts that if we move the light twice as far from the subject, the light's intensity will be one quarter, or two stops, less than the original intensity. This law also works in the opposite direction: if you move the light one half the distance toward the subject, the intensity will be four times, or two stops, more than the original intensity. This holds true for an open bulb on the light beam's axis or a bare bulb light. We will return to this subject in discussing light modification.

One factor that affects the intensity of the light is the size and form of the beam from the light source. Other than a point source light, the beam structure has three main parts: the central beam, the field area where light illuminates without a loss of one stop less intensity, and the falloff that goes from about three stops less intensity to no illumination. The central beam is concentrated around the light's axis. It may be spread widely as a floodlight, be more constrained in a collimated form, or be somewhere between these extremes.

## Direction

There are three directional dynamics that affect portrait photography:

1. Axis of the face
2. Axis of the camera
3. Axis of the key light

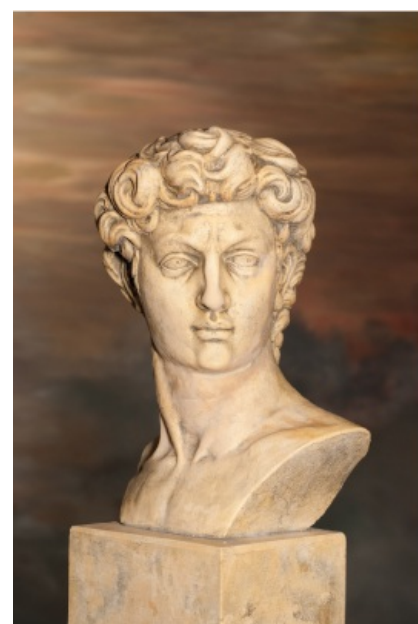
The interaction of these axes defines the dynamics of the portrait. The axis of the face is perpendicular from the eyes. The axis of the camera is the line along the center point identified in the viewfinder. The axis of the key light is the line defining the central beam. The key light is the light that creates the dominant shadows and highlights and is used to set the base exposure.

For this beginning discussion, we will assume that the camera is in a fixed location without changing the axis, since the camera distance and angle do not affect light dynamics. While the axis of the camera can be considered steady, the axis of the face is movable and defined by posing, which will be dealt with in its own chapter. Once again, we will simplify this discussion by taking a "mug-shot" approach so we can concentrate on the real light dynamic found in the axis of the key light. As the key light's axis changes in relation to the face's axis, most changes will occur in the lighting effects.

The directional component of the light dynamic affects the location of shadows and highlights. As the light axis comes closer to being perpendicular to the camera axis or the face's axis, the light seems harsher with dramatic, elongated shadows. As the key light's axis aligns with the camera's axis, the light flattens out the face's perceived depth and diminishes texture. In addition, as the light's direction moves in relation to the subject and camera, the highlights will move, particularly with rounded forms. While in portrait photography we discuss the effects of the light's axis in relation to the axis of the face, the camera's axis determines how the texture, shape, and volume will be seen. As the light's direction moves to where the LD Edge is clearly seen, the volume is easier to see (unless the main light's axis is perpendicular to the camera axis).

## The Light Dynamic Dome

The "light dynamic dome" (LD Dome) provides a method for showing the effects of moving the key light's axis in relation to the face's axis. It shows the light dynamic as controlled by the direction of the light. The foreground/background contrast establishes the contour of the portrait while the positioning of the LD Edge and the diffuse/specular quality of the light controls the form and volume within the face. The LD Edge appears at 90° from the light axis on a rounded surface; thus, it is visible in some form from all light positions other than behind the subject or if the light is blocked.



0-0 Or as near to the camera axis as possible. A camera flash produces this effect. The light is sterile and diminishes texture; it does not have an LD Edge to assist in seeing volume, shape, or depth. With on-camera flash, when there is a slight axis difference between the camera and the light, the shadow is thrown back into the scene. It will land on a surface behind and create a dark area around the edge of the face if the

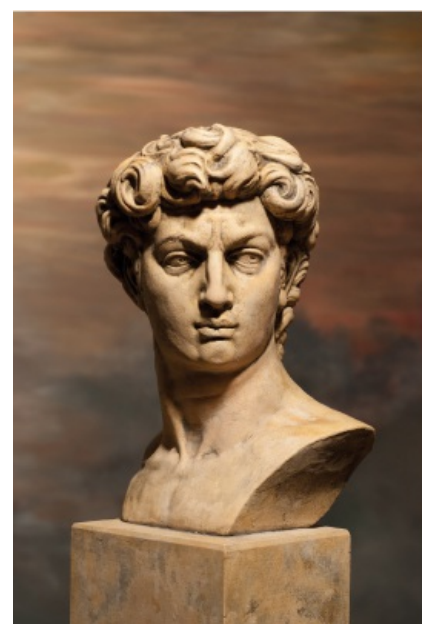
background is too close to the subject.

With the camera position and the point of view established, moving the light controls the LD Edge and the shadow/highlight creation in the portrait. The light dynamics produced by the interaction of the key light and face axes create emphasis as well as volume and depth. To better understand these dynamics, we imagine a dome that is equidistant over the subject. We then move light to different positions around the dome to see the effects on the face. In this example, we use 11 different locations on half of the dome, with and without a fill light. The positions we chose are the most common for portraiture. We also use words common to portrait photography in the accompanying captions. We use only half of the dome since the other half will produce similar results, only with the shadows and LD Edge projecting in the opposite direction. We have also done this demonstration without fill to show the light dynamic of each position.

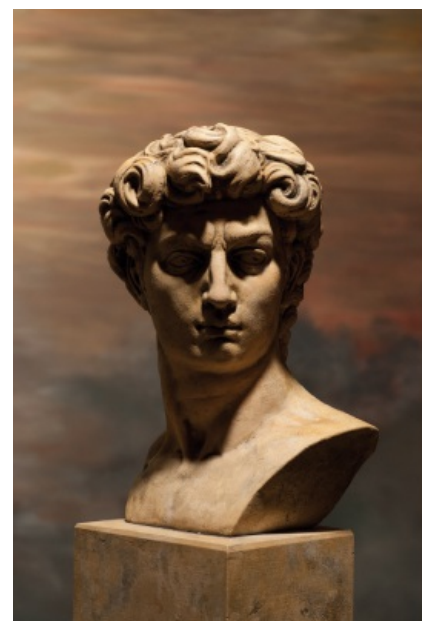
## Color

When we discuss color in light, two major considerations need to be addressed: the makeup of colors and the biases they have as we use light in a color capture environment.

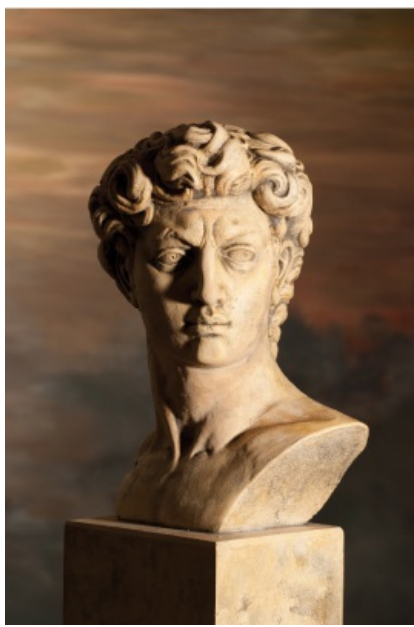
In photography, we use “light primaries” for color mixing. This means that the basis of all colors that we can capture or see are components of red, green, and blue (RGB). While there are other ways to mix colors, using RGB is the most accurate choice. Based on this system, we find that the proportion of red, green, and blue defines all colors of light that make up any particular hue. For example, orange is made up primarily of red with less green to make it become more yellow; if the tone is lighter than the most saturated orange, it also contains some blue. To further this example, the computer mixture for this orange might be 240 red, 150 green, and 80 blue.



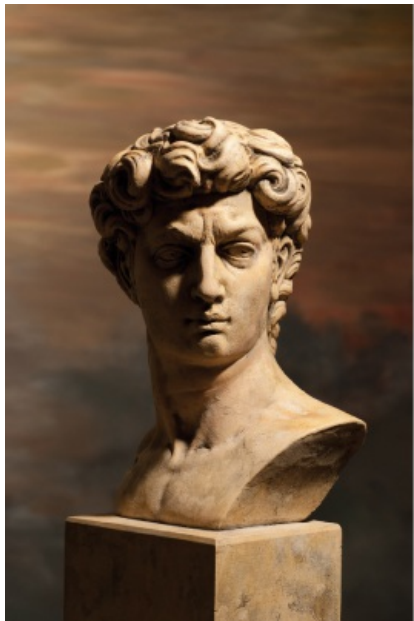
0-45 Horizontal features on the face such as the eyebrows, lips, and chin create LD Edges. Highlights are prominent on the forehead, cheeks, and nose. There is a good shadow from the chin’s edge.



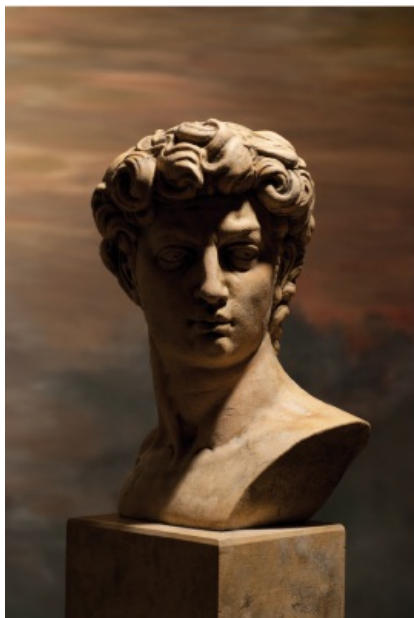
0-70 This light tends to exaggerate shape, depending on the contours of the face. The bolder the facial features, the stronger the shadows. Textures on frontal surfaces are heightened.



45-0 This light is good for faces with strong vertical planar changes. Texture on front-facing surfaces is improved when the surface goes away from the light. Depth is shown through the shadows and the LD Edge on the cheek away from the light. If the nose is large or misshapen, its shadow may become problematic. The 45-0 position is not an attractive angle for portraiture. It casts horizontal shadows across the face, which are considered unflattering.



45-45 Often referred to as  $\frac{3}{4}$  or open 45 lighting, this is one of the most common key light positions in portraiture. It is excellent for showing the shape of nonplanar objects and greater depth in the subject. The LD Edge is not on the meridian (the center) of the face, so off-set LD Edges between different planes add to the depth of the portrait. This light position also creates important highlights that add to the perceived depth of the image, particularly the highlights on the forehead, nose, chin, and both cheeks.

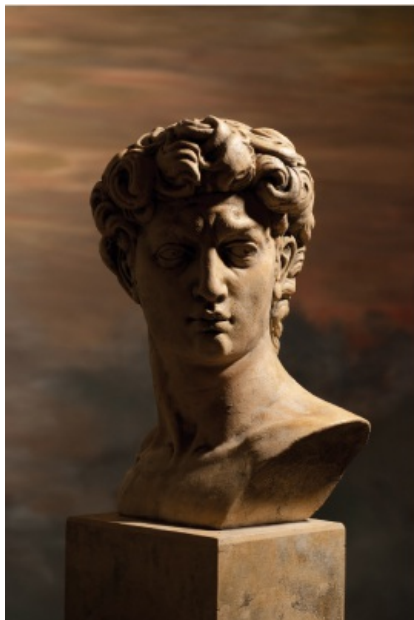




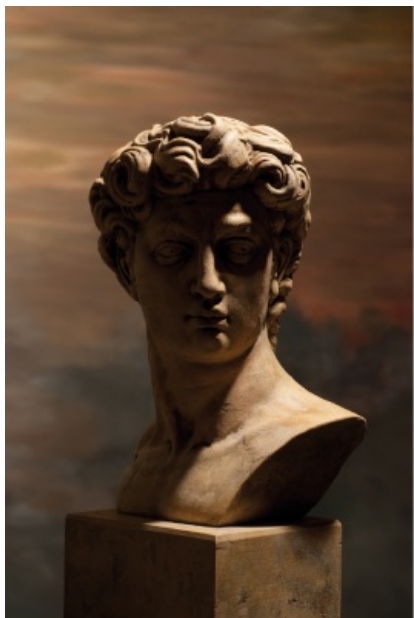
45-70 This light is dramatic with strong, bold shadows and strong highlights. With this lighting, the LD Edge is less important than the highlights for developing depth in the image. This light is not normally considered a good choice for portraiture due to the deep shadows obscuring the eyes.



90-0 This light position shows texture on vertical surfaces aligned with the light. The dominant feature is the LD Edge through the meridian of the face, which bisects it into light and shadow.

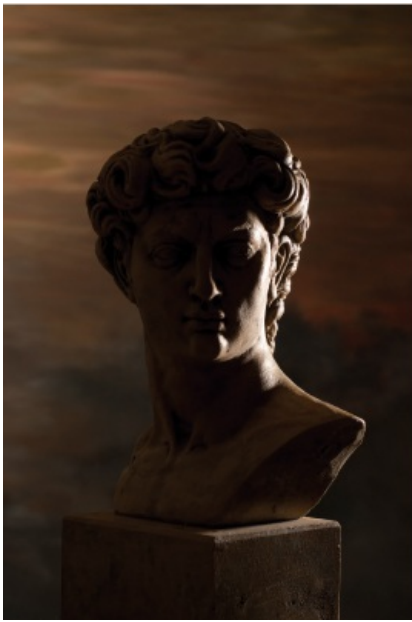


90-45 This is the most common location for split lighting when the face is on axis with the camera. Its dominant feature is the LD Edge through the meridian of the face, which bisects it into light and shadow. In this higher 45° position, it produces a more favorable light for portraiture.

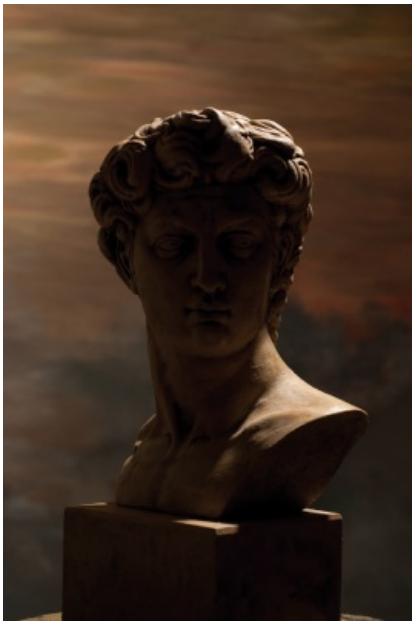


90-70 While not a common lighting position, 90-70 shows the effect of a high light from the side





120-0 This light accentuates the shape of the face through highlights. The camera can become a problem as the light moves to the rear, and both the direct light and bright reflections can enter directly into the camera's lens. This comes close to emulating the effect of side or edge lights in portraiture. Used to separate the subject from the background and to accentuate form, edge lights are commonly used in classical portraiture and were a signature style of artists like Yousuf Karsh.



120-70 This light is commonly used for a "hair light" in portraiture. As with other rear quadrant lighting, this setup is based on creating effects through highlights.



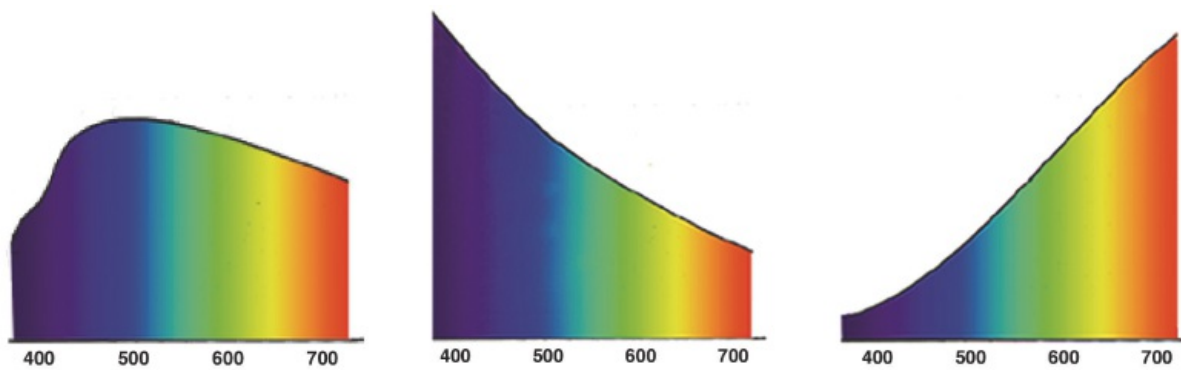
The sun late in the day takes on a reddish, warm tone  
 © Tim Meyer

When we mix colors in this way, we can envision a circle with RGB equally spaced around the outer edge. Within that circle, we can locate any light-generated hue. For the purposes of this book, we deal only with the colors around the outside edge (fully saturated colors). If we mix red and blue, we achieve magenta; with blue and green, we create cyan; and with red and green, we make yellow. These six colors make up the primary (RGB) and secondary (CMY) colors of light.

The secondary colors are the complements of the primaries. If we look at the color circle, also known as the color wheel, we recognize that across the circle from any color is its complement. This means that across the color wheel from orange is its complement, a bluish green. If fully saturated, complementary colors are mixed, they result in white light. Complementary colors that are not fully saturated mix to make neutrals

(grays). Therefore, if the light source is yellowish in color (incandescent light), a blue filter or shifting the white balance toward blue neutralizes the color bias.

This effect happens with reflections as well. When light is reflected from a colored material, it takes on the color of that reflecting material. When a colored reflector is used, it acts like a colored light; it either adds a color to the subject or mutes the color of the subject if the color of the reflector is the subject's complement. For example, a green reflector will gray out or reduce the redness of whatever part of a portrait receives the light coming from the reflector.



Spectral energy distributions of daylight, north light, and tungsten light. The color bias of each light source can be seen where the graph is higher. Midday daylight has a slightly blue bias, north light has a strong blue bias, and tungsten light has a strong reddish bias.

All light has some color bias. Sunrise and sunset are reddish in color, while shaded light on the north side of a building is bluish. Matching film and using white balance or correcting filters can neutralize color bias, or colored light can be added to the image for effect.

One of the main ways we speak about color in light is based on its color temperature. Without going into a highly technical discussion, let us lay out what happens to the color bias of light as its temperature changes. As an energy source becomes hotter, its color changes from red to blue. We first see the color as red-orange (sunrise/sunset), then as yellowish (e.g., tungsten light), then as bluish white (e.g., clear sky or electronic flash), and finally as blue (e.g., overcast sky). A scientist would describe these color biases in terms of Kelvins, but for the purposes of photography, we can simply say that the color is moving toward blue or toward red. This color bias is important for true color representations created by the light source and not related to filtered or manipulated color.

Color temperature can also be seen in spectral energy distribution; that is, the amount of different colors within the spectrum that can be seen as a bias. The spectral energy distribution for midday sunny light shows a slightly cyan bias, the north sky shows a highly blue color shift, and a clear sky shows the reddish color shift of tungsten light. Even though its spectral energy distribution is different, electronic flash has a color temperature similar to daytime sunlight.

We see the bias or other aspects of the light as the reflection of the light's color. Color bias is reflected more in the mid tones than in any other area. In addition to the color bias, the light will also reflect nearby colors into the portrait if they are not controlled. For example, a portrait taken on grass may reflect green into the shadows of the subject. Also, materials that reflect high levels of ultraviolet energy, such as those washed in color brighteners, reflect higher amounts of blue.



© Joyce Wilson  
(Courtesy of the artist)

Auto white balance can eliminate the color bias in digital cameras and filters can be used for adjusting the color bias when using film. However, a color bias may occasionally be desirable, such as in an image at sunset.

While the technical aspects of color impact how light is seen in a portrait, the perceptual and emotional aspects mean the most to us as portrait photographers. These will be discussed in more depth in [chapter 10](#).

## 3 Lighting Sources and Equipment



© Tim Meyer

### Creating Light

We need light to make photographs. Like the painters of the Renaissance, we create the lighting environment in a way that allows us to envision and capture the portrait. To do this, we need to understand how to control light. We will deal with this topic in this chapter, discussing light and lighting equipment, and in the next chapter, where we will discuss the modification of lighting.

Discussing light as energy is the most accurate way to approach this subject. Light, regardless of type, is part of the electromagnetic spectrum (EMS). When there is a release of energy, there is the potential that part of it will be released as visible light. All light that is used in photography involves an energy release, whether it is the sun, continuous light, or electronic flash.

We will begin by introducing incandescent and ambient light, including sunlight, and then concentrate more on electronic flash since it is so prominent in photographic portraiture. We take this approach to lighting because all light, regardless of how it is generated, acts the same. Therefore, the controls we use with electronic flash are the same as those used for sunlight or incandescent light.

### Continuous Light

While not heavily used in contemporary portraiture, some photographers do rely on continuous lighting equipment. Most common are incandescent lights, but soon we may see more solid-state light-emitting diode (LED) systems. The advantage of continuous lighting is that there is no difference between the light seen before the shutter is activated and the light present for capture.

Incandescent light is the easiest type to understand from a generation standpoint. It is created from heat, and the heat is the energy source that releases the light. The sun, fire, candles, and light bulbs create light in this manner. To understand how this works, look at a common light bulb. The bulb is constructed of a glass envelope filled with an inert gas and a tungsten filament, which is a doubly wound fine wire. This construction has a very small cross section with a larger surface area. When electricity passes through the filament, it heats up and glows. As the filament gets hotter, its color changes from a warm red to a bright yellow.

Incandescent lights are used both as lighting for portraits and as integrated modeling lights for electronic flash. For primary lights, there are two types of bulbs. Photofloods, an older technology, are traditional in design and have a limited color life consistency. Quartz halogen bulbs, or tungsten lights, have extended color constancy because of their high heat. Regardless of the type, incandescent lights use a great deal of electricity and generate a great deal of heat. In addition, the “hot lights” can make the subject of a portrait uncomfortable. Newer LED systems have the advantage of reducing both power usage and heat.

### Ambient Light

Ambient refers to light that is not part of a lighting pattern created by equipment. This can be light from an open window, light in nature, or other sources that provide light to a set. Ambient light is most obvious in environmental portraits, but it is also a major concern in outdoor photography. When present, it does not necessarily become the main lighting or key light, and it may or may not be involved in the image capture.

The sun is the most available form of ambient light and it is often used in portraiture. The sun provides the majority of the energy reaching the Earth. Depending on the cloud cover, the light can vary from specular to exceptionally diffuse.

As far as photography is concerned, the distance from the sun to Earth is constant. This leads to the “Sunny Day Rule.” During midday (between 10 a.m. and 2 p.m.) with clear sky conditions, the proper exposure is  $f/16$  at a shutter speed of the reciprocal of the ISO. This exposure method is accurate and is further developed in the Basic Daylight Exposure method (described in [chapter 5](#)). If direct sunlight is used as the key



light for a portrait, that is lighting the face of the subject, then this method gives the base exposure.

When making a portrait in ambient light situations, you must consider whether the ambient light will be the main light source or whether other sources will be required.

## Window Light

There are several considerations when using window light. First is the direction the window faces. If the window allows direct sunlight to enter, it will have a different color bias than a window facing away from the sun. Also, if the sky is clear and sunlight shines directly into the area used for the portrait, it can be used either as a specular source to light the subject or to create effects on the background. However, because the sun constantly moves in the sky, it tends to be unreliable as a controlled source to create a particular lighting style. If the light enters the room from an overcast sky or away from the sun, it will have a blue cast and be more diffuse the closer the subject is to the window.

Window light is often used in a found environment. As compared to a studio with window light, it is more difficult to envision modifying the light in found settings with lighting equipment. This situation can be addressed with portable power packs and small, self-contained electronic flash units. However, whether in a studio or in a found environment, window light can serve as the concept setting light if not the key light for the portrait itself.



Monoblock self-contained unit, left, and studio power packs and heads, right (Courtesy of Profoto)

## Strobe Light Sources

Unlike incandescent light, electronic flash, or strobe light, results from an atomic particle action that causes the gas enclosed in a flashtube to glow. To make this glow, electricity passes through an inert gas, usually xenon, causing electrons to move out of orbit. As the electronic charge subsides, the electrons return to their original orbits and release stored energy that causes the gas to glow. With the speed of the electronic energy flow, the glow is very short. The energy is released primarily as visible light approximately the color temperature of daylight. A substantial amount of ultraviolet light accompanies the visible light.

The major concerns for strobe equipment design are the strength of the light, the duration of the light, and the flexibility of the unit. Strobes create less heat than incandescents, and heat dissipation from the electronic flash is not a great issue. A more important issue for strobe lighting equipment is holding the charge needed to affect the flash and getting it to the flashtube to create the light. This is handled by the capacitor. The normal way to discuss the power of an electronic flash unit is through the watt-second rating of the capacitor. The higher the watt-second rating, the more light can be produced by the unit. As the light intensity increases, so does the duration of the flash. The power from the capacitor is limited based on the flashtube, so the flashtube must be matched with the power to be released through it.

In terms of the need for flexibility, strobe lights come in two formats: monoblock self-contained units and studio power packs. With monoblocks, the flashtube, capacitor, and controls are all contained in one unit. The unit can be placed anywhere as long as a power supply (usually an electrical outlet) is available. With monoblocks, there are several concerns dealing with the flexibility of power settings once the unit has been positioned. However, just as remote firing has been provided to monoblocks, some higher-end units allow remote control of discharge amounts.



Ring light  
(Courtesy of Profoto)

Studio power packs are often called generators because they may use a generator to charge the capacitor quickly. These units include the capacitor, a method to charge the capacitor, and devices to control flash power. With the packs located either on the ground or in other stable locations, weight is not an issue, allowing for larger capacitors and greater light output. As mentioned, there must be a match between the capacitor and the flashtube's ability to handle the energy sent to the flash head. If excess power is sent to the flash head, it can destroy the flashtube.

It is common for power packs to allow the connection of multiple flash heads with cabling. With all the flash heads attached to a single control unit, synchronization and control are simplified. In addition, the flash units themselves are simpler in design and lighter. However, cables will cross over spaces within the studio.

On location, an extension of the power pack is the portable flash pack. This is a highly efficient rechargeable battery that includes a circuit for connecting a flash head.

Most flash units, whether monoblocks or packs, use modeling lights to allow the photographer to see the approximate lighting effects that will result when the flash units fire. Today, these modeling lights are incandescent bulbs; on higher-end lighting equipment, they can be proportional to the amount of the light that will be created with the flash. A rheostat that controls the output of the modeling light is connected to the power controller so the capacitor can coordinate the approximate output. Problems with accuracy of modeling lights can be attributed to differences between the size of the modeling light bulb and the size of the flashtube and differences between their respective axes. However, depending on the design of the flash unit, these effects can be greatly minimized.

An additional specialized piece of lighting equipment is the ring light. This is a strobe designed to fit around the camera lens and send its light straight at the subject, creating a unique highlight and shadow signature. It is sometimes used as a fill light; since it comes from the same axis as the camera, it avoids the shadows created by typical fill lights. It adds a unique specular highlight to skin and is used extensively in fashion work for this reason.

Activation of the flash unit occurs when the capacitor's charge releases into the flash tube. There are three basic ways to activate the unit. The oldest method is a PC cord, wiring that connects from the camera to the flash unit or studio pack. The PC cord is mounted through a PC connector integrated into the camera or hot shoe. Another method is an "optical slave" attached to the flash unit that is activated by a bright on-camera flash or the discharge from another unit. The last activation method is an infrared or radio trigger that sends a signal to a receiver on the flash unit. This remote activation can also be used to trip the shutter release, allowing the entire capture process to be completely away from the camera.

Because light generation takes a few microseconds, the flash unit and the camera shutter must be synchronized. In-lens leaf shutters do not have major problems with synchronization, but it can be a problem for shuttering sensors and focal plane shutters.

While an electronic flash may appear to be instantaneous, the light takes a short time to reach its full intensity. To address this temporal concern, many on-camera strobes have the ability to automatically adjust or stop the output when the correct amount of light reaches the film or sensor. A thyristor/quenching tube circuit diverts energy coming from the capacitor when the light energy from the film or the sensor reaches the proper level.

The release of energy from the gas that creates visible light in the flashtube generates a great deal of ultraviolet light, sometimes causing a problem called anomalous reflection. When the light from the flash reflects off certain materials, it can reflect more ultraviolet energy than normal and make the color shift to a bluish cast. This happens most noticeably with color-enhanced synthetic materials and other materials washed in brightness-enhancing detergents. This problem can be easily corrected with the use of an ultraviolet filter coating on the flashtube.

## Power Requirements

Power consumption and access are ongoing concerns with lighting equipment. Dependable power sources are a necessity, whether in the studio or on location. Access to power determines which lighting equipment can be used. While wall outlets, generators, or batteries provide power, each piece of equipment creates its own draw and can stress wiring and/or produce an overdraw on the power supply.

In the studio, multiple circuits are required for lighting equipment, digital cameras, and computers. While electronic flash is less of a power draw, modeling lights (commonly quartz halogen bulbs) and generators or charging systems are heavy power consumers. Surge protection also plays an important part in modern studio electrical systems because of the use of microcircuits in most equipment, including electronic flash, cameras, and computers.

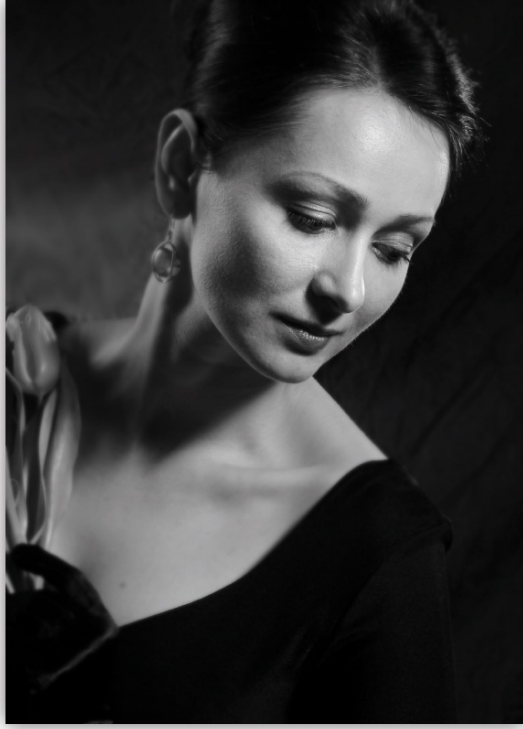


© Stacy Pearsall (Courtesy of the artist)

Several safety issues need to be addressed when working with any electrical equipment. With power packs, cables will cross the studio, and with monoblocks, wiring will be present throughout the setup. Also there are heat concerns, particularly with incandescent lighting such as modeling lights in electronic flash. Equipment and lighting situations that use quartz halogen lights need good ventilation with air movement to allow the heat to dissipate. Without care, the dissipation of the heat created can cause fires or other heat-related problems.

When quartz halogen lights are used, whether as direct sources or as modeling lights, care must be taken with the bulbs even when they are cool. In all situations, you should follow safety warnings with each piece of equipment.

## 4 Light Modification



The key light for this portrait was a parabolic reflector with a diffuser dome over the flashtube, creating a complex highlight that embeds a diffuse highlight in a highly directional light source. © Tim Meyer

Light is the medium that makes photography possible, and it is the way that the light is modified that allows a portrait to take on uniqueness and become visually exciting. Light modification techniques allow the portraitist to accent or diminish intensity, change the lighting ratio, and adjust color to make the portrait more than just a picture of a person. Because of this, light modification is one of the most important technical aspects of portrait photography.

### Modification Optics

A brief explanation of the optics involved is the best way to begin this discussion of light modifiers. Optics is the study of how light interacts with materials. While we are interested in the qualities of the light that reaches our subject, it is the modifiers and their interaction that establish those light qualities. Of the seven basic optical interactions in portrait lighting, we use four: reflection, scattering, refraction, and absorption/transmission.

Reflection is the most frequently used optical concept in portrait lighting. All lighting equipment, except a bare bulb, uses a reflector to direct the light from the flashtube toward the subject. Regardless of whether the reflector is on the light, a fill card, mirror, or umbrella, the same rule of reflection applies: that is, the angle of the light equals the angle of the reflection. This means that if light strikes the reflecting surface at a  $30^\circ$  angle, then the reflection will also be at a  $30^\circ$  angle. (The angle is measured from the perpendicular at the point that the light strikes the reflecting surface.)

Without going into great detail, the structure of the reflecting surface determines the quality of the reflected light. The more polished and shiny the surface, the more direct the reflection. This type of shiny surface is called a specular surface. When a surface is textured, it reflects diffuse light and is referred to as a diffuse surface. The more textured the surface, the more diffuse the reflection. Both of these surface reflections remain true regardless of the shape of the surface. We see the reflections better from specular surfaces than from diffuse surfaces. If a surface is curved outward (convex), diffuse surfaces will spread the light. If the surface is curved away from the subject (concave), specular surfaces will concentrate the light.

Color needs to be discussed in terms of reflection. When light interacts with a neutral surface, the color of the reflected light will be unchanged. However, if the surface has a color, the reflected light will take on the color bias of the surface.

The second optical interaction that is frequently used in light modification is scattering. This is done in two ways: by reflecting light from a rounded surface and by reflecting light as it passes through a material. In the first method, as the light reflects from a rounded object, the direction of the reflection changes as the reflecting surface changes. The myriad changes in the directions of reflections over an area create the scattering.

In the second method, light passes through a material and is scattered by it. This makes a larger light source and allows the light to strike the subject from many angles across the larger light pattern. Whether the light passes through a cloudy sky, rip-stop nylon, or plastic, it is distributed over a larger area. In certain situations, as with fog, the scattering becomes intensified as the light reflects from the subject toward the camera.

The third optic interaction that is involved in light modification is refraction, or the bending of light. This is how lenses work, and some lighting equipment uses lenses to control the light.

Finally, light is modified by the amount of absorption or transmission that a material provides. This is important for both filtration and shadow creation. It is easier to think of blocking any light that creates shadows; however, absorption not only stops light from creating shadows, it also helps reduce reflection. When a surface is darker, there is more absorption and less light reflected. Absorption also removes colors from reflected light that give it a color bias.

A significant issue is the way light falls off as it is blocked. Distances between the light source, what creates the shadow, and what catches the

shadow contribute to the sharpness of the shadow or falloff of the light. The sharpness of the shadow at the edge is the penumbra created by the blocking element, the size of the light source, and the distance to the shadow-catching surface.

## Basic Reflectors and Domes

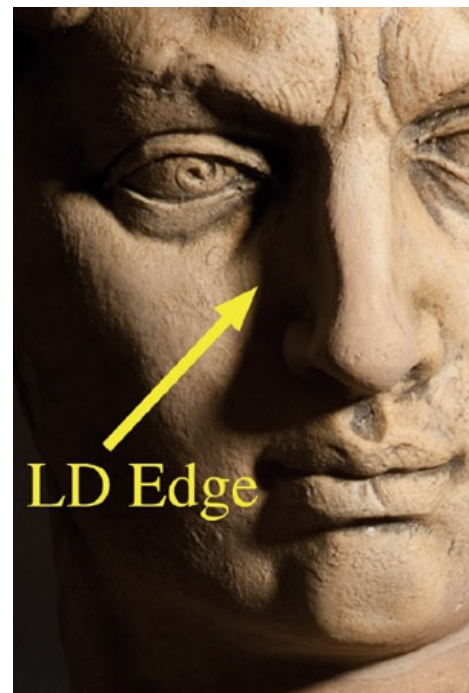
The light sources used in portrait photography emit light in all directions, but we need the light to be controlled and fall on our subject or a targeted area. In most situations, we want the light formed into a beam. Large or small, soft or hard, we want the light to travel along a predictable path to the targeted area. We can adjust a beam of light via the shape and positioning of the reflector.

When the reflector has a shallow shape, the light has a weak beam and spreads in what is commonly known as a flood pattern. The flood pattern tends to be stronger in the center with the light falloff away from the beam's axis. A pebbled surface on the reflector spreads the light more evenly but does not eliminate falloff.

As the reflector's shape becomes deeper, the beam of light becomes tighter. Unless the light is totally directed into the reflector, there will always be some flooding. Directing the light into a deep spherical or parabolic-shaped reflector creates a very tight and focused light beam.

Some systems allow focusing by moving the reflector position in relation to the flashtube. This makes the flash unit function as a "zoom" unit, meaning that the light can be varied from a flood characteristic to more of a spot characteristic.

There are also specialized reflectors, such as "beauty dishes," large, shallow parabolic reflectors that produce a soft directional light with mostly collimated characteristics. Other reflectors are designed to create very specular light that approximates sunlight. Depending on the electronic flash system, specialized reflectors can support the use of other light modifiers such as grids.



A small reflector creates specular LD Edges with well-defined boundaries and dark shadows

Many electronic flash units have transparent or translucent domes over the flashtube. These domes provide protection against failure of the flashtube or modeling light as well as modifying the light source. A clear dome has little effect on the quality of light, though sandblasting, texturing, or pebbling its surface breaks up the light and softens it somewhat. Translucent domes create a more diffuse light source. There are also globes that fit over the flashtube to make the light take on the characteristics of a household light-bulb.





A deep reflector creates a more directional light source. Other flash units move the light source in relation to the reflector, allowing focusing of the light.

(Courtesy of Profoto)

## Soft Light Modifiers

All diffuse or soft light is not the same. Rather, it is part of a spectrum of light quality that goes from hard and specular to soft and diffused. As part of this discussion, we will also include the amount of directionality that the light processes.

Soft or diffuse light is usually the preferred key lighting for portraits. This is because diffuse light reduces the texture of skin. Therefore, we will first look at how to modify light to achieve diffuse light.

For many portraitists, umbrellas are the most common modifiers used to spread and concentrate light. There are several types of umbrellas, all of which look, open, and hold their shape in the same manner as a common rain umbrella. Umbrellas designed for photography have their central shaft extend through the reflector or main housing of the flash unit. Normally the shaft can be adjusted to change the distance to the umbrella's surface.

We can easily separate umbrellas into transmitters and reflectors. Transmission umbrellas are constructed of white translucent materials that allow the light coming from the flash unit to travel through the umbrella and be diffused. Adjusting the distance of the flash unit from the umbrella changes the size of the illuminated circle on the umbrella's surface. Depending on the density of the umbrella material, the light source can penetrate it and create a slightly specular light.

Reflection umbrellas present many options in their construction and function. They direct light into the umbrella which is then bounced back toward the subject. Most have a black covering on the back that prevents the light from illuminating the area away from the posing area.

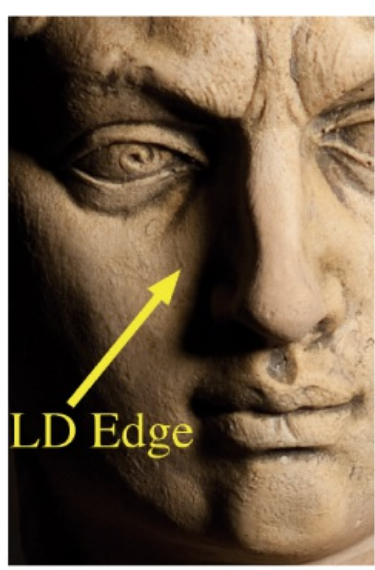
The depth and shape of the umbrella are important considerations. As an umbrella becomes deeper, it becomes more restrictive in the light pattern that it produces. The pattern can also be controlled by positioning the flashtube in relation to the actual focus (for parabolic umbrellas) or the apparent focus (for spherical umbrellas). As the flashtube's position becomes farther away, the light reflecting from the umbrella's surface approaches a collimated form; that is, parallel light rays.

The final consideration for umbrellas is their reflective surface material. The inner surfaces can be either white or metallic. Metallic surfaces produce higher amounts of reflection, offer greater efficiency in concentrating light, and produce a more specular light. The metallic umbrellas come in gold and silver; the gold color gives more warmth to the light.

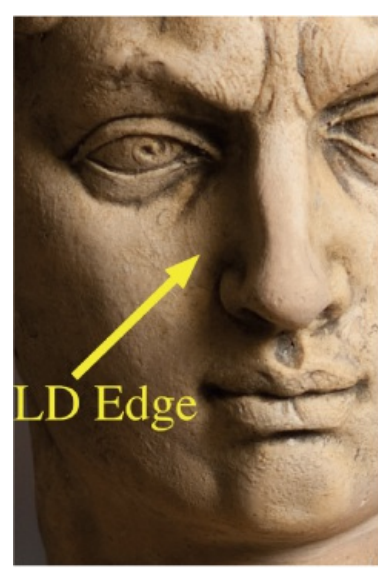
The light characteristics of umbrellas produce a defined but soft LD Edge. The edge becomes sharper the farther away the umbrella is from the subject. The umbrella's distance from the subject defines the highlight dynamic as well. As the umbrella moves farther away, the relative intensity between specular and diffused highlights increases.

When a very large umbrella is required, "ceiling reflectors" fit the bill. Manufactured with diameters of eight feet or larger, they are based on a parabolic design; the flashtube is aimed at the metallic surface from the focus of the parabola. The light comes off in a large, even, parallel pattern. This system is positioned behind the camera, so the LD Edge falls to the sides of the subject with weak highlights on the front.

Softboxes are self-contained diffusion panels with a controlled light source contained within a housing. The construction of most softboxes uses an external ribbed frame, a cloth covering, and a mounting system for the flashtube. From the outside, the softbox appears as a black, tentlike structure with a white panel across the front. The material on the interior rear surface is white or metallic with a laminate or backing of black opaque material facing out. As in the case of umbrellas, the black backing restricts the light exiting the structure other than through the diffuser panel.



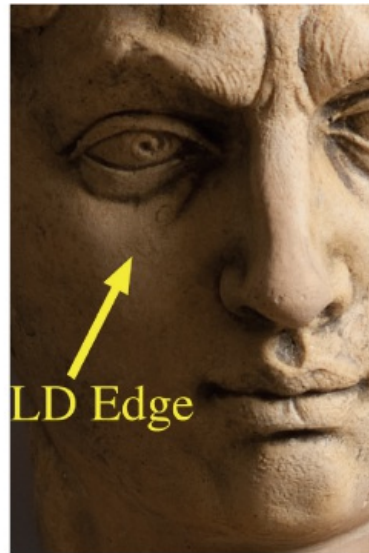
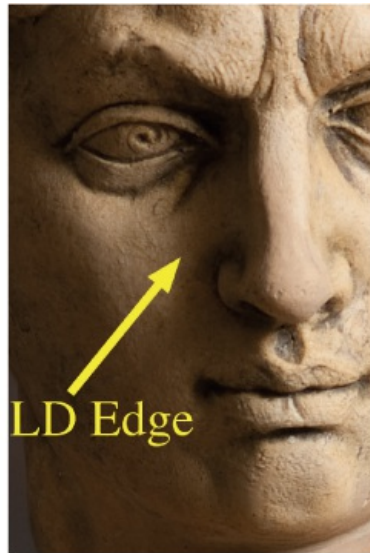
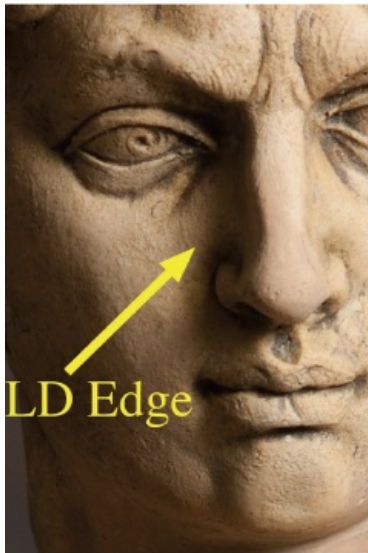
When the reflector is broadened and flattened to a more parabolic shape, the light is spread, becoming slightly diffused while maintaining strong directionality. This is the design of a beauty dish that produces an LD Edge that is slightly softened.  
(Courtesy of Profoto)



The flash unit is pointed into the reflective surface, spreading the light across the umbrella and producing a diffuse light with a definite direction. The LD Edge is seen as softened while still developing good shadows.  
(Courtesy of Profoto)



© Tim Meyer



When an umbrella is rotated, two things happen: As the light rotates, the angle of the light changes, moving the LD Edge. Also, if the light is rotated toward the back of the subject, the light becomes closer, creating an accent on edges on the umbrella's side of the subject.

The structure bounces all the light from the flashtube (which is held inside at the rear) toward the white diffusion panel that stretches across the front. As with diffusion panels, if the light within the softbox is directed at the subject, there is an embedded specular portion to the light. To diminish this specularity, many softboxes stretch an additional diffusion panel between the flashtube and the front panel.

The common light dynamic for softboxes is smooth and broad highlights with gradual LD Edges. The larger and closer the softbox is to the subject, the more gradual the transition in the LD Edge. In addition, the specular highlights appear less distinct. Most softboxes have rectangular front diffusion panels, but other shapes and modifications can be used. Many photographers wish to avoid rectangular catchlights reflecting in the eyes of the subject. For this reason, softboxes are manufactured as polygons or octagons, and with circular masks on the front diffusion panel to create round catchlights.

Softboxes are also constructed as long and narrow strip lights. Highlights created by a strip light are longer and parallel to the length of the light. The LD Edge will be longer and smoother when the LD Edge's transition is in the same direction as the strip, and vice versa. This produces complex highlights and LD Edges as they change in relation to the direction of the strip. When an umbrella is used at a substantial angle to the subject, the light reflecting onto the subject acts similarly to a strip light.

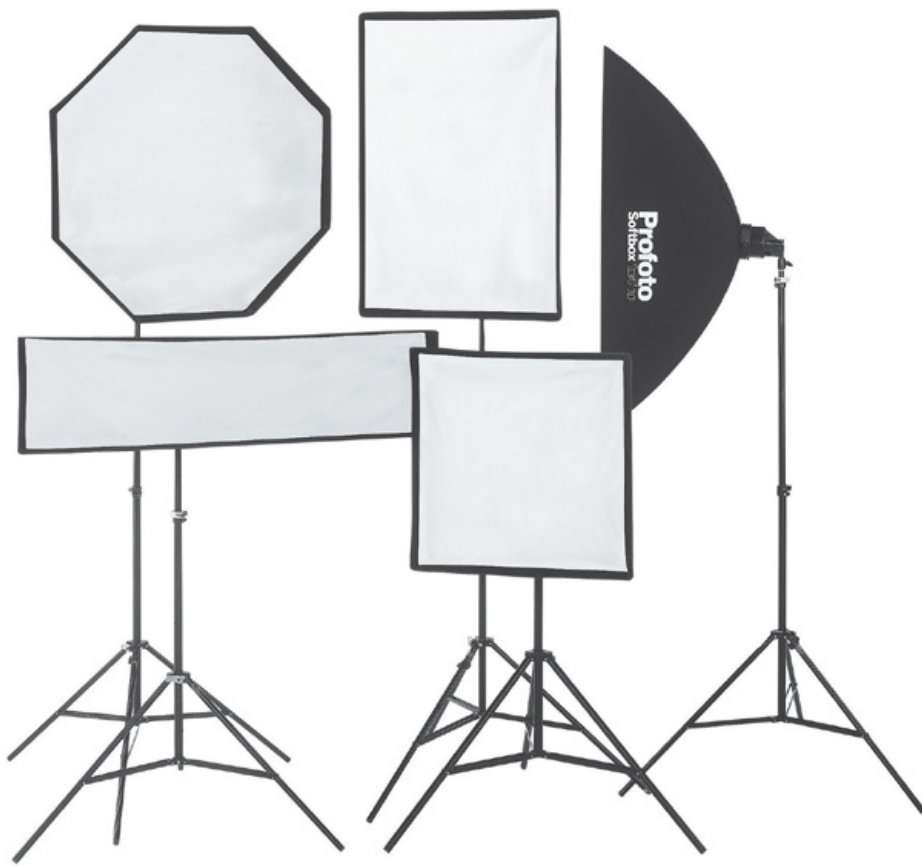




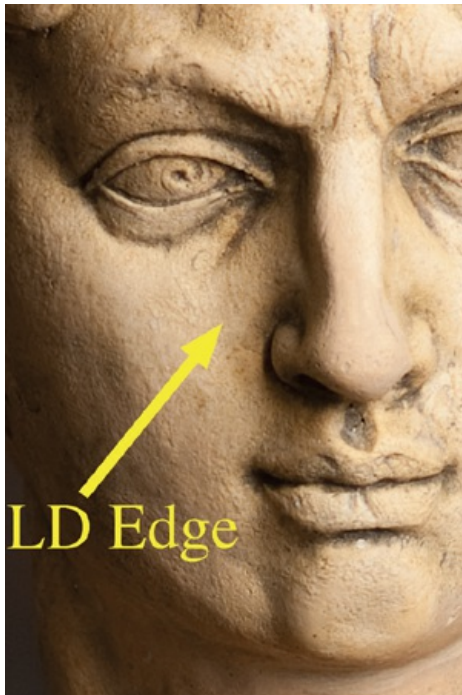
Silvered giant reflectors  
(Courtesy of Profoto)



A globe creates a softer and more diffused light than the flashtube  
(Courtesy of Profoto)



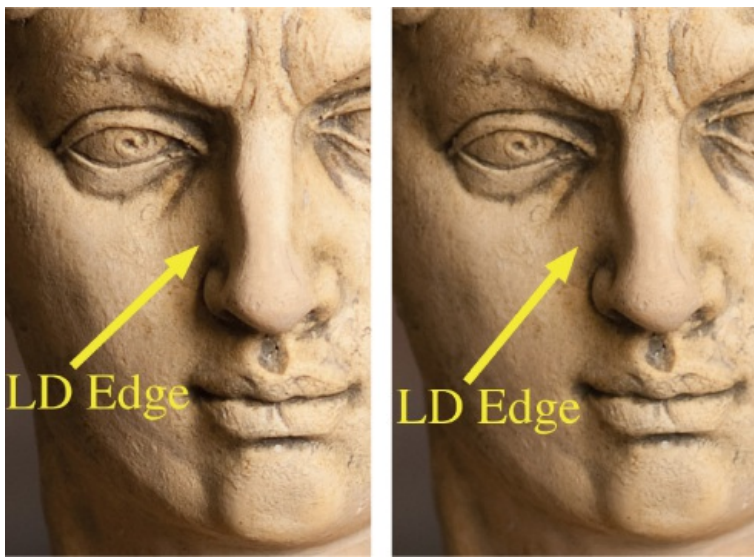
Various shapes and sizes of softboxes  
(Courtesy of Profoto)



A softbox creates diffuse light with a soft LD Edge when the softbox is close to the subject

Softboxes are manufactured in various sizes from very small (approximately 1 foot) to extremely large (5 feet). A modification of the softbox concept features multiple flash-head units up to 40 feet in length.

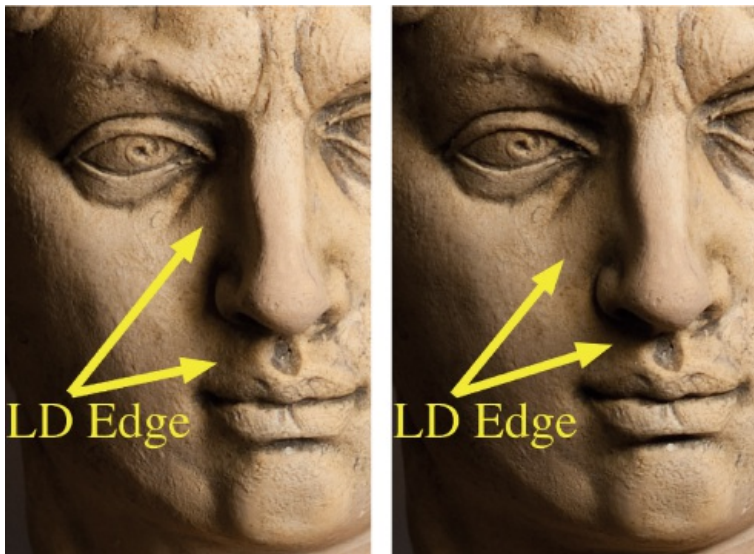
Not all light diffusers in portrait setups are umbrellas or softboxes. Various mirrors, panels, cards, and frames can be used to reflect soft light. Reflectors are commonly used for fill light because they tend to have less intensity and weaker specular characteristics. If the reflector is flat, it cannot increase the specularity of the light landing on it. For example, a mirror reflects diffuse light if that is the light illuminating it, but it cannot change diffuse illumination to specular if the mirror is flat. However, a concave reflector, with the center of the panel curved away from the reflection, tends to concentrate the light.



The two details show the effect of using a small and large softbox 58 inches from the subject. The larger softbox creates more diffuse light, as can be seen in comparing the LD Edges.

Often reflectors are mounted to panels that can also be used to hold diffusion materials. Others are attached to flexible, collapsible frames. Any material that reflects light can be used. One of the easiest and least expensive light modifiers is a piece of white cardboard or foamcore. Any colors or materials can be used, and it is quite common to find manufactured reflectors with a metallic surface on one side and white on the other side.

If a panel has a translucent material, the light projected onto the back of the panel scatters as it passes through. The amount of diffuse light thus created depends on the density of the material and the size of its light pattern. If the light is directed at the subject through the diffuser panel, it will have some directional aspects included within diffused light. A strong point in using diffusion panels is that they can be easily controlled by blocking some of the light coming through the panel or by changing the color of light transmitting through the panel.



The strip light creates a complex LD Edge with the edge more specular opposite the narrow dimension of the strip light and diffuse opposite the long direction of the strip light. When the strip light is used vertically (left), specular LD Edges are created by vertical edges (the nose), and diffuse LD Edges are created by horizontal edges (the eyebrows). When the strip light is used horizontally (right), the LD Edges are the opposites of those created by a vertical strip light. (Courtesy of Profoto)



Covering or blocking portions of the illuminated surface of a softbox can change the shape of the light  
(Courtesy of Chimera)

## Hard Light Modifiers

Just as soft light is a matter of degree, so is hard light. At the other end of the specular/diffuse spectrum, we also have equipment that modifies light to different amounts of specularity.

At the sharpest, hardest end of the specular/diffuse dynamic are spotlights. Powerful lenses focus the light and bring all the light rays together at the desired place. Because the rays converge at one location, this light is very hard.

Fresnel lights produce collimated light, which means that the light is in a column with all the rays parallel and well defined. The name comes from the inventor of the lens, Augustin-Jean Fresnel. This type of lens is lightweight with a very short focal length. The light quality from a Fresnel lens is hard, and its light pattern falls off rapidly.

Variable spotlights are a function of the shape of the reflector and the position of the flashtube within it. As the flashtube moves closer to the front of the reflector, the light floods a larger area. Because the light source is open to the subject, the light remains specular. This setup is known as a zoom spot. The deeper and the more parabolic the reflector, the more concentrated the light.

With all these light modifiers—spotlights, Fresnel, and variable spots—the LD Edges have short transitions and the highlights are smaller and more defined. The more specular and shiny the lit surface, the tighter the highlight.

Parabolic reflectors create hard light similar to that of a Fresnel light. Because the basic design of this type of reflector is shallow, the light will be collimated if it is positioned near the focus of the parabola. However, since the flashtube is open to the subject, the light takes on some characteristics of a floodlight, thus softening the overall affect of the modifier. The LD Edge will have the characteristic of any dome used on the

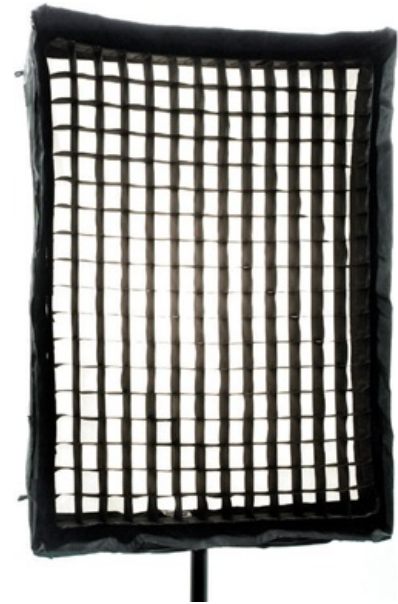


flashtube, and the highlight will take on the characteristic of the dome. A clear dome produces a specular highlight, and a frosted dome creates a softer and more diffused highlight.

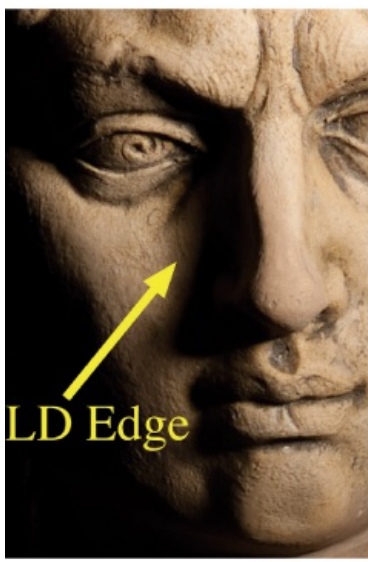


Fresnel lens attachment (Courtesy of Profoto)

Regardless of the other parts of the lighting setup, the smaller and farther the opening is from the light source, the crisper the light will be. This consideration affects three common modifiers: snoots, grids, and egg crates. Snoots are extensions from the front of the flash reflector that allow the light to shine only through a small opening away from the flashtube, producing a small pattern of light. A grid is placed on the front of the reflector, forcing the light from the flashtube to pass through numerous openings made of parallel pieces of material. The deeper the grid, the less angular the spread of the light and the sharper the light. Grids increased in size are known as egg crates. Egg crates are attached to the front of a softbox. The depth of the egg crate controls the angle of the light coming from the surface of the softbox and therefore adds more directionality to the diffuse light. Louvers operate the same way as egg crates.



Egg crate (Courtesy of Chimera)



Grids fit directly over the light source and make the light more directional. The LD Edge is well defined and the shadows are dark. (Courtesy of Chimera)

## Modifying Intensity

Light can be modified not only to change its characteristics, but also to change the amount of light to and from all or part of the portrait image. We can lighten or darken the image area or change the contrast ratio for all or part of the image.

Many pieces of lighting equipment have built-in variable intensity controls. Another, more readily available option is fine-tuning light by physically moving the lights. Based on the effects the Inverse Square Law (ISL), light can be varied in intensity by simply moving individual lights in or out. This is true for both direct and reflected intensities.

Since photographic stops (shutter speeds, f-stops, and ISOs) and the ISL are all based on the mathematical square function of the base 2, they work well together. For example, the full f-stops are 1.4, 2, 2.8, 4, 5.6, 8, 11, etc. They are related to the powers of the base 2 in that 1.4 is the square root of 2, 8 is 2 to the 3rd power, etc. Therefore, we find that if we move the light 1.4 times farther away from the subject, we halve the intensity of the light. If we move the light twice as far away from the subject, we reduce the light by two stops, and if we move the light 2.8 times away, we reduce the intensity by three stops. This relationship holds for all full stops as multipliers of distance change from the light. A caveat must be stated: these ratios hold most accurately for bare bulb setups measured on the light's beam axis.

Modifying light by reducing it is often just as important to establish the correct portrait setting. We can reduce light by blocking it totally, diminishing it proportionally, patterning it, or absorbing its intensity.

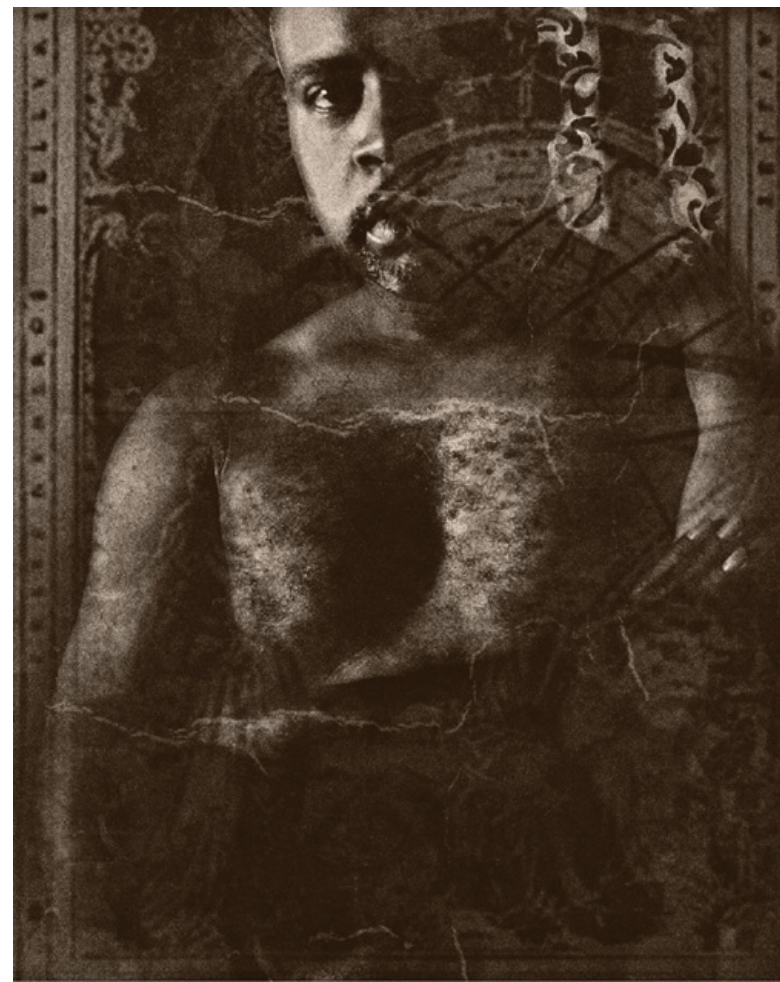
Barndoors attached to the light source as blades or panels are hinged so that they can be positioned to restrict the light pattern. This restriction generates a shadow and a feathered LD Edge. The resulting light pattern consists of a fully lit area at the beam or in the illumination area, a shadow adjacent to the lit area, and feathered light in between.

Gels decrease light intensity evenly at the source. Their name comes from the gelatin that was formerly used in camera-based filters. Today's gels are produced from heat-resistant plastics; the heat resistance is an important feature for gels used with electronic flash because modeling lights also generate heat. Neutral density gels decrease the intensity of the light without producing a color shift, while color gels decrease the intensity as they change the color. Color gels are used to change the atmosphere of a portrait, to match the color of artificial light to ambient light, or to make light take on a desired color.

Screens and scrims reduce light at the source similar to a grid, but without the depth; they provide only partial blocking. Metal screens are best since they are heat resistant. Scrims can be used over a softbox or behind the subject to reduce the intensity of a background. The scrim should be a dark, neutral tone and made of fine material. Also, the scrim must be placed outside the area of focus and be large enough to extend beyond the angular coverage of the camera.

Sometimes the light within a portrait setting is helpful to the image or flattens its contrast ratio. To control unwanted light, a flag can be used. Flags

are made of black, heavy, textured material that absorbs ambient light and keeps it from entering the setting from the flagâ€™s direction. This restricts the fill light that would normally enter the shadows, thus producing higher lighting ratios.



Â© Arthur Rainville (Courtesy of the artist)

Increasing or decreasing the flagâ€™s angle changes the amount of light absorbed. Moving the flag closer and farther from the subject can also produce a noticeable change in lighting ratios. When the flag is close to a shadow area, the shadow will darken and the lighting ratio will be higher.

The flag is at one end of the continuum from maximum to minimum reflection. All surfaces reflect and absorb some light. When there is color present in a surface, the light reflecting from it will have a color bias. For example, photographing a portrait on a grassy area means that the light reflected from the ground will have a greenish cast and also that the shadows will be filled with greenish light. In turn, this will create a dulling of colors in the red spectral area. The reflection from a color surface is selective, diminishing complementary and accent colors in the same spectral range as the reflection.

To end this discussion about modifying light intensity, we come to cuculoris, or â€œcookieâ€ (also spelled kookaloris or cucalorus). Cookies are cutouts used primarily to produce light patterns. For example, to simulate the light from a window, a cookie can be made that looks like a window and a focused light can be projected through the pattern. Cookies can also be used to block light in specific areas, such as removing an unwanted specular highlight by using a cookie in front of the key light.

## 5 Exposure and Metering



© Tim Meyer

Exposure refers to the capture of light on the camera’s sensor or film. Factors affecting exposure include the camera’s aperture and shutter speed as well as the speed of the sensor or film. When any one of these three factors remains constant, then the other two variables establish the exposure.

Though many portrait photographers believe they do not need to consider shutter speed because they use electronic flash, there are several situations where the shutter speed is crucial, such as when needing to include an unlighted background.

All photography is based on a 2:1 factor. Doubling the ISO increases the film or sensor’s sensitivity by a factor of 2. Both f-stops and shutter speeds are based on this doubling/halving function.

If the ISO is held constant (the method used for film), then f/4 at 1/125, f/5.6 at 1/60, f/8 at 1/30, and f/11 at 1/15 will all be equivalent exposures. (With digital sensors, the ISO is flexible.)

If the shutter speed is held constant, then f/11 at 400 ISO, f/8 at 200 ISO, and f/5.6 at 100 ISO will all be equivalent exposures.

If the f-stop is held constant, then 1/125 at 400 ISO, 1/60 at 200 ISO, and 1/30 at 100 ISO will all be equivalent exposures.

### Basic Daylight Exposure

In some situations, understanding the basic power of sunlight will assist in making better exposures. Basic daylight exposure (BDE) gives the portrait photographer the ability to deal with ambient light as the key light, fill light, or background. BDE is based on the illumination level of clear sky sunlight. Also known as the “Sunny Day” or “Sunny 16” rule, it states that on a sunny day the proper exposure is f/16 at a shutter speed of 1/ISO.

Light Condition	Light Value	Exposure
Sunny day	BDE	f/16
Sunny on snow or sand	BDE + 1 stop	f/22
Hazy	BDE – 1 stop	f/11
Normal cloudy but bright	BDE – 2 stops	f/8
Overcast or open shadow	BDE – 3 stops	f/5.6

The table above shows specific recommended BDE exposures in various lighting situations. While BDE actually has an extensive list of recommended exposures for varying light conditions, the list presented here is shorter, focusing on exposures that might be used in an environmental or outdoor portrait.

### Unmetered Electronic Flash Exposure



Electronic flash is the predominant method for lighting portraiture, and one of the most commonly used unmetred exposure methods is electronic flash guide numbers. The guide number is found by a formula that uses the intensity of the flash unit's central beam and the ISO of the film or the sensor setting. Once we know the guide number (usually from the manufacturer's publication), we can calculate the exposure; dividing the guide number by the distance to the subject gives the correct f-stop. Since shutter speed is not generally involved in electronic flash, the f-stop is the exposure control. For example, if the guide number for the key light flash unit is 110 and the distance from the flash unit to the subject is 10 feet, then the exposure will be f/11. (110 divided by 10 equals 11.)



These three meters allow the portrait photographer to use both ambient and electronic flash by reading incident light. The third meter, the L-578DR, also allows spot metering. (Courtesy of Sekonic)

This technique is particularly helpful when using an on-camera fill flash or ring light in an ambient or backlit setting. The flash may or may not be used as the key light, but it will be important in setting the exposure for the face. This technique will be addressed later in this chapter.

## Light Meters and Basic Metering

While it is possible to determine exposure without metering, most portrait photography is made with the aid of a light meter. Meters work with photocells similar to, but manufactured differently from, those in digital cameras. When the light's energy is collected by the photocells, they can either create electric voltage or change the resistance in a circuit. When the current in the circuit is measured, it is calibrated to provide a measure of the light. In light meters, the light value is converted to provide f-stop and shutter speed in relation to a set ISO.

For portrait photography, a handheld light meter is the best choice. This is true for most studio-based photography. Since there will always be some movement in a subject, the structure of light is more important than the specific reflection in the portrait setting. While the flash power can be calculated within the camera's through-the-lens (TTL) system, it will not accurately read the ratio or background.

Meters evaluate either the amount of light that falls on the subject (incident meters) or the amount of light reflected from the subject (reflective meters). The meter's software measures the light and sets the exposure to acquire an 18% reflective value. For the portrait photographer, this is convenient since light flesh tone has approximately this value (dark skin is one stop lower).

Since an incident meter reads the amount of illumination rather than the amount of reflection, subject bias is avoided. The light is measured through a translucent diffuser covering the meter's photocell. The translucent diffuser averages out the illumination falling on the subject. There are three types of translucent diffusers: dome, flat, and retractable. The most common design is the dome. When pointed at the camera, a dome receives light from all sources that illuminate the subject. Flat diffusers are affected only by light pointed at the diffuser. This is also true of retractable diffusers, which are even more restrictive because they retract into a housing that limits the amount of light being measured.

Generally speaking, flash meters are incident meters. While there are some reflective and spot flash meters, the incident light measuring method is superior for most portraiture. Modern meters simultaneously measure the high brief intensity of the electronic flash along with adding and/or separating the ambient light arriving at the subject. The flash meter reacts to the high intensity, short duration light and calculates the f-stop to provide the needed exposure. Some meters read both the flash and the ambient light to give a total light value.

Incident meters are not pointed at the subject to measure the light reflecting from its surface; rather, they are pointed either at the camera or at the key light from the subject's position. When the meter is directed at the camera from the key light side of a portrait, it averages the key light directed at the subject and any ambient or fill light. When the meter is pointed at the light source, it measures the full illumination of the light as it reaches the subject's surface. If the meter is pointed at the camera, it reads all light proportionally to its positioning. Therefore, if only part of the meter's dome is lit, it will measure the light as less intense than when it is pointed directly at the light source. As we state later when discussing additive and source ratios, both methods work, but one must be chosen and consistently applied. It should also be obvious that pointing the incident meter at the camera is required for the additive method and pointing it at the light works best for the source method.

Reflective meters are infrequently used in portraiture but can be beneficial in certain situations. There are three types of reflective meters: average, programmed, and spot. Regardless of how much of the image is sampled to set the exposure—the amount of the image that is actually measured—the meter calculates the average light energy across the sample and sets that as the middle tone.

Software allows us to use digital camera sensors as meters. Also, metering photocells can be placed within the camera housing that read the light energy off the film's surface or as the focused light passes through to establish exposure. These are known as TTL meters, and they are reflective meters. With digital cameras, the TTL system not only establishes the proper exposure level but also represents the range and

distribution of the light through a graph known as the histogram. While the histogram can be used to assist in making a good exposure, it is directly related to the exposure settings entered into the camera. Therefore, a histogram can only tell whether the selected exposure fits within the camera's abilities, not whether the exposure is the best available.

As a result of TTL and on-camera metering, "auto-exposure" settings are common on most cameras. These settings provide overall exposure calculation based on the light from the subject reflected back into the camera. It is important to remember that auto-exposure is not the only exposure choice. As with most reflective meter readings, auto-exposures are subject biased. If the subject shows mostly highlights, the auto-exposure setting will produce an underexposure. When the subject is dark, the image will be overexposed.

With the sophisticated sensors in today's cameras, metering can be programmed to patterns rather than just basing an exposure on an average reading. The possibilities include weighted exposures and emphasizing certain areas of the frame; for example, programming can center weight a portrait to base an exposure on the face.

While a TTL meter can be accurate, it is inconvenient to set the camera on a tripod and use the TTL function. Furthermore, measuring the lighting ratio with a TTL is difficult compared to using a handheld reflective meter.

## Substitution Metering

Many photographers only have an in-camera meter or a reflective handheld meter but wish to measure the light falling on the subject in order to avoid subject bias. This can be accomplished with substitution metering, which introduces a material with a known reflectivity, e.g., the palm of the hand (normally one stop lighter than 18%). The procedure is to measure the reflection from the substituted material with the knowledge of how it varies from the normal 18% reflectivity. Any material can be used as long as you know the number of stops it differs in reflectivity from 18%.

One easy way to use this method is a gray card that reflects 18% of the light falling on it. It is important to use the card at the same angle that you use for an incident meter.

To set the exposure for a portrait, the card should be perpendicular to the camera and as close as possible to the subject. This is important so that the card is illuminated by all the light provided on the highlight side of the subject. If the card produces some flare, do not readjust it because the flare will also be an issue in the photograph and needs to be considered in the metering.

## Tonal Placement

Tonal placement can be very important in certain portraits. Because film and digital capture function differently, the way tonal placement is used can vary greatly. There are three different situations for the use of tonal placement: the general placement of a particular tone, such as skin tone; the placement of dark tones that are more critical when using film; and the placement of highlight tones when using digital capture.



Brigitte DeMayer © Tim Mantoani (Courtesy of the artist)

General tonal placement involves choosing a specific tone within the portrait and setting the exposure to reproduce that tone as a specific value. A reflective meter is required for all tonal placement techniques. Generally, a meter reading is taken for the critical tone, e.g., the facial tone of the

cheek. As a result, the metered area reproduces as a middle tone. For light skin, one additional stop of exposure is given to the reading. For darker-skinned individuals, the reading ranges from an exposure of equal to the reading to two stops underexposure. The tonal placement approach to setting exposure adjusts not only the output of the chosen area but also all other areas of the portrait. For example, if underexposure is used to achieve a darker skin tone, it will also darken the entire portrait.

Dark-tone metering is perhaps the most useful nontechnical approach to expose film; however, it is not acceptable for digital capture because of the sensor's inability to accept overexposure. This type of metering uses textured shadow (shadow detail) as the point for proper exposure. The phrase "expose for the shadows and develop for the highlights" explains how negative film-based photography worked for many years. (When shadow detail is critical, if it is not in the negative, then it will not appear in the final image.) Dark-tone metering is accomplished by determining the shadow area in the portrait that will be the darkest part with detail. This area of the setting is metered with a reflective meter that will produce a middle tone if not compensated. The compensation for exposure is to close down two stops. This results in a negative with good enough details in the shadows and enough latitude in the highlights that they will be represented well in the final print.

Digital capture and transparency film do not handle overexposure well. Because of this, exposure of the highlights becomes essential. With digital capture, "blowing out" highlights can be avoided by proper placement of the highlight tones. In this type of tonal placement, we select the area of highlights that needs to have detail in the final image. This area is measured with a reflective meter to provide an exposure that is two stops underexposed. The adjustment of the exposure by opening up two stops places detail in the highlight tones. Without this control, overexposure can result in "clipping," i.e., white highlight values with no detail. Particularly when a portrait presents critical highlight detail, such as a bride in a white lace gown, highlight tonal placement is appropriate.

Average-value metering uses aspects of both dark-tone and highlight-tone metering to calculate exposure. With this method, we select and meter two tonal areas, one dark and one light, to establish a range of tones for the portrait. This exposure is defined by dividing the two tones. Effectively, we meter the shadow detail and the highlight detail and split the difference between the two. If there is no clear midpoint between the highlight and shadow meter readings, then a slight underexposure should be favored.



© Ray Prevost (Courtesy of the artist)

## Testing for Exposure

When we are using digital capture, it is best to establish the correct Exposure Index (EI). This is the actual speed of our digital sensor rather than just the ISO setting on the digital camera. We need to know how the sensor will actually expose, its real speed, and its color bias. The following is a method for testing the sensor's EI:

## Speed Testing Digital Photography

You will need the following:

- An incident light meter.
- A test target that consists of white, 18% gray, and black areas that are large enough to measure with imaging software. These can be overlapped separate cards.
- A model wearing a textured white shirt or sweater. Alternatively, a piece of white material with heavy texture, ribs, or cabling can be draped over a shoulder.
- A camera in manual mode so that you can adjust the speed and aperture. Set the camera to capture RAW files.

Organize the test shot in the following manner:

1. Find or create an evenly illuminated scene with an even, solid, dark background. If there is a bright background or backlighting, the test will be inaccurate.
2. Put the cards on a stand near the model's face. Make sure that you can see part of the white fabric in detail. The gray, black, and white

cards must be parallel to the sensor's plane (the back of the camera) for accuracy.

3. Check to see that the light is nondirectional (diffuse) on the model and cards (no specular light).
4. The ISO for the light meter must be the same as the selected ISO for the camera. (Because of noise considerations, we recommend that you use ISO 100 or the lowest available ISO for baseline testing.)
5. Take an incident meter reading, and write down the f-stop and shutter speed.
6. Start by setting the camera opened up two stops from the reading you made in step 5. This will be your first exposure.
7. Close down the lens 1/3 stop and take the second exposure. If your lens has 1/2 stops, do the test in 1/2 stops. Record your information for each successive frame.
8. Close down another 1/3 stop (or 1/2 stop if appropriate) and take another exposure. Repeat until you have a complete four-stop range.

To determine your camera's true ISO, read the white card with the info marker in image software. Neutralize the file and then take information readings on the white card. (The neutralizing should not include adjusting the white point.) The correct exposure will be the frame where the white card value is approximately 245 with no exposure adjustment. This determination gives you the closest true white value that compares with your original meter reading.

If you organize the shooting and corresponding white point data in order, from most exposure to least exposure, you can see which exposure's white point is closest to 245. The EI is the number of stops (1/3 or 1/2) away from the camera's set ISO. For correct exposure, reduce the exposure setting if the EI is below the meter setting and increase the exposure setting if the EI is greater than the meter setting. Obviously, this method is viable only if the camera is used in manual mode and a light meter is used for testing.

To determine the highest amount of overexposure that your camera will allow and still give detail in white/highlight areas, start with your new EI exposure and view successively overexposed frames. Adjust exposure with the viewing software to avoid "clipping" by setting the white card at 245. You can magnify and view the white material with texture and look for the loss of detail, color shifts, blooming, and color fringing, thus determining the highest amount of overexposure that your camera will allow without significant degradation of the image. This finding is accurate whether the camera is used in manual or any automatic mode.



## 6 Lighting Ratios



This image shows how the ratio is controlled to make the lighting look as though the light has a consistent direction from the high windows  
Â© Arthur Rainville (Courtesy of the artist)

Techniques to convey details in highlights and shadows simultaneously have been part of painting since early human history. Because painters could interpret how they wished to delineate shadow detail, they could use the totality of their visual, mental, and artistic abilities to ensure the reading of details in the dark areas of a painting.

This approach differs from the photographic portrait process because the ability of the human perceptual system to see a range of light values is vastly different from the photographic process. The human perceptual system sees selectively; that is, when we look at a scene, our eyes automatically adjust for differences in illumination levels between light and dark areas. Our mind puts this information together seamlessly, processing light values across a 20-stop range. In contrast, photography is a nonselective means of viewing a scene that does not change to see variations. To emulate our normal visual ability to see details in highlights and shadows simultaneously, we must bring the levels of illumination closer together. This is where the concept of lighting ratios comes in.

Lighting ratios also relate to human perception in other major ways. Our visual system uses brightness to assist us in discerning depth. As subjects become brighter, they pull forward in visual space. If part of a portrait is bright, that area seems closer to the viewer than a darker area of the same image. This principle allows us to produce roundness and fullness in a portrait. If part of the portrait is maximum black, it becomes flat and absorbs energy from the image.

In talking about lighting ratios, the area of greatest concern is the face. This is true even if the totality of the image has a large dynamic range. We may be using kickers, hair lights, or darkened backgrounds, but they do not enter into our concern with how the ratio works.

Also, regardless of the other dynamics of the light, the LD Edge becomes more visible as the lighting ratio increases. The lower the ratio, the less volume can be seen in the portrait. This means that as long as the detail is maintained in the shadows, increasing the lighting ratios provides better volume and depth within the image. However, very high lighting ratios tend to show more texture, looking harsher and more dramatic. Therefore, for portraiture, moderate to lower lighting ratios are preferred.

### Fit

While not normally discussed, the issue of how well a photographic system can capture and output the light is crucial to a successful portrait. This dynamic includes the effects of the camera system, the overall lighting of the subject, and finally, the output. “[Fit](#)” involves matching the contrast ratio of the light with the dynamic range of the capture and output systems. (While we have mentioned output, it will not be addressed further as the central thrust of this book is taking the portrait rather than printing it.)

At its simplest, the dynamic range of the camera system is the difference in stops between the darkest and lightest areas of the image that can be captured without losing detail. For film, this is defined as the difference between D-min (the lowest recorded light value) and D-max (the highest recorded light value). For negative film, it is 15 or more stops, depending on handling; with transparency film, the capture range is less than six stops. For digital cameras, the range is approximately 14 stops, though this is highly dependent on the software built into the camera.



This image has natural fill coming from the reflection of a nearby wall © Tim Meyer

The dynamic range of the lighting is more difficult to quantify than the capture range, and for portraiture, it is more important. Control of the lighting ratio is a complex issue for two reasons. First is the makeup of tones present in the subject. For example, if we make a portrait of a man in a black jacket with a bright white shirt, the dynamic range (also referred to as reflectance value) can be large. If the subject's dynamic range exceeds the camera system's ability to capture it, then "clipping" will occur; detail will be lost either from the highlights or shadows, and not all the image light will be captured.

Within the portrait studio, we have the ability to adjust the lighting to ensure that the brightest and darkest detailed reflections from the subject are within the capture capability. Two possible methods are the Zone System, the technical method of developing black-and-white film to match light conditions defined by Ansel Adams, and measured photography, a studio method that changes the lighting range to match the output abilities.

Regardless of the approach, in order to achieve fit, we need to control three dynamics: the capabilities of the camera system, the reflectivity of the detail range of the subject, and the light ratios.

## Lighting Ratios

Lighting ratios are a means of measuring the different levels of illumination in a scene. In a portrait, we are dealing with the light from the highlight area as compared to the light in the shadow areas. Lighting ratios are numbers that represent the relative differences in intensity between these specific areas. A typical numerical representation might be a 3:1 lighting ratio. That means that the highlights (in this case represented by the 3) receive three times more light than the shadows (represented by the 1). A 5:1 ratio means that the highlights are illuminated with five times more light than the shadows.

The measurement and capture of lighting ratios in portrait photographs have been confusing to many. This is because there often is a discussion of the appropriateness of one of two specific methods based on either the measurement of relative intensity used for key and fill lights individually, or the relative intensity between the combined measurement of the key and fill lights and the fill light alone. These methods are the "source method" and the "additive method."

The source method measures the key light and fill light independently. The light from each source is measured without the other light illuminating the subject. Thus the fill is turned on, the light value is measured, and then it is turned off. Then the key light (main light) is measured without the fill light. This method gives the light intensity values of each light unit.

The additive method is based on the assumption that the key and fill lights interact. First, the fill light is measured independently on the shadow side of the subject. Then the key light is turned on without turning off the fill light. A measurement of the combined key and fill lights is then taken on the highlight side of the subject of the combined key and fill lights.

At first glance, the distinction between the source and additive methods doesn't seem that significant. It is! Fundamentally, one measures the light emitted from each source separately and the other measures the total amount of light that can be captured in the photographic process. Understanding this concept eliminates any confusion.

To better understand these measurement techniques, let's begin by defining the positions of the key and fill lights. The key light is the light that determines the subject's shape and dimension, as shown in [chapter 2](#). For this example, we are using a key light placed at about 45° to the right of the camera/subject axis, about 45° above the camera's axis. This is a very typical lighting setup in portraiture and is often called the 45/45 key light position. The fill light is in the traditional position directly above and behind the camera at 0/70, as described in [chapter 2](#). Its sole function is to add light to the shadow areas. Placing it directly behind the camera eliminates any additional shadows that might be confusing in the portrait.

With this setup, using the source method we measure a 2:1 relative intensity difference between the key and fill lights. When we meter the fill light independently, it reads an intensity of f/5.6. (The shutter speed is irrelevant since we are using strobe lights.) Metering the key light independently, we get a reading of one stop brighter at f/8. In the source method, it is important to make sure that each light does not affect the meter reading of the other and that the incident dome of the meter points at the light from the subject.



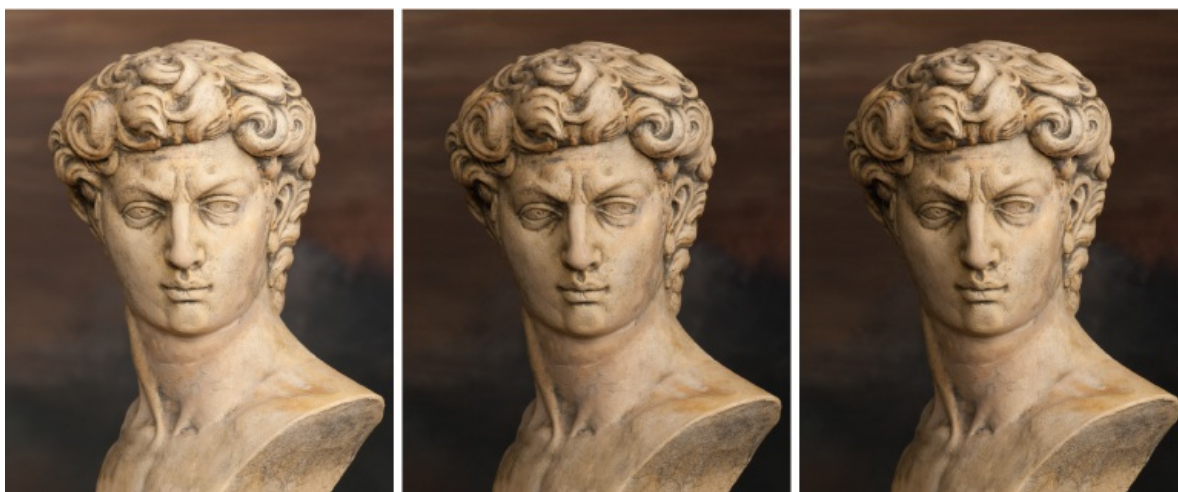
Each block indicates one unit of measured light intensity (e.g.,  $f/5.6$ ). The first image shows the fill as yellow light at an intensity of one unit/block. The second image shows the key as white light with an intensity of two units/blocks ( $f/5.6 + f/5.6 = f/8$ ). The third image shows the effect of both the fill and key lights. In the fill area there is an intensity one unit/block while the key area has an intensity of two units/blocks from the key combined with one unit/block of intensity from the fill. Therefore, the lighting ratio is 3:1.

While the intensity ratio as measured by the source method is 2:1, the actual lighting ratio is 3:1 because the key light is strengthened in intensity by the overlay of the fill light.

When we use the additive method to determine the lighting ratio of the same setup, we measure the light differently. With the meter pointed at the camera from the subject, we measure the fill light from the shadow side and arrive at the same f-stop,  $f/5.6$ . However, when we read the highlight side with both the key light and the fill light, we find that the measurement reads  $f/8\frac{1}{2}$  (about  $f/10$  as read on a digital camera). This means the light ratio between the fill in the shadows and the total light in the highlights is 3:1.

In this example both measuring systems used the same lighting setup and produced the same functional ratio. However, the methods of description are different. The source method deals with the intensity of the lights, and the additive method deals with light on the subject. The source method uses an intensity ratio measured by the intensity of individual lights. The additive method states that the ratio is about the light available to be reflected back to the camera from the highlight and shadow areas; therefore, the total light in the shadows is compared to the total light in the highlights. It is an issue of words, not light; the light stays the same.

Is one method better to use than the other? Not a simple answer. Both are correct and where/how you learned ratios will probably determine which system you use. After years of using both methods, we have found that standardizing on the additive method provides better results in all situations—particularly with setups outside the studio environment that require metering the key and fill combined. In the outdoors, fill light is usually ambient light and is therefore impossible to turn off to get a true reading of the key light alone. That same system has translated well into the studio and requires less calculation. However, if you are working exclusively in the studio, the source method performs well and can be standardized.



The examples show 2:1, 3:1, and 8:1 ratios

Ultimately, the capture and output devices you use have just as much an effect on how your images reproduce as the original lighting ratio. Learning to quickly reproduce the look you want is the crucial point.

The table below provides both an easy way to see the relationship between the two methods and a guide to using ratios. We base this table on a setup that has the fill light set to read  $f/5.6$ . The key light is listed as both the f-stop compared to the fill light and the stop differential based on the fill stop. Exposures for these recommendations are the f-stop listed as the additive key reading regardless of the method used. If you use the source method and an f-stop other than  $f/5.6$ , the key stop differential provides the additional stops needed to achieve the desired light ratio. (Please note: The readings on the chart are represented in digital f-stops. These are delineated in  $1/3$  stop increments and are not as accurate as what can be achieved using  $1/10$  increments [available on most handheld light meters]. Unfortunately modern digital cameras only allow for aperture adjustments in  $1/3$  stop increments.)

Desired Light Ratio	Fill Light Reading	Source Key Reading	Key Stop Differential	Additive Key Reading
2:1	f/5.6	f/5.6	even	f/8
3:1	f/5.6	f/8	1 stop	f/10
4:1	f/5.6	f/10	1½ stops	f/11
5:1	f/5.6	f/11	2 stops	f/13
9:1	f/5.6	f/16	3 stops	f/17



In this lighting setup, two diffuse light modifiers were used to create a 4:1 light ratio. The power of the two diffuse lights was adjusted with the rectangular softbox key light to create the desired ratio, and the Octobank was placed near the camera as the fill.

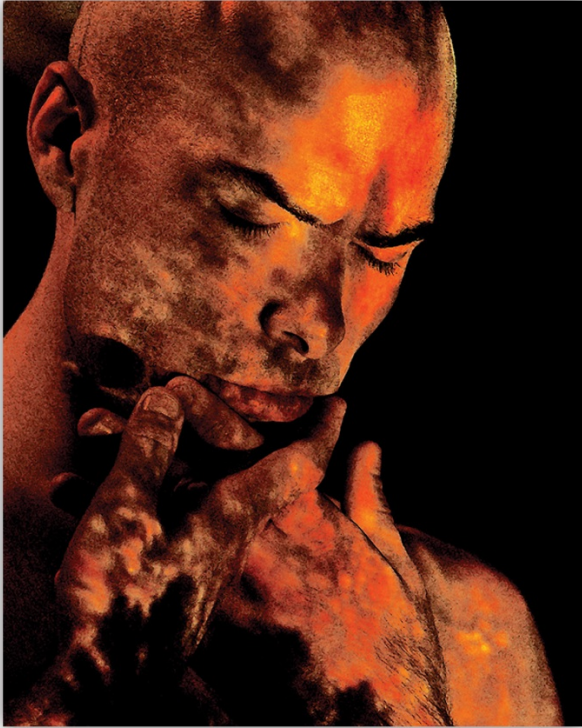
One final note about lighting ratios: What camera setting should you use when exposing the previously described ratios? The answer is whatever your meter indicates. You should take a meter reading with both the key and the fill lights illuminated and use that reading.





The lighting ratio in this image is 3:1  
© Tim Meyer

## 7 Lighting Patterns on the Human Face



Â© Arthur Rainville (Courtesy of the artist)

In discussing how to control lighting patterns on the face, we must first define two primary concerns of the lighting's effect. First are the five planes that determine how light works on the surfaces of the face. The second is best defined by an approach to lighting the face.

### Planes of the Face

There are five primary surfaces, or planes, that receive light in the portrait setting and thus determine the look of the image. They are, from largest to smallest, the forehead, the two cheeks, the nose, and the chin. While other parts of the face could be defined, such as the temples, they may or may not be involved in the portrait. Four of the five listed above are present in every photograph of the face. Only when the face is seen in profile is one of the four planes missing (the second cheek).

The forehead is the largest skin surface in most portraits, and its slight upward tilt makes it a reflecting surface toward the camera. Because of its roundness, there will almost surely be a specular highlight somewhere on the forehead.

The cheeks show lighting effects more than the other planes. Because they are frontal with a bulbous form, they catch light from any angle and show any LD Edge as well as diffuse and specular highlights. This means that the lighting of the cheeks establishes the way the viewer relates to depth shown in the portrait. The cheeks attract vision and direct it to other parts of the image. Also, the cheeks border on the eyes, which are considered the most important part of a portrait.

Next, the nose defines a plane. Unlike the other planes defining the face, the nose is perpendicular to the other four planes. This has two effects. First, it will cast a shadow unless the key light is on the facial axis. Second, the nose provides a consistent highlight area. With the narrowness of the nose plane, the highlight becomes a line when the face axis aligns with the camera axis. When the head is twisted so that the facial axis is acute with the camera axis, the shape of the nose becomes more obvious until the facial axis is perpendicular to the camera axis—at which point a profile shows the shape of the nose.



This image of the bust of David was “posterized” to show paramount lighting as it illuminates the five planes of the face: the forehead, both cheeks, the nose, and the chin. Because these surfaces all received approximately the same light, they all appear as yellow areas.

The chin is the smallest plane that we normally consider when lighting the face. Even though it is a small area, it provides definition at the bottom of the face. Without this definition, the face would appear to expand in size and merge with the neck.

## Approach

In setting out to describe portrait lighting, we realized that the way light illuminates the facial planes has several interrelated aspects. The type of lighting is defined by the relationship between the facial axis and the key light’s axis. At the same time, the basic approach to lighting is defined by the illumination of the part of the face closest to the camera. We normally describe lighting by naming both the type of lighting and the approach.

Approaches are defined using all three axes: facial, light, and camera. The approach determines how the face is illuminated. Normally only one ear will be seen in a portrait. If the axis of the face is turned so that the ear in the image is illuminated, then the approach is considered “broad.” If the lighting does not illuminate the visible ear, then the approach is considered “short.” The only exception to this is when all three axes are in the same plane (a straight-on photograph); in that case, both ears are slightly visible and illuminated.

In broad lighting, the key light fully illuminates the side of the face seen by the camera. Although this lighting helps to de-emphasize facial textures, it is used primarily as a corrective lighting technique to help widen thin or narrow faces. It also de-emphasizes texture on the highlight side of the face. Broad lighting was the lighting of choice up until the 20th century. It tends to add weight to the subject, which in earlier times in history indicated that one could afford food. In modern times, it is usually more desirous to look thinner, which is the specialty of short lighting.

In short lighting (sometimes known as narrow lighting), the key light fully illuminates the side of the face not seen by the camera. This lighting is generally used for average oval faces. Short lighting tends to emphasize facial contours more than broad lighting, and in conjunction with a comparatively weak fill light, it can be used as “strong” or “masculine” lighting. It is especially adaptable for low-key portraits. It has the effect of narrowing the face, and therefore it can be used effectively as a corrective lighting technique for round or plump faces.

## Lighting Direction

In [chapter 2](#), the captions for the LD Dome images define the light with two numbers. These numbers refer to the light’s position in the dome in relation to the axis of the face. The zero point for the dome is at the camera, so its position is 0-0. As we move clockwise around the dome, the first number indicates the angular distance and the second number indicates the angle above the horizontal. Therefore, lighting described as 45-45 means that the light is 45° from the face axis and pointed down a 45° angle.

## On Axis Lighting

“On axis” lighting is flat with the key light on the same axis as the camera. This lighting has the effect of removing all key light shadows as well as flattening texture on the face. Many contemporary fashion and fine art portraits employ on axis lighting. Modern cameras have built-in flash units that produce this type of lighting. Some professional photographers avoid the look because of its lack of dimension and flatness. On axis lighting tends to be clinical in appearance, except when modified by equipment such as ring lights and giant (8 foot or larger) fashion umbrellas.



Broad lighting (left) has the ear closest to the camera lit while short lighting (right) has the camera side ear in shadow

This type of lighting has become both a fallback style and a way to solve certain lighting issues. When used creatively, it can add a feeling of confrontation and tension between the subject and viewer.

## 3/4 or 45-45 Lighting

The painters of the Renaissance determined that the 45-45 lighting (also called 3/4 lighting) worked well for portraying depth and form in the figure and the face. Famous painters such as Peter Paul Rubens moved the light source closer to the artist’s point of view to flatten the image and to achieve a distinctive look through stylistic representations of the skin. The most commonly used lighting in contemporary photographic portraiture is 45-45 lighting: it has all the attributes that first so enamored painters.

## Split or 90° Lighting

Split or 90° lighting also has a long history in painting. The Dutch painters Vermeer, Rembrandt, and their contemporaries often used this look in their paintings. Caravaggio employed 90° lighting to great effect. The key to this style is moving the body and the face to positions that flatter the subject. It is a very dramatic style of lighting (especially when used at higher ratios) that requires an understanding of lighting dynamics. It slenderizes and can be used to camouflage undesirable facial features.



© Elinor Carucci (Courtesy of the artist)

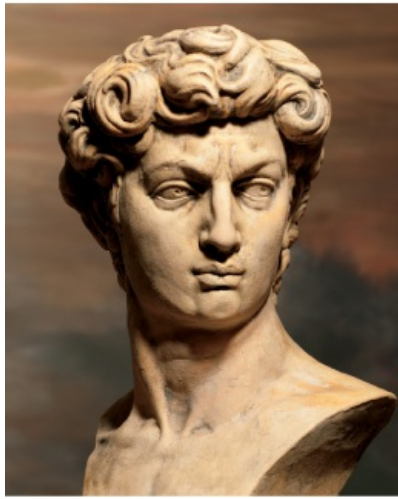
## Lighting Patterns

There are four common lighting types that have their own names. The first two are referred to as “loop” lighting. “Closed loop” lighting, also called Rembrandt, has a high, substantial angle between the facial and light axes. This creates a small light triangle below the eye when the nose shadow intersects the shadow from the cheek line. It is a dramatic lighting style that emphasizes a strong, angular face. It is often used for men, but it also works well for women who have strong features. When used skillfully, this lighting can hide undesirable skin textures; however, when used improperly, it can accentuate texture and lines. “Open loop” lighting uses a high-angle light that is closer to the facial axis. Open loop lighting shows the shadow of the nose on the cheek without intersecting the cheek shadow. Open loop lighting is the most commonly used lighting pattern in modern times (with the short lighting approach). It creates a sense of direction and depth on the face without being too dramatic and is flattering for all facial types.

Next is “butterfly” lighting, also referred to as “paramount.” With butterfly lighting, the key light is positioned high above the head and aligned vertically with the facial axis. This lighting style gets its name from the butterfly-shaped shadow it produces under the nose. Butterfly lighting is also sometimes called “fat” lighting because it makes the face appear fuller, emphasizing cheekbones and eyes. Ideal for the perfect face, it is used extensively in fashion, beauty, glamour, and modeling portfolios. Ideally the shadow from the nose should not intersect the lips. When a subject has deep-set eyes, there will be no light in the eyes with this lighting pattern, and therefore, it is not a great choice.

“Split” lighting is the least commonly used basic lighting pattern. It is very dramatic and stylized when used at higher ratios. It also slenderizes and can camouflage unflattering facial features. When properly executed, the face is split into two almost equal parts. In most cases, a little light will bleed slightly onto the shadow side of the forehead. Care should be taken to bring the light far enough forward to avoid casting a shadow on the eye on the highlight side of the face.





Closed loop (top left), open loop (top right), butterfly (bottom left), and split lighting (bottom right)

## 8 Lighting Setups



Being ready is important when approaching portraiture in a candid manner. In this image Art Suwansang was aware of the energy as opposed to the lighting setup. Since this was photographed on infrared film, his understanding of what would be presented to the camera and how this would be translated into a finished image was crucial.

© Art P. Suwansang (Courtesy of the artist)

Our approach to lighting utilizes a building-block concept. This means that we start with the simplest setup and add lights to control various areas within the portrait. Our idea is to present a progression of lighting design that provides predictable results. With these setups as a starting point, you will be able to use the information from other portions of this book to make additional lighting choices.

In [chapter 2](#), we discussed the direction of the key light and how its angle from the face axis determines the look of the shadows on the subject. The examples where the light is positioned at the front and side of the face axis illustrate shadows produced on the face. The examples where the light is positioned behind the face axis, away from the camera, are used as accents of various types.

While we show the basic setup with diffused sources for the key light, the specularity of the key light determines the “hardness” of the portrait. In most portraiture there is a desire to soften the LD Edge, smooth the skin, and avoid accenting the angularity of the face, but there are situations where high contrast and harsh lighting are useful. In these situations, the key light’s size, various light modifiers, and the light’s distance from the subject can be manipulated to change the specularity of the portrait.



Key light



Fill light

## One Light

When only one artificial light is used, the light ratio is obviously affected by the ambient light that creates the fill. In this case, the light ratio depends on the intensity of the key light. We can use lighting equipment with variable power or move the light to control the ratio as well as the volume aspects of shadow formation. For metering in this situation, we will need to use the additive method to determine or set the lighting ratio.

The major caveat for the use of one light with ambient light as the fill is color bias. If ambient light is the fill, any color bias it has will be visible in the shadow areas of the portrait. For example, when normal fluorescent lighting becomes the fill, there will likely be a greenish color bias in the shadows. Similarly, an outdoor portrait in a grassy area may also create green-biased shadows.

When a single light is used within a natural light environment, the key light should take on the angular dynamic of the sunlight if the portrait is to look natural. In other words, if the sunlight is approximately at a  $60^\circ$  angle from the south, then the key light should be approximately at the same angle. The issue of matching the angular dynamic of the ambient light will be addressed in other setups.

In the studio, single light images have a different look than most other portraits. Primarily, these portraits tend to look more dramatic because of the higher apparent lighting ratio and the dark, hard-edged shadows created by the specular light. The placement of the shadows and highlights on the face are critical. Hollywood glamour images of the 1930s are great examples of this technique. Softer light sources can produce a lower apparent ratio while still achieving a dramatic look.

## Two Lights

Here we discuss a two-light setup as the use of a key light with a fill light. This is the most common way a second light is used in portraiture. Though it may not seem accurate, the use of a reflector as a fill light qualifies as a two-light setup because a reflector acts like a light source in most respects and therefore can be controlled.

As with any light source, the distance of the fill reflector from the subject affects the intensity of light. The closer the reflector is to the subject, the more intense the fill. The more reflective the material, the higher the intensity of the light coming from the reflector, thus the stronger the fill. Finally, the larger the fill reflector, the more diffused the light will be.

A crucial point with fill reflectors is whether they are in the pattern of light illuminated by the key or ambient light. Regardless of the material used in making the reflector, it will be more effective when it is lit. Even if only ambient light is available, the more light falling on the reflector, the more intense the fill.

The reflector's angle also has an effect on the fill light. Just like a mirror, any reflector can be aimed. If the light illuminating the reflector has directionality, then the law of reflection (which states that the angle of incidence equals the angle of reflection) determines the direction of the light. Thus, reflectors can direct their light to specific areas on the subject. There will be different reflection patterns depending on the surface shape of the reflector.

Reflectors can also be used to add color. Gold or warm tone reflectors are common, but any color reflector can be used. It should be noted that the reflecting color may mute other colors. Also, green reflecting onto Caucasian skin may gray the skin tone in the fill, whereas pink may heighten the skin tone. A reflecting fill may also be used to eliminate color by reflecting white light from the key light to counter ambient colors reflecting onto the subject.



Background light



Hair light

The most common lighting setup is to have the key light to the camera side and above the subject, such as a 45-45. The fill reflector is positioned to bring as much light onto the subject as possible. The fill reflector may be angled slightly toward the subject from near the camera to maximize the intensity of the fill. The closer the reflector is to the camera axis, the less likely the fill will create unwanted crossing shadows. Moving the reflector to oppose the key light increases the potential for crossing shadows.

On the vertical axis, reflectors come from two basic directions: either below the subject from the camera axis or from the side opposite the key angle, normally at the same height as the face.

When a fill light is used, two major issues arise. First is determining the lighting ratio as discussed in [chapter 6](#). Once the ratio is established, the second issue is the positioning of the fill light. With a low light ratio such as a 1:2, the fill light may create unwanted shadows on the key lit portion of the subject. To avoid the possibility of crossing shadows in the basic setup, the fill light is positioned close to the camera axis. The more



specular the fill light, the more likely any shadowing caused by the fill will be visible.

In the basic studio setup, the fill light is behind and slightly above the camera (the 0-70 position). Regardless of the quality of the key light, this setup traditionally uses a diffuse source, such as an umbrella or a softbox. It is possible to use either a ring light or a giant reflector directly behind the camera as the fill, which will produce more intense frontal highlights as well as more fill in the shadows.

In this setup, the role of the key light is to define the shadow and volume of the face, while the fill light determines the intensity of the shadows. When the fill light is behind the camera, its intensity needs to be equal to or less than the key light. When the fill equals the intensity of the key light, the ratio becomes 2:1. If the intensity of the fill is greater than the key light, the ratio approaches 1:1. The key light still defines shadowing on the subject, but the ratio is reversed. If the setup has the fill behind the camera, 1:1 will never be reached.

## Three Lights

In the next step of basic lighting, the third light is added as a background light. It controls the intensity of the background to add image depth, define the contour of the subject, and control shadows created by the key light.

The background light is important for creating depth in the image rather than depth in the subject. The key and fill lights create the light/shadow dynamics that affect the front surfaces of the subject. Our ability to define the background establishes the depth of the entire image. If there is flat light in the background (truly black or fully white), the depth of the image is confined to the subject.

The second issue, contour management, is a tool that comes from the Renaissance painters. Many think it means the pool of light behind the subject, but it is more than that. In order to accentuate the contour, Rembrandt and other artists used background light to contrast with the subject. Varying the tone of the background so that the background goes dark when the subject is light in tone and vice versa created good separation and defined the contour of the subject. In the same way, photographic portraits use the background light to keep the subject from becoming absorbed in the “œnonimage” areas.

Finally, the background light can control any shadow that may be created by the key light. Depending on the individual needs of the portrait, the control of the darkness of any cast shadow can be accomplished by the background light.

The position of a background light within the basic setup depends on what shape the light will be. The pattern can be as small as a streak or totally illumine the background; however, the most commonly used background light is a shaped light located below and behind the subject.

As a general guide, use an incident meter to determine the exposure of your background light. If you set the light intensity to match your exposure aperture, the background will record as it appears to the human eye. A white background will appear white, and darker backgrounds will appear dark. If you want your backgrounds lighter, increase the amount of light beyond the exposure aperture; to darken your backgrounds, give them less intensity than the exposure aperture.



Combination of the four lights

## Four Lights

Any additional lights beyond the three already discussed will be accent lights. The most common accent light is a hair light, which creates a noticeable separation from the background as well as giving texture and form to the back of the head. To do this, a smaller light pattern is directed at the back and top of the head. The idea of the hair light is to reflect light from the hair toward the camera. Sometimes a snoot controls the size of the light pattern, although most modern studios use strip lights in the 180-70 position. This works well for both group and individual portraits.

The other frequently used accent lights are edge accents, which can be used on any critical contour. They bring light from behind the subject to strike the critical edge without casting light on other portions of the portrait.

A special setup based on the concept of edge lighting is the "rim light." Rim lighting is created by backlighting the subject so that the light itself is totally blocked by the subject's body or head. The rim light can also be above and behind the subject, pointing down and toward the camera but not shining into the camera. This will produce an edge lighting effect around the subject, which sometimes appears as a fine line or "halo" around the portrait.

Normal exposures for hair and rim lights vary depending upon the subject matter. When the light falls on fabric and hair, it normally has an intensity about  $\frac{1}{2}$  to 1 full stop less than the exposure aperture (when the incident meter dome is pointed toward the light source). When the light falls on the skin or other specular surfaces, its intensity should be around  $1\frac{1}{2}$  to 2 stops less than the exposing aperture.



The common four-light setup uses: a key light with a specularity chosen by the photographer to establish the form and intensity for the image; a fill light to open up the shadows on the face; a background light to add the appropriate level of illumination for the background; and a hair light to accent the top of the head. While the key light may have any level of specularity, the fill light is normally diffuse to avoid creating crossing shadows. The hair light can have any level of specularity, but a larger diffuse source tends to make posing easier for both the subject and the photographer. The background light is to provide illumination to the background and only becomes an issue if the background has detail shadowing or content that is contrary to the subject.



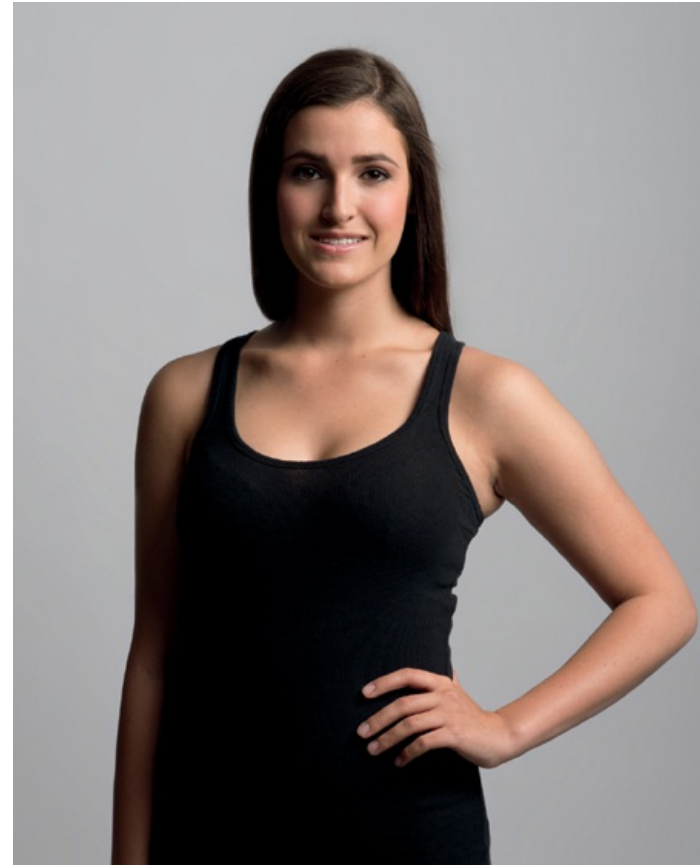
## Clamshells

While the four-light setup is the most common and gives us the most information about general portrait lighting, there are other types of lighting that depend on the position of the fill or fills. One variation of the two-light setup is the clamshell, which gets its name from the way the key and fill lights oppose each other. The plane of the lights forms a V shape with the camera at the point of the V. The key light can have any level of specularity, but the fill needs to be very diffuse to minimize crossing shadows.

In basic lighting setups, we can consider two clamshell arrangements. There are many side-to-side clamshells with the key and fill lights on opposite sides of the subject, but the more interesting arrangement is top-to-bottom. A top-to-bottom clamshell is most common for butterfly lighting with the key light in the 0-80 position and the fill light pointing up from in front and below the subject. In this arrangement, the specularity of the key light establishes the look of the shadow and the ratio determines the darkness of the shadows. The top-to-bottom clamshell is common for “glamour” lighting.



In this vertical clamshell, the light above creates a near paramount lighting pattern. The lower fill is of sufficient power to nearly fill in all the shadows, so the specular highlights on the forehead, nose, and cheeks become more prominent. There is a one-stop difference between the intensity of the two lights, with the lower light being the dimmer of the two.



## Form Fill

A form fill is primarily used to reinforce the key light. If the fill light does not come from the same axis as the camera in a form fill situation, there are areas of the image that will not receive direct illumination from the fill light. In this case, it is not a true fill light by the strict definition. This is, however, a technique that was used extensively in the past and is enjoying a revival of sorts in modern portraiture.

You can also rotate the fill light to the same side as the key light and position it between the key light and the camera. The fill provides less intensity than the key light. If the key light is more specular than the form fill, the fill does not reduce the shadowing effects of the key light; it softens the LD Edge, opens the shadow detail slightly, and shortens the shadow length. On its own, the fill would create similar lighting patterns as the key, only softer and less pronounced. Adding a form fill to the key light's effects produces more pronounced shadowing than other lighting types with similar ratios. In a form fill situation, the key light is often used in a selective fashion with the fill light as a more general lighting tool. The result is that the key light primarily illuminates one portion of the portrait, e.g., an important facial structure or detail, while the fill illuminates the entire image. This can be achieved because the key light and fill light come from the same direction.

The form fill reinforces the directional characteristic, the shadowing effects, and highlight effects of the key light. The subject's face gains depth with slightly more openness in the shadows. This provides more tonal variation on the face with a lower light ratio. Because the near alignment of the key and fill lights, there will be added complexity to the highlights. The lower the light ratio, the less obvious the highlight complexity.

At the extremes of form fill is the "light-within-a-light." This method of aligning the fill on near axis with the key light is often called "double key." In this situation, a specular light is positioned within the bounds of a diffuse modifier. When the more specular light produces greater intensity, the specular source is the key, and the broader diffuse source is the form fill. If the specular light is of lesser output than the diffused source, then the specular light acts as an accent light. In both cases, complex highlights are created. The key light defines the LD Edges and



shadow characteristics.



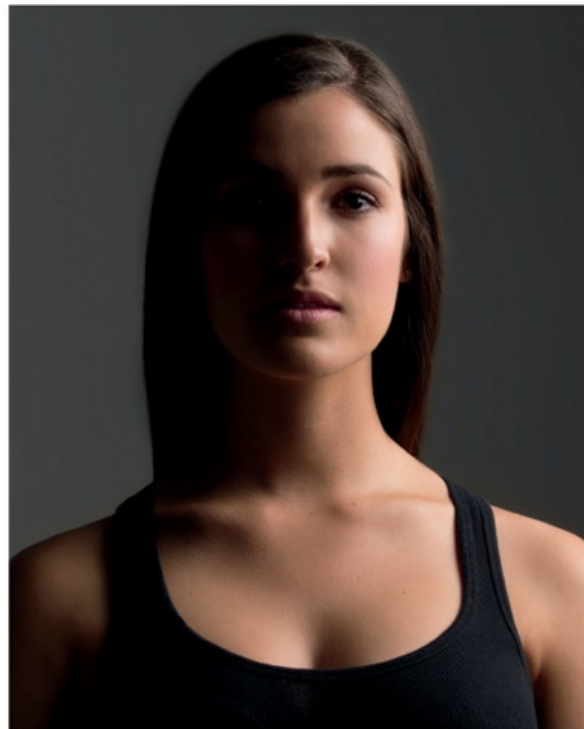
The previous page shows form fill, which uses two different light sources positioned near to each other. This page shows a specular and diffuse lighting source on the same side of the subject. Both specular and diffuse light sources are aligned or in close proximity, they produce a complex highlight. This can be seen with a specular highlight embedded in the diffuse highlight. The selective nature of a smaller light source, a gridded spot, only illuminates the upper shoulders and face while the large softbox produces a diffuse directional light that illuminates the entire subject. This produces the desired ratio between the two lights and demonstrates the possibility of using a selective light within a broader light.



Start with the subject's position aligned with the end of the softbox farthest from the camera. Because the diffusing surface extends in front of the subject, the light wraps around the face, creating a softer LD Edge with a strong directional feel.

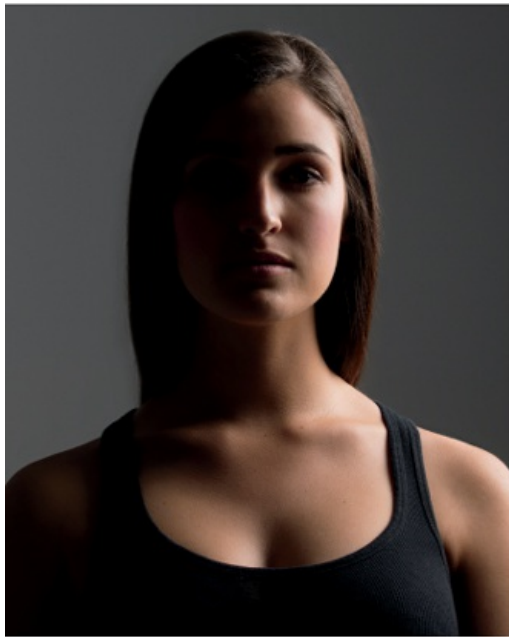
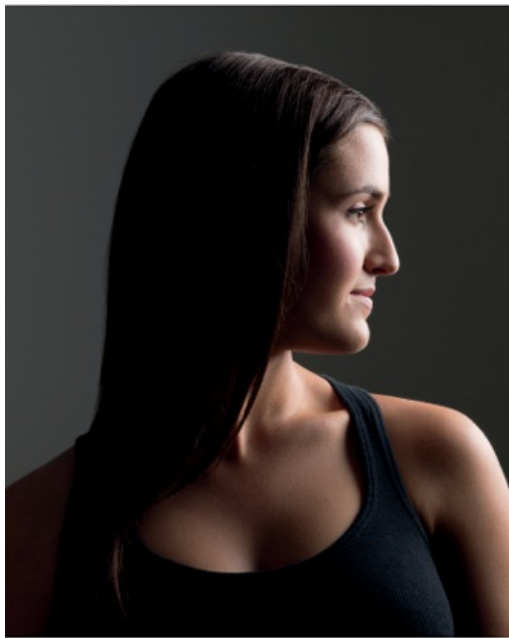
## Walking the Light

It is important to realize that the positioning relationship between the light and the subject can change the effect of the portrait. "Walking the light" means not relying on a predetermined position for the light or the subject. If you are using a large softbox, e.g., 3 x 4 feet or larger, the subject/softbox relationship will determine the affects of the light. Either the subject or softbox can be moved to achieve the desired light. When the softbox is positioned horizontally on the key light side of the subject, the light coming from the softbox can range from large and diffuse light to specular.



As the subject moves to the middle of the softbox, the light creates a split pattern on the face. Because less of the diffusing surface extends in front of the subject, less of the light wraps around the face, creating a harder LD Edge.

If the subject is aligned with the farthest point of the softbox from the camera, the light will be diffused with falloff toward the back. As the subject moves closer to the center, the softbox will wrap the light around the subject, providing diffuse lighting on the subject from the back of the softbox on areas away from the camera. Finally, when the subject is positioned on the camera side of the softbox, the light on the portrait takes the form of a strip light. The back of the softbox acts as a rim or accent light on the far edges and generates complex or fat light. Because of the strip light effect, this lighting setup works best if the subject's head is turned toward the light, presenting a profile or near profile to the camera.



When the subject moves to the front of the softbox, the effective surface of light becomes very narrow. Because there is a narrow form to the light, it creates broad highlights on the facial surfaces parallel to the softbox's front panel. If the subject turns their head toward the softbox, the light opens up the face producing a beautiful profile light. Also, in this lighting position, the light from the softbox behind the subject will accent the surfaces of the face toward the back, serving as an additional variation of an edge light on the highlighted side of the face.

## Accents

While it is most common to use broad, diffuse light sources as fills, there are times when it is appropriate to use specular lights as accents rather than filling in the shadows created by the key light. Hatchet lighting is one example of this type of setup. With hatchet lighting, two accents are used on both sides of the face to highlight the edges of the face. This lighting style creates a flatter portrait because the large, specular patterns on the sides of the face perceptually move those highlighted areas forward.

While hatchet lighting tends to flatten an image, using accent lighting instead of fill does not always do so. Particularly when the lighting approach is short, an accent used instead of a fill will bring the otherwise darkened surface forward and give the image exaggerated depth. This is a very dramatic way of lighting a portrait.



This accent lighting pattern is known as “cat’s paw lighting.” Two strip softboxes are positioned behind the model on either side. The power of the accent lights is equal to or less than that of the key light. Since the accent lights are behind the subject, their effect is seen only on the edges of the subject and does not affect the lighting pattern chosen for the front of the portrait.

## Glamour Lighting

Glamour photography is normally associated with images for the cosmetic industry. Because the goal of these images is to show “perfect” skin, the lighting is very flat. This style of lighting is also useful in portraiture. Two basic setups produce this type of lighting. The easiest and most in vogue is the use of giant reflectors, i.e., eight-foot or larger umbrellas placed directly behind and slightly above the camera. The other is a high, closed clamshell with the goal of achieving a 1:1 light ratio.

A glamour lighting setup is especially useful for bridal and high-key portraits. In both of these cases, the flat, evenly lit subject gains softness with few dark shadows. Also, the frontal, even light minimizes skin texture and lessens blemishes.

A hybrid clamshell can be used to create the appearance of a 1:1 ratio. This can be accomplished by starting with highly diffused butterfly lighting with a large softbox and two equally strong soft fills from below. The fills form their own clamshell so that the combined power of the fills matches the key light. This lighting has very weak shadows and no apparent LD Edge.





Douglas Dubler is well known as a beauty/glamour photographer  
Â© Douglas Dubler (Courtesy of the artist)

# 9 Backgrounds



In this image, Judy Host used several layers, blending options, and masking to craft this portrait © Judy Host (Courtesy of the artist)

Like the music track in a movie, the background of a portrait seldom makes the art. The background can help or hurt, but it is not what people are interested in seeing. Regardless of the lack of attention paid to the background, it is an important part of the portrait. In the traditional portrait, it eliminates clutter that can become disruptive to the image. In informal and environmental portraits, it can assist in communicating the mood or other desired information.

When discussing backgrounds, we need to consider established and found backgrounds. Established backgrounds include those that the portraitist arranges, erects, or constructs. These range in complexity from seamless paper and cloth to elaborate painted backdrops or sets. The major advantage of an established background is its convenience for lighting and control of other aspects of the photographic process.

Found backgrounds can be anything that will support the portraitist's needs. In selecting a background, attention must be paid to whatever portion of it will show in the portrait and how it will relate to the subject. In many found situations, ambient light may become the key light or create the need to conform the key light to the available light. Also, some environments have logistical problems that require specialized equipment or compromises in photographic processes to utilize the background.

## Seamless Backgrounds

A seamless background is just what it sounds like: a background that shows no changes in form, connection, or patterning. The major advantage of a seamless background is its ability to isolate the subject in the frame. Because the background is a consistent tone without distractions, it has the potential of "nothing", i.e., it can take on a pattern or intensity of light or become a colored field to contrast against the subject.

A seamless background can be made of many materials. Most common are seamless papers, fabric, and constructed walls. For a full-length portrait, the seamless background needs to extend below the subject so that no seams or corners will be visible. To avoid unwanted seams, corners, or visible changes in the background, a sweep or constructed cove can be used.

Beyond the uncluttered effect of a seamless background, it provides opportunities for tonal and color changes based on how it is lit. With overall lighting, it is just as defined, a flat, tonal field that isolates the contours of the subject. However, pooling light on the background creates opportunities to accentuate some portions of the subject while diminishing others. For example, lightening the background on the shadow side of the face will define that portion of the portrait. At the same time, the light can be controlled to have darkness behind an area that is either lighter or that has been accented with other lighting. In addition to the use of tonal differences on the seamless background, colored gels can further enhance contrast or complement the subject.

A variation on the seamless background is draping material that may or may not have dimension or tonal variation. When dimension is desired, the fabric is arranged to form a series of folds or other discontinuities that create shadows or tonal variations behind the portrait.

While any kind of material can be used as an established backdrop, fabric backgrounds usually employ heavier cloth. Muslin is the most common material used. Heavier materials are easier to control in the way they hang. The common use of fabric is to drape it to produce a series of ripples or folds in an abstract pattern. Another alternative is to have the material crumpled or otherwise texturized; the resulting permanent pattern can be used as either a seamless or folded drape.

## Painted Backgrounds

The idea of painting a background for a portrait goes back to the very beginnings of commercial photography. In early portrait photography, a background would be painted to provide a pleasant setting for the portrait. Today, the same idea persists. In some cases traditional landscapes are used, but many other visions can support a portrait as well. The scenes in painted backgrounds are often stylized to present the viewer with

the reality of the subject in front of a less-than-real setting. In illustrative-type portraits, there is a great variety of painted or photographically produced backgrounds.

Another type of painted background is the abstract or impressionistic background, which provides a mix of colors and tones that do not interfere with the subject. These are often darker tones of various colors applied in overlapping streaks, daubs, or blobs. The idea is to avoid definable patterns. With impressionistic backgrounds, the idea is to give a hint of a background scene without distracting attention from the subject.

The modern method of using an image or abstract background began with projection systems that placed the subject in a setting. These were initially rear projection systems and later front projection systems. In both of these systems, a slide was projected so that an image appears to be behind the subject. These systems have been replaced by the use of “green screen” and “chroma key” systems.

The green or blue screen derives its name from the color of the screen behind the subject. Sometimes this color is referred to as electric green or blue because of its vibrancy. Because the color does not occur naturally, it can be used as a dropout color in a computer. When the green is dropped out of a digital image, it can be replaced by any image file as a background—whether a scanned slide from the subject’s summer trip, a graphic element or logo, or a purchased digital backdrop. Once the portrait and the digital background are combined, the final portrait can be completed.

There are two concerns that affect the correct use of the green screen process. First, the screen must be evenly lit behind the subject as seen through the camera. Shadows on the green screen can cause problems with the computer dropout. The second issue is that the lighting should mimic the light in the replacement background. If the scene to be placed behind the subject has light coming from the right, then that direction must be duplicated during the shot.

## Post-Production Backgrounds

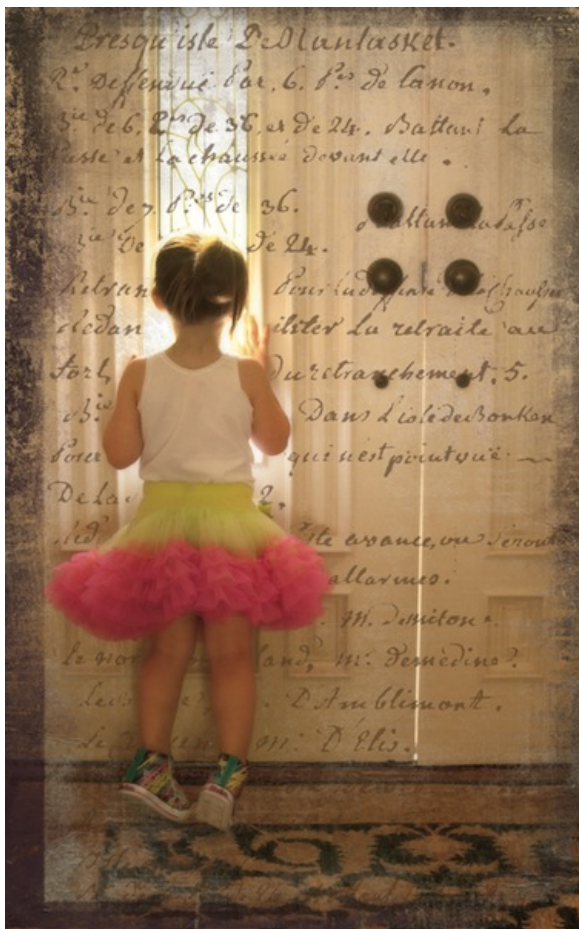
Projecting a background or using methods to create a background in a darkroom has been common in portraiture since the early days of photography. With the advent of Photoshop and other electronic imaging technologies, the ability to utilize a background not present in the studio has become a common reality. This has opened up a great number of potentials for using backgrounds that have never been considered before. Whether these are real or imagined locations, or digitally constructed materials, the opportunity to insert new and varied backgrounds into the repertoire of the portrait photographer has expanded.

Borrowing from the nomenclature of video, many photographers are using a “green screen” approach to making portraits. The concept of a green screen is to utilize a color not found in the photographs and to electronically replace that tone with the desired background. In videography this is known as chroma key. The color most commonly used is a vivid green that is seldom seen in the props or people who will be superimposed over the background. After the photo is taken, the green color is replaced with a digital file that will make up the background. Therefore, only the background will be dropped out and replaced unless the chroma key color is present in the foreground. Remember that if there are any discrepancies between the portrait and the background, these will likely be seen as rough edges or as remnants of the background color along the edges of the foreground portrait subject.

While chroma key equipment can be used in portrait photography, creating background for the portrait can also be accomplished with the use of imaging software such as Photoshop. If the subject is photographed on a well-lit background of uniform color, then a simple selection and deletion of the background can be done to create a layer in the software with no background information. When the background layer is added below the subject in the software’s layer stacking order, the subject will appear in front of whatever background was selected.

Even without a specific background color or tone, the subject can be isolated by either using the selection or masking tools common in imaging software. However, these techniques require the photographer/artist to use hand-manipulated techniques with the computer to create the proper selections or masks. Just as with the chroma key method, once the background is selected, it can be deleted from the image. Because of this, it is not necessary to make extensive lighting or background preparation for a background that will be eventually eliminated and replaced.

With the relative ease of selecting and layering a portrait over a background, several considerations need to be taken into account to ensure successful merging of the foreground portrait and the digital file being used as the background. The first consideration is the angle of light. The light angle in the portrait and the light angle in the image file that becomes the background need to be consistent—particularly when the background scene is to appear as a real scene. This is especially the case if the portrait is to be presented in a recognizable location or where visual cues referring to the accuracy of the background exist, such as signs that can be read, etc. In these cases, the lighting for the portrait must take the same general angle as the lighting used as the background. When the light angles on the subject and the background are not consistent, the portrait appears fake.



This image uses both a physical background and an electronic background to create its unique look. The image is of a little girl looking out the window of a front door—the window and the door are the background. Two layers were then added to create the illusion of a vintage look. The first layer is the script that was carefully edited using a layer mask. It was important to have the text continue between the little girl and the door to give the appearance of the written page behind the girl. A second layer was used to create what the artist calls grunge. This layer was handled with both selective masking and blending options to accomplish its desired appearance. In this construction, the background is both behind and in front of the subject. © Judy Host  
(Courtesy of the artist)

The next concern for utilizing electronically introduced backgrounds is noting when a shadow from the portrait subject will be seen. In cases where the photographs of the portrait must include the shadow, the layering requires that blending options and levels of opacity, particularly where the shadow exists, are used to create a seamless transition from the subject to the background. In some cases this may require another layer created from only the shadow to be introduced between the foreground and the background to create the proper look for the portrait.

It is also important to realize that there must be a pixel density relationship between the portrait and the electronically generated background. If the electronically generated background is chosen from a file with significantly less pixel density (pixels per inch), the background will show pixilation and aliasing while the portrait will not. Depending on the way the background layer is married to the portrait, this might also degrade the pixel structure of the foreground portrait. It is highly recommended the background used be equal to or greater in pixel density than the portrait that will be placed in front of it.

Lastly, when selecting, masking, or layering a digital portrait over a digital background, there is a strong possibility that aliasing, the jagged structure of the pixels, will be seen at the boundary of the portrait. This is particularly the case when the portrait has been selected without feathering the edge. This is common when the selection or mask is not feathered or when there is an uneven tone in the background and the selection picks up extraneous pixels from the originally photographed background. This will require digital retouching of the final image to smooth the boundary area of the portrait with the background or to erase the erroneous pixels from the portrait's layers.

## Constructed Indoor and Outdoor Settings

A set is commonly used in many portraiture applications. Sets are designed to allow effective lighting and are used as photographic backgrounds. Often they replicate common settings such as an office with bookcases or a hearth with Christmas decorations. The idea of these settings is that they can be controlled in their focus and lighting. Even if they consist of a single wall or a wall with a single corner, various camera angles are built into the design to allow posing the subject with a supporting background. Most often there is no ceiling so that lighting can be controlled at high angles if desired. Sets as painted backgrounds are usually designed for multiple portraits, though specific sets may be appropriate for certain individual portraits. Also, many companies manufacture sets for portraiture, ranging from Tuscan ruins to high-tech settings with painted or photographic backgrounds.





In this portrait, Paul Tumason used a painting technique to make the background function the same as an abstract painted background  
© Paul Tumason (Courtesy of the artist)

A very common created background is an outdoor set. Unlike the studio-based set, the outdoor set relies on ambient lighting, which adds a further level of complexity to the exposure. When choosing an outdoor location, thought must be given to the sun's angle and to eliminating direct sunlight on the set.

While light angles for the portrait are always an issue, so is the background upon which the portrait will be photographed. In the studio, light can be left off the background if its tone is too bright, but on the outdoor set, the background is lit by ambient light and beyond direct control. For this reason, the camera angle as well as the basic tone of the areas behind the subject need to be considered.

Another issue that must be addressed is the need to keep distracting materials from intruding into the portrait. For example, it would not be desirable to have a brightly lit leaf right behind the subject's nose in a profile shot or sticking up from the head like a feather in a war bonnet. It is far better to have a background of dark foliage where the predominant light does not reach it at an angle that can easily reflect toward the camera.



© David Williams (Courtesy of the artist)



Â© Art P. Suwansang (Courtesy of the artist)



Â© Lisa Evans (Courtesy of the artist)

## Found Backgrounds

Any surface, landscape, or cityscape can serve as a found background. Found backgrounds present tremendous opportunities and produce further demands on the requirements for the portrait. The issues in using found backgrounds are primarily access, lighting, and exposure. They basically fall into two types: environmental portrait settings and interesting though nonspecific backgrounds.



An environmental portrait setting is one that gives clues as to what we learn about an individual. This might be their work or living space or important symbols that identify or enlighten us about the subject. Unlike many portraits, in environmental portraiture the background is very important to the content of the image. The way the background is lit becomes important for symbolism, image information, and definition of the subject. This might involve highlighting or clearly representing portions of the surrounding elements, including the background. While ambient light can be the light source, lighting equipment may be required to ensure that important information in the background is conveyed in relationship to the subject. The use of additional light can effectively create a new light ratio in the portrait between the subject and the background.

The other type of found background is the nonspecific background. This is a setting that might be interesting to use as a backdrop but is not related in any way to the portrait. Nonspecific backgrounds are used to add interest and compositional strength to the portrait.

In most found background situations, the major concern is lighting. Often because of the location of a found background, power for lighting and/or space become concerns. These situations tend to use ambient light as fill, or else all the lighting is ambient. As a result, there is a need to find ways to create the light ratios needed for the portrait. Some found backgrounds do not provide the access needed to achieve the proper camera distance or angle. In either situation, with lighting or space issues, it is important to put the success of the portrait ahead of the look of the background.

Found backgrounds often offer attractive colors. Particularly with saturated colors in intense light, such as direct sunlight, the color of the background can reflect onto the subject and thus change the color in ambient fill.



© Elinor Carucci (Courtesy of the artist)





© Tim Mantoani (Courtesy of the artist)



David Williams used a found environmental background, including the important people in the subject's life, to create this portrait  
© David Williams (Courtesy of the artist)

# 10 Mixed Ambient and Electronic Flash Lighting and Exposure



This environmental portrait was made for a *Ceramics Monthly* magazine cover. The subject used a mirror to make her pottery, so it was used as part of the portrait. Since her studio looked out on the mountains, a decision was made to balance the exposure between electronic flash for the interior and face and the view through the window.

Â© Glenn Rand

With exposure basics in hand, we can now accomplish some mixed light exposure techniques. We can regard portraits as either studio-lit or mixed light situations. Even within a studio setting, mixed light may be chosen either to use a window as a key light or to provide a creative accent. Many other portrait environments and styles lend themselves to mixed lighting. In most cases, making an outdoor portrait, an environmental portrait, or an editorial illustrative portrait involves mixed light sources and demands greater control of both exposure and lighting.

Many of these situations will involve a mix of ambient light and lighting equipment. This can be as simple as a reflector fill to add light to a outdoor portrait or as complicated as a lit interior and subject with a view out a window. The most complicated setups use artificial lighting along with ambient light in the portrait's setting.

Since ambient light can serve as either key or fill light, the shutter speed becomes involved whether or not electronic flash is used. Electronic flash presents both potential problems and creative opportunities in these situations. Unless the flash is used only for fill, the shutter speed controls the background's tone and motion.

Equivalent exposure becomes an important control concept. The exposure control used for electronic flash and the shutter speed combined with aperture controls exposure for ambient light. It allows adjustment of the ambient portion of the exposure to align with the electronic flash. This is the most common paradigm for ambient/flash lighting situations. The use of equivalent exposure in most mixed light situations means that the aperture is set by the key light—whether sunlight, other ambient sources, or electronic flash—and the fill is controlled by equivalent exposure to bring the exposure to the desired ratio. The background tone and motion are controlled by equivalent exposure when the flash is the key light.

## Outdoor Lighting and Exposure

Outdoor lighting with electronic flash can be daunting. There are many means for balancing the light output of a strobe with the ambient light available in the scene. Few, however, are consistent from shot to shot. This is the case with battery pack generators or speedlights. Speedlights, often described as the lights that can attach to the hot shoes of most modern cameras, have at least two settings that allow the photographer to balance the flash and ambient light—manual and through-the-lens (TTL). Regardless of the type of lighting equipment, at present, accurate exposure is more readily achieved with the use of manual settings.



© Joyce Wilson  
(Courtesy of the artist)

The manual mode allows the photographer to adjust the power output setting on the flash that can then be balanced with the available, ambient light. Today there are no in-camera metering methods for this technique, so most photographers depend upon some combination of viewing the LCD screen on the back of the camera and using clipping indicators or histograms to give them some idea of proper exposure. However, many modern cameras have an advanced method of TTL metering. This uses the camera's internal metering system and onboard computer to determine correct exposure and the balance of both the ambient and the flash exposures. Though these onboard systems bring the exposures close to optimal, there are situations where TTL settings are inconsistent. Ultimately, many photographers use the LCD screen or use clipping indicators or histograms to make decisions and adjust EV settings to achieve the look they want. With the above in mind, we recommend using a handheld meter to bring consistency and accuracy to the process.

New generation meters have introduced methods of determining ratios between flash and ambient light. Along with the other useful information that the meters provide, they now show the relationship between the intensity of the flash and the ambient light.

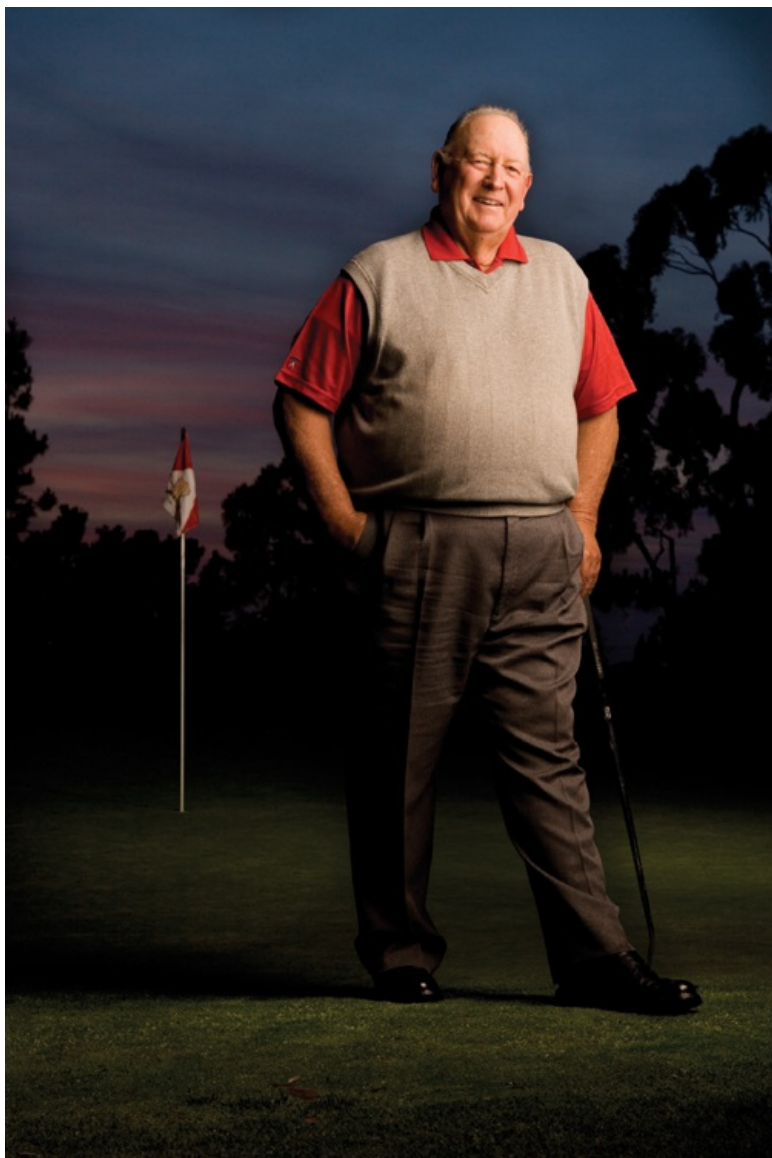
Even with a handheld light meter, determining ratios between ambient and flash lighting can be complicated. Ambient exposure in photography is determined by the relationship between shutter speed and aperture. Flash exposure is controlled in-camera by the aperture or by adjusting the power output of the flash. Determining the correct balance between flash and ambient exposures has always been a dance between these two exposure scenarios.

To utilize the available technology and achieve both the proper exposure and desired look in a portrait, several steps are required. First, the ISO setting on the meter needs to be properly aligned with your camera. Next, put the meter in any one of the available strobe modes. Turn on the flash, point the dome of the meter back at the camera, and set off the flash. With the newer meter technology you can measure what percentage of your exposure is coming from the flash. Knowing the relationship of electronic flash and ambient illumination will allow you to determine the key-light source and establish a desired lighting ratio.

In a situation where electronic flash is used with ambient light, the flash can be the key or fill depending on the direction of the light and the strengths of the electronic flash and ambient light source(s). Using a handheld meter allows you to adjust the power of the electronic flash to control the ratio regardless of whether it is the key or fill.

This ability to choose whether the ambient or electronic flash will be key gives you great flexibility in determining the style of your portraits. By using a handheld meter and changing the power settings on the electronic flash, you can control the ratios in your portraits and determine the style and look of the portraits by adjusting which source, ambient or electronic flash, will be dominant.





Billy Casper © Tim Mantoani (Courtesy of the artist)



© Stacy Pearsall (Courtesy of the artist)

## Backlit Outdoor Situations

A strongly backlit setting, such as a portrait with a sunset in the background, creates its own unique lighting and exposure concerns. Beyond the potential of flare in the camera, a backlit situation means that the face may be naturally flattened. In addition, the ambient lighting will have no LD Edge with a 1:1 ratio.

A flash fill increases the flattening potential, particularly when the flash is on-camera or in a traditional behind-the-camera position. The additional light opens the tonality of the face but does not add dimension. If an electronic flash is used at an angle, then this light replaces the sun as the key light and creates an LD Edge and light ratio between the light and ambient fill.

If the electronic flash vastly overpowers the sunlight, the resulting image can take on an unnatural look. When an electronic flash is used at an angle, care should be taken to keep it at a consistent angle with the sun. If the sun or the angle of the light is visible in the frame, the new key light should be on the same side of the frame and at a similar angle to ensure a more natural look. It is important to use diffused light and to keep the



lighting ratio low, less than 1:4.

In a backlit portrait setting, the background has noticeable effects. Vertical surfaces are silhouetted and darkened, while horizontal surfaces are bright and potentially glaring.

The exposure for a heavily backlit situation depends on the tone desired for the background. It is helpful to perform a reflective meter reading of the background and then determine the exposure for the shutter speed and aperture. At this point, the angular electronic flash reading is taken. If a natural look is desired, the power for the flash unit should be set to an aperture equal to or one stop less than the f-stop resulting from the background exposure. If you cannot power down the key light flash to an acceptable aperture, then an equivalent exposure can be used to adjust the shutter speed for an f-stop within the light range the flash unit can produce. Any fill should be set using the additive method, whether you are using a flash unit, reflector, or ambient light.

## Expanded Range Situations

In outdoor situations with bright sunlight, the light's dynamic range may be too great for you to effectively print both the portrait and the sunlit background. Neither normal digital capture nor traditional negative-to-print processing can adequately present the totality of the photographic information. This situation suggests the use of a longer dynamic range. For film cameras with color negative film, the range is about 18 stops. For digital cameras, it is necessary to use digital output that allows the separation of tones across a wide range. While it is possible to do high dynamic range imaging (HDRI) with digital capture, presently these techniques consist of scanning technology or multiple exposures that are not appropriate for portrait photography.

Digital capture is particularly unable to accept overexposure. This is one area where negative film has an advantage. Using film's latitude for overexposure results in a negative that has all the information needed for facial details, deep shadow details, and bright sunlit areas. It is necessary to make two scans of the negative, one for the highlight areas and one for the darker areas. These two scans are then merged, either manually or by using software such as HDRI Merge in Photoshop, to produce one file that includes all the long dynamic range information.

## Indoor/Outdoor Situations

For environmental or editorial illustrative portraits, we often find the need to light an interior with our subject and at the same time see through a window to capture the exterior view. Here the approach is to light the interior and the subject first and then calculate the exposure based on the combination of interior and exterior lighting. When the interior lighting is an electronic flash with the exposure based on the aperture, it can be balanced with an equivalent exposure for the exterior light at the same f-stop. The f-stop is calculated by metering the interior electronic flash. Regardless of whether the exposure for the exterior light is determined by metering or by using BDE, the equivalent exposure has the same f-stop as the interior lighting provided by the electronic flash.



This bridal image was shot outdoors using lighting from the sky and streetlights



# 11 Portrait Compositional Basics



© Lisa Evans (Courtesy of the artist)

Most of the common vocabularies about composition are rooted in painting and drawing. As portrait photographers, we can find these concepts beneficial, but it makes sense to speak in terms of how a portrait works rather than just presenting traditional art concepts. For this approach, we widen the ideas from the “elements” or “principles” of composition to include the perceptual aspects of composition, including both psychophysical and phenomenal aspects within the portrait.

Many books present compositional concepts as six, seven, or eight elements of design with five or more principles. We deal with all of these ideas throughout this book, not just in this chapter. It is important to recognize that these concepts are immersed in the total process of making a solid portrait. We present the concepts by tying them to the portrait without defining their specific importance by how or when we introduce them. For example, one of the consistently discussed elements is tonality, or value, which was discussed in depth in its own chapter ([chapter 5](#)). Also, certain concepts of color were brought out in [chapter 2](#) when discussing light and value and in [chapter 6](#) when discussing lighting ratios. However, many further ideas that need discussion will be amplified here.

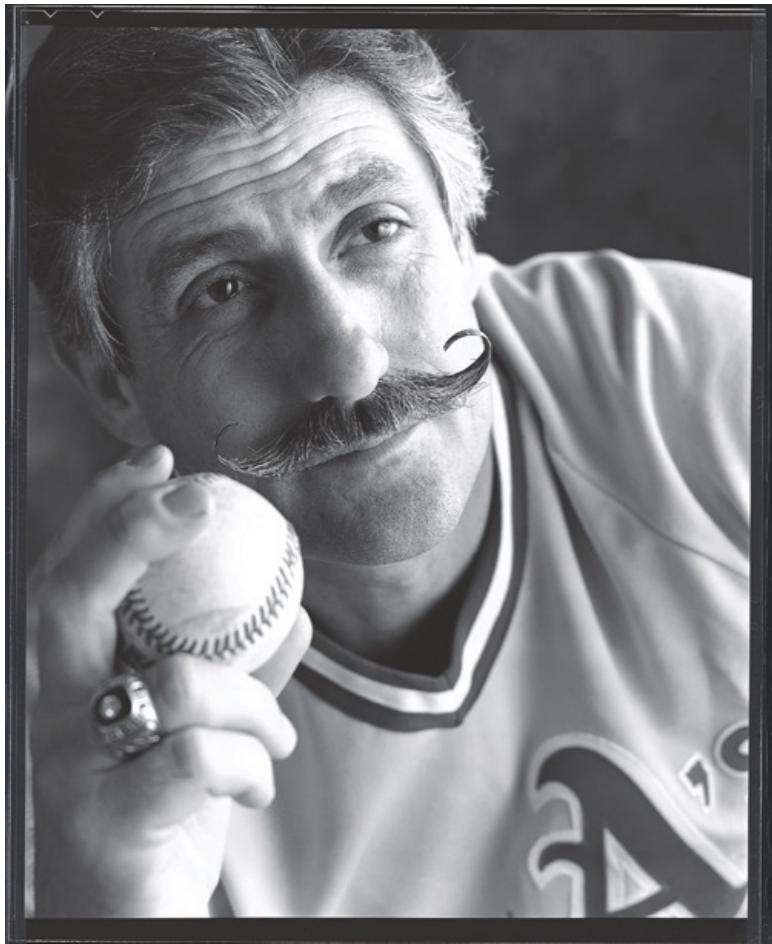
## Balance

Noted art psychologist Rudolf Arnheim stated that without balance, communication in an image is not possible. Starting with this concept, it is imperative that we define how balance functions in a portrait.

Balance in an image is based on the visual structure within the frame and where we find the natural focus point—the visual center. The visual center is identified as a point that has the most effect on balance. It sits slightly above the physical center, where the two diagonals from the four corners cross. The balance of the image is then defined around this point.

We can create a symmetrically balanced image by arranging it with an equal amount of visual weight on either side of a vertical line through the visual center. A mirror image, where each side of the image is the reverse of the other, is purely symmetrical. Symmetrical images are stable and tend to be static and appear more formal.

While a mirror image is the model for symmetry, in reality, many images are close to symmetrical without being exact. The human face, for example, is close to symmetrical though not identical from one side to the other. Likewise, we can gain the same image stability by counterbalancing objects of similar size, weight, or importance at a near-centered vertical point in the frame. When the subject is positioned on the visual center, the image becomes stable; without other balance effects, such images are banal. Symmetry by itself does not make a portrait banal because such images are about a line, not just the visual center.



This portrait of Hall of Fame pitcher Rollie Fingers shows various elements working together successfully. Balance is created by the Athletics™ logo at the bottom, the baseball, and Rollie™s face. Further, his fingers and the logo become leading lines toward his face. His signature mustache is at the visual center of the image and, along with the contrast of the lighting on the cheek, centers the attention of view on this portrait.  
 © Tim Mantoani (Courtesy of the artist)



In this image by Julie Sparks Andrada we can see two major aspects of balance. First, the image is constructed with the visible eye of the little girl placed at the upper left intersection of lines based on the rule of thirds. Second, the visual weight of the dark jumper gives stability to the image.  
 © Julie Sparks Andrada (Courtesy of the artist)





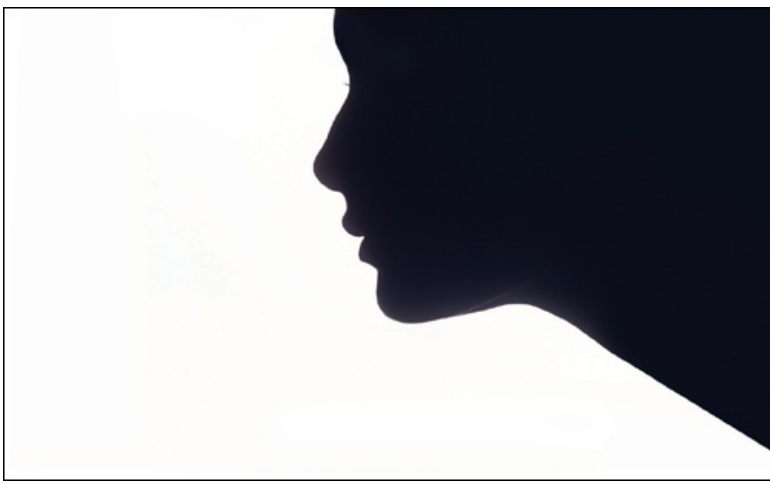
In this image, the red feathers provide lines that frame the face and control the view © Douglas Dubler (Courtesy of the artist)

When an image is not arranged equally around the vertical centerline, it is considered to be asymmetrical. This does not mean that the image is not balanced. The structure of the image uses a lever-and-fulcrum approach to creating balance. In this situation the visual forces within the frame create tension that finds equilibrium. These images are said to have dynamic balance. The elements in the image are arranged so that their distance and visual weight or tension corresponds to the point in the image acting as the fulcrum. For example, a heavier visual weight can be balanced by a lighter visual weight if the heavier element is closer to the fulcrum than the lighter visual element. The fulcrum point need not be in the center. The combination of size, tone, color saturation, and distance of the visual elements from the fulcrum point creates the dynamic balance. Regardless of the type, some sort of balance is needed for an image to work.

How the elements of a portrait are arranged around the visual center can also create apparent motion in the image. If the subject is positioned adjacent to the visual center, there will be a pull toward the center. In Western societies, because of our reading patterns, a subject above and off to the right of the visual center tends to pull more to the center than a subject on the left. As the subject moves away from the visual center in the frame, the pull is reduced. Based on this concept, we can see how the “rule of thirds” functions. This rule states that to construct a dynamically balanced image, the subject must be placed at an intersection of lines drawn parallel to the edges of the image frame at one third of the image’s length from each side. The rule of thirds is a dominant tool in portrait composition. Normally, the eyes are placed in the upper third with one eye on the vertical centerline. However, these rules are often broken in contemporary portrait photography to add visual impact.

As mentioned above, the balance depends on visual weight. In turn, the visual weight of various parts of an image depends on several factors. The first factor is the tonal density of the element. The darker the tone, the greater the visual weight. As can easily be seen, the second factor is size. Tone and size work together to increase the total effect of visual weight. The third factor in visual weight is the saturation of any color. When the saturation of a color increases, its visual weight increases. It should be noted that complementary colors of similar value and saturation balance each other.

As the elements of the image move toward the edges, they are pulled toward the edges. If an element touches the edge, it becomes stable. This is true of all edges, but especially true of the bottom edge. If there is a mass, such as the shoulders touching the bottom edge of the frame, the image becomes very stable. If the portrait has a vignette, then the edge of the vignette becomes the critical edge. In a head shot, the eyes are central to defining the balance of the image. In a fuller body portrait, the head and face are considered to be the balance-determining portion.



In this profile of Twiggy we can see the power of the contour as well as a strong figure-ground aspect. When the white is seen as ground, Twiggy's face is clearly seen, but if interpreted with the black being the ground a figure of a seated woman can be seen.  
 Â© Douglas Kirkland (Courtesy of the artist)

## Lines

In drawing, lines are absolutely essential, and they can also play a positive role in the composition of a photographic portrait. We discuss lines in terms of their weight, their thickness, and their direction and form and whether they are straight or curved. Lines can have mass and texture but are extremely long compared to their width.

Within a photographic portrait, lines are seldom the major element of the composition; they usually support other design elements. Folds in material, shadows, hair details, an arm or finger, etc., can form or imply lines. Because lines have direction, they are often used as "leading lines" to guide the eye toward important objects. We can think of a leading line as a type of arrow that concentrates the view. A line can also aid in balance, e.g., adding a countereffect to an off-center subject.

One of the most important lines in a portrait is the one that defines the shape of the face. In drawing, this contour line alone can be used to define the subject. Particularly with a profile, we can define subjects more easily with a strong contour than with any other part of the portrait. Even when the portrait is not a profile, a contour is needed to define the shape of the face; if this contour line is not readily visible, it can decrease the effectiveness of the image. The lack of a contour line frequently occurs in very high-key or low-key portraits.



In this portrait, the painted screen in the background has a ribbon motif that reinforces the gown, bows, and sash the subject is holding. Even though the color is not exact, because they are all in the same family of colors (reds), the similarity is seen.

Â© Phillip Stewart Charis (Courtesy of the artist)

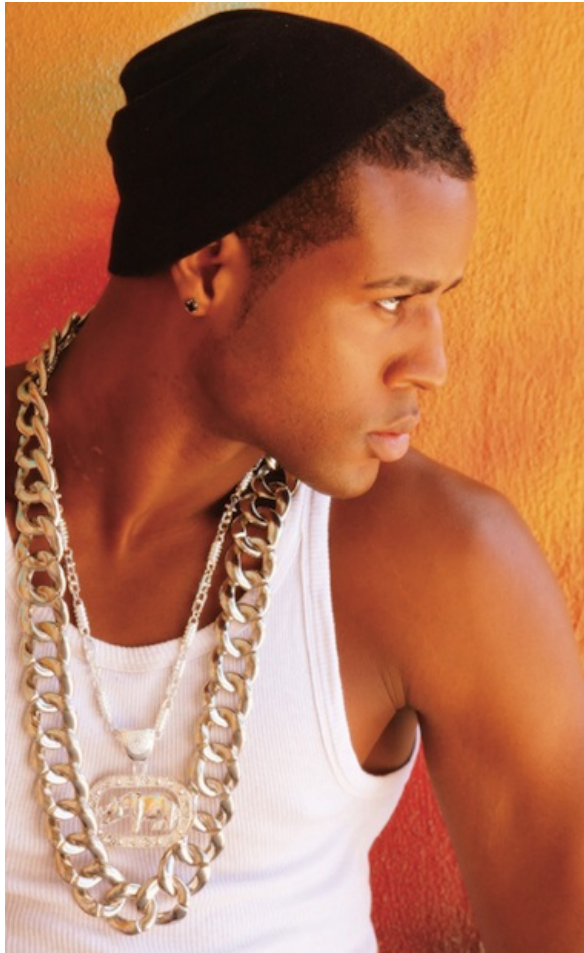


In this image, the shape of the face is unmistakable. The specular light creates sharpness in the shapes between brilliant highlights and dark shadows. © Tim Meyer



© Judy Host  
(Courtesy of the artist)





The background color warms up the image by selectively reflecting onto the subject and setting an overall warmer color scheme to the portrait  
 © Matthew Scott Drake (Courtesy of the artist)

## Shape

The contour is not always a line; it is often seen as a shape. Shapes are essential to the identity of the subject, the balance of the image, and the vibrancy of the portrait. Shapes are the building blocks for all pictures. They are filled with tones, textures, and lines; most important for portraiture, they are filled with light and shadows.

As mentioned earlier, the contour of a portrait can give more information as to the identity of the subject than any other element of the image. The silhouette or the shadow of Alfred Hitchcock at the beginning of his television show identifies the subject without any other information. The contour is formed by the boundary between the subject and the background. In order for the contour to be visible, we assume that the background continues behind the shape defining the subject's contour. When the contour is a strong boundary, we can clearly define the subject's identity. The more separation between the subject and the background, whether color, tone, texture, etc., the more identified the contour will be.

When we create this boundary between the subject and the background, we create a "figure-ground" relationship. In portrait photography, we often speak of separating the subject from the background. If we want to concentrate on the subject of the portrait, then it is important that we define the subject as figure and the background as ground. Since the boundary is part of both the subject and background, it can be assumed to be part of either. When there is confusion as to where the boundary belongs, then we have a situation known as a "figure-ground illusion" or "contour rivalry" that makes the image difficult to interpret. This may occur when the subject and background tones are flat at the boundary with a strong tonal variation—particularly when the background is brighter in tone or more vivid in color than the subject. In this situation, the background and foreground are often transposed, resulting in visual confusion.

"Negative space" is what we routinely call the space within the background that is identifiable as interesting. These background shapes are seldom problematic, and they can become important visual and conceptual aspects of the image. However, they can also become destructive if they distract from the portrait. A common scenario is to have a contrasting background that creates bold, recognizable shapes. In the hands of a master, this concept can lead to dramatic communication of the meaning of the portrait.

While the contour is an obvious shape, the entirety of any portrait is made up of interrelated shapes. We can think of the face of our subject as made up of a group of shapes defined by shadows, highlights, and LD Edges. For example, a triangle-shaped light area often forms under the eye with Rembrandt lighting, and we then see the chin as a block or curved shape. The overall shape of the face is a major consideration in our choice of a lighting pattern. Hair styling can change the apparent shape of the face. As we divide the face with shadows and highlights, its interaction with hair and/or clothing creates the shapes in the image.

Shadows have a tremendous impact on creating shapes, both in terms of the shape itself and how we perceive it. With crisper definition of shapes, a portrait displays a harsher look. A specular light with well-defined LD Edges forms hard shapes, while the LD Edge from a diffuse source softens the shapes and the portrait.





© Paul Tumasov (Courtesy of the artist)

Perceptually, shapes are seen as complete and fully closed even when small parts are missing. This concept is known as closure. If a small part of the contour of a face is obscured, our brain fills in the missing piece. This aspect can be enhanced by the use of similar shapes within the image. If there are many circles in a portrait, then nearly circular shapes complete easier. Regardless of their exact proportions, similar shapes support each other. Shapes will also “group” based on their similarity and proximity.

## Similarity

Like other compositional elements, shapes support each other. This happens in two ways. First, when there is a similarity of color, texture, shape, etc., the repetition helps us react to the object. If the subject has a round-shaped face, then other rounded shapes in the image will accent and reinforce that roundness. Repetition does not require exact replication of the element, but only enough similarity so that the relationship can be visibly recognized. Such repetition can be either a plus or minus, depending on your desires.

A second, related concept is that of grouping. When there is close proximity between similar shapes or lines, the elements will tend to be seen as a group rather than as separate elements. This can be easily seen in a group portrait where an individual moves away and is therefore seen as separate from the group.

## Juxtaposition

In a portrait, elements placed near each other so that they interact without supporting each other are referred to as “juxtaposed.” Juxtaposition accents the elements by contrasting them. Not all elements can be seen as juxtaposed because of their similarity or because of how they support other elements.

## Color

We discussed some of the physical attributes of color in [chapter 2](#), but here we will deal with its perceptual and emotional aspects.

The perception of color happens better in bright light situations than in dark light situations. Therefore, when we see color, we interpret the area where the color is lit with the most intense light. This concept of brightness relating to color also relates to the saturation of color. Since our perceptual system identifies brighter objects as closer, when color is seen, it advances in the perceived space toward the viewer. Thus, with more saturated color, there is even greater perceived closeness. Also, psychologically cool (blue-based) colors tend to recede in a portrait whereas warm (red-based) colors tend to pull forward.

Several other attributes of color affect the way it functions in a portrait. Colors interact with each other and affect the way we see nearby colors.

This concept, known as border contrast, strengthens or weakens the perception of the neighboring colors depending on their relative value and whether the colors are complements to each other. Complementary colors enhance their apparent saturation when bordering each other. When a color is bordered by a dark neutral, such as black, the color is also perceived as more saturated. When bordering colors are near each other on the color wheel, they reduce their apparent saturations.



In this portrait diptych of the artist Magdalena Abakanowicz, the size relationship of the sculptures' legs in the environmental portrait and the large frontal portrait create the dynamic for interpreting the image  
© Bettina Flitner (Courtesy of the artist)

The portraitist can benefit from the use of the mood and emotionality of color in the image. Like the quality of light, the saturation of color helps set the mood for the portrait. Saturated colors tend to make harder images, while less saturated, pastel colors make softer images. Saturated colors are bolder and can make a portrait more dynamic. When colors are complementary, the contrast hardens the portrait; the opposite occurs when colors are within the same spectral area.

Whether an image is seen as hot or cool, cheery or sad, its colors can have a great effect on the viewer. While the color temperature for red is cooler than blue, in determining the relative warmth of a portrait the opposite is the case. The colors red through yellow on the color wheel are perceived as warm, and blues are seen as cool.

Color has a great deal of emotional impact. Beyond the issue of heat created by color, we often think of red as the color of love and blue/violet as the color of royalty. Orange is seen as full of life and energy, while blue green is seen as restful. In many societies, pink is feminine and blue is masculine. Though we dress babies in blue or pink based on gender, a vibrant red car is seen as "macho." Green is the color of jealousy. The gold part of the yellow spectrum is seen as rich. Blue is seen as staid and proper. The "blue suit" is the standard for business. When the portrait is dark, the image is perceived as somber, while lighter colors are happier. Colors are loaded with meaning and emotion.

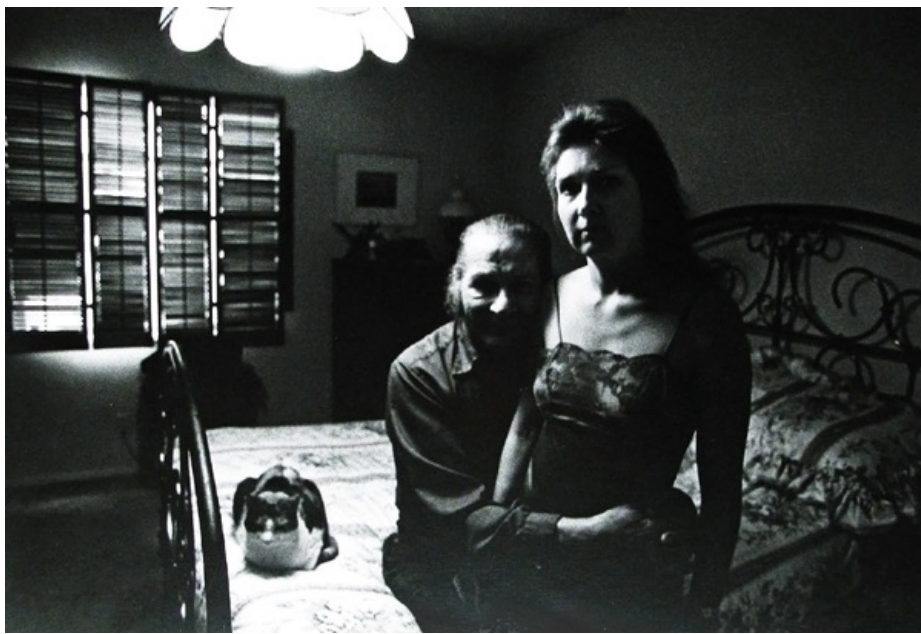
A significant use of color in a portrait is for emphasis. Color attracts the eyes of the viewer and directs how to process the image. Whether it's the red lipstick that attracts attention or the brilliant blue eyes, spots of color add emphasis. Some glamour portraits use saturated color to attract attention or set the mood.

## Texture and Pattern

The difference between texture and pattern is mostly a function of scale. Both involve repetitive detail, with texture being smaller and more likely random. Texture is not seen as a primary element of an image, whereas pattern sometimes is critical to the look. Texture and pattern are often perceived as backgrounds and interpreted as continuing behind a subject.

Both texture and pattern can give a great feel of depth to an image. Perceptually, as they become smaller, they provide visual clues to depth. At an infinite distance from the viewer, they both become tone.

Perhaps the most important difference between texture and pattern is the way each interacts with light. Since texture is created by differences in depth, the type of light (specular/diffuse) has a significant effect on it, whereas pattern is not affected to any great degree by differences in light quality. Specular light, particularly at a large angle of incidence, increases the ability to see texture, while diffuse light decreases the ability to see it. In portrait photography, skin texture is enhanced by specular light and made smoother by diffuse light. A pattern, whether added to the skin or occurring naturally, is unaffected by light quality.



In this environmental portrait by Anne Noggle, the symbolism is powerful. Most noticeable is the lighting used to set the mood, with the light from the single room light and the sun trying to come in through the window. Other symbols, the bed, cat, and the woman's attire, also add meaning to the image.

© Anne Noggle (1922-2005) (From the collection of Jim Holbrook)

## Volume

Volume is an element that gives life to an image. Since photographic portraiture is a two-dimensional art form, we must replace the natural three-dimensionality of our subjects with elements that communicate volume. The primary elements are the LD Edge as it defines shape of the lit surface and the characteristic of the light (specular/diffuse) that makes the image. These elements convey a form that we perceive as human with all its roundness and depth.

While the LD Edge and the shadowing on the subject create much of the volume of a portrait, the highlights also contribute. As the intensity and definition of the specular highlights increase, they pull forward in the image and make the portrait seem more three-dimensional.

## Size

Size refers to the relational portions that objects occupy within the portrait's frame. In medieval paintings, the size of the people gave an indication of their importance. Relative size within the frame was often dictated by stylistic conventions. In modern portrait photographs, the same concepts can be applied. If a person is small within the frame, then they will be perceived as less dominant. With multiple objects or subjects, their relative sizes will establish their value.

## Symbolism, Content, and Meaning

Photography is a powerful language. However, the strength of the language has no meaning if you have nothing to say. Portraits can convey far more than the identities of their subjects. The real content of the portrait lies in the way symbolism is used to communicate. For example, Arnold Newman was known for taking portraits in a subject's environment, but he was careful to control the camera so that the symbols he captured told the story he wished to tell.

Symbols are objects that provide meaning by their presence in a portrait. While the object may not directly communicate the desired meaning, its presence allows the viewer to receive the intended meaning. There are two types of symbols: universal and societal specific. Of the two, specific symbols tend to be more powerful because they have more communicative value to the society that supports them. While many societies use a cross as a symbol, Christian societies attach greater meaning to it because of its religious connotation. Some Asian societies might see the symbol as meaning the number 10, with less importance than the Christian connotation.

While it is obvious that an environmental portrait will utilize symbols, they are also important in studio portraits. Jewelry, clothing, and accessories can function as symbols, as can facial expressions and head positions.





Richard © David Williams (Courtesy of the artist)



# 12 Posing



Kim Meyer © Tim Meyer

By definition, posing requires directing the subject to change physical position to increase visual interest, flatter, imply emotion, or communicate intent to the viewer. This is done by rotating the subject, tilting the head, positioning the subject's body, and employing clothing and accessories.

Throughout history, portraitists have been aware of the implications of subject positioning. The earliest portraits were more concerned with recording and expressing power and authority than portraying the personality of the subject. This was true for sculpture as well as painting.

We are indebted to the ancient Greeks for introducing visual interest and emotion to the art of posing. They used rotations and tilts of the head and torso to accent the emotion shown in the face. Rigidity gave way to a more relaxed portrayal of the subject. Even when the idea was to show strength or vigor, active poses conveyed more of the artist's idea of the person than static poses.

Since that time, portraiture has seen myriad shifts in style due to the interests of the patrons. The early Renaissance brought a revival of the Greek style with a twist toward naturalism. The Baroque period introduced an element of realism and spontaneity. The continual ebb and flow of posing styles continued with the invention of photography.

The introduction of photographic processes in 1839 brought new restrictions on posing into the making of portraits. The slowness of the daguerreotype and calotype processes required the subject to remain still for long exposures. Therefore, the most common poses were stable positions such as the subject's arm resting on the arm of a chair, the subject's hand resting on a table, or, even more restrictive, the subject's head confined by restraints from behind.

Over the past 170 years, photographic posing styles have changed dramatically. In the past few decades, there has been a significant discussion about the role of posing in portrait photography. For most of photographic portraiture's history, classical posing has reigned supreme. But with time and changes in both technology and equipment, there has been a movement to a freer style of posing.

What has changed most is the degree of movement within the pose, and even this varies depending on the specific photographic genre. High fashion portraits, portraits of children, and portraits of individuals concerned with style tend toward exaggerated poses, while the financial elite and fine artists tend toward less physical but more understated poses.

## Posing Basics

In spite of the changes in style through the ages, the fundamentals of posing in portraiture have remained the same. They can be broken down into two distinct avenues of thought:

1. Pose as composition
2. Pose as expression



This portrait, made by Hill and Adamson around 1843, shows classic posing that allowed the subject to hold their position during a long exposure (From the collection of David Ruderman)

“Pose as composition” refers to positioning the arms, legs, head, and the entire body, for that matter, to create more visually interesting compositions, to flatter the sitter, or to communicate the portraitist’s ideas. “Pose as expression” refers to expressing body language and symbols via the human form. This is normally the purview of the fine artist, but pose as expression often finds its way into many everyday portraits. It is used to express the attitudes and/or the beliefs of the sitter or portraitist. Which of these two concepts dominates is determined by the purpose of the portrait and the physical nature of the sitter. However, most portraits mix the two styles.

Classical posing, which is based on the Greek model, emphasizes angles and curves with rare introductions of vertical and horizontal elements. Contemporary and fine art applications employ classical elements but introduce a significant number of vertical and horizontal elements. This expressive style of posing is reflected in the placement of the hands, arms, legs, and even the spine. Feminine subjects are built around S and C curve configurations, while masculine subjects reflect a more angular approach. Pose as expression is noteworthy specifically for the separation that it provides from the classic forms and, when used creatively, for the interpretation and symbolism that it brings to the subject.

## Physical Posing

The first issue in approaching posing is the amount of the subject’s body that makes up the portrait. There is no specific advantage to one approach or another, as each gives a different look. Primarily, we speak of full-length, three-quarter ( $\frac{3}{4}$ ), bust, and closeup portraits. The most common pose is the bust that includes the total head without cropping and the upper part of the torso. A full-length pose need not be a standing portrait, but it will show the entire body. The least frequently used pose is the three-quarter view that includes the head and full torso but seldom shows the body below mid-thigh. Last is the closeup or full-face portrait that crops tightly on the face and does not show the shoulders.

Regardless of how much of the subject will be seen in the portrait, posing starts at the feet. Whether the subject is seated or standing, or the portrait is full-length or closeup, the placement of the feet creates the foundation for the portrait and determines the posture of the subject. The Greeks gave us the concept of *contrapposto* (ironically, an Italian phrase depicting a Greek concept), which refers to the placement of the subject’s weight on one foot, often the farthest foot from the photographer, and the relaxation of the front foot. This minor weight shift creates movement in the line of the spine, alters the axis of the hips and shoulders, and implies a sense of ease in the subject.

Other positions of the feet convey various other body concepts. With the double flat-footed stance, there tends to be static placement of the shoulders, hips, and spine. When used in “at attention” mode, it recalls military or historic statues. This foot structure restricts the motion of the hips and increases muscle tension to maintain balance. The muscular and skeletal tension progresses up the body to the neck and face. While tension is created throughout the portrait by rigid symmetrical feet positioning, when the feet are more relaxed, they can produce poor posture.



© Matthew Scott Drake  
(Courtesy of the artist)

It is common for women to stand in the contrapposto fashion while exaggerating the curve of the spine to create the C or S curve. The amount of exaggeration is determined by the genre of portraiture. While men also take advantage of the contrapposto position, the hip maintains an angular and therefore a more masculine feel. When the weight is placed on the front foot, even while sitting, the body's weight moves toward the camera and creates a more aggressive statement.

Just as the feet begin the pose, the legs transfer the posing energy to the hips. In turn, the hips set the angle for the torso, defining the spine angle and establishing the head tilt potential. Depending on the flexibility of the torso, the posing of the mid-body sets up how relaxed or tense the shoulders and neck appear.

With the exception of full-face and closeup portraits, the shoulders or their posing are involved in the image. Most commonly, one shoulder is rotated toward the camera. This position allows for a full range of head rotation. To facilitate the range of motion for the head with vertical rotation and yaw, the shoulder closest to the camera is frequently lowered. This tends to be a widespread pose because it promotes a relaxed look. Posing with the shoulders horizontal or with the shoulder closest to the camera raised creates an "attitude."

When the arms and hands become involved, the composition and posing for the portrait become more complex. Because of the flexibility and size of the arms, their position within the pose can determine the success of the portrait. The posing process can use arm placements designed around poses that feel comfortable for the subject but still maintain a sense of style. For most portraits, it is advisable to avoid right angles at the elbows or wrists and the creation of vertical or horizontal lines with either part of the arm.





Unlike feminine poses, masculine poses avoid softening the pose with rounded shoulders or exaggerated shoulders, hips, and legs. In the top row, the male I form can be seen. Hips and shoulders stay parallel and there is little head tilt. In row two, the C form is subtle with slight head tilts and small hip displacements. In creating the S form shown in the bottom row, just as with the C pose, the head tilts and shoulder and hip movements are minimized.





This chart shows nine poses that are common for female full-body posing. The first row shows I-type poses where the body position relative to the camera is a vertical line. Example C shows that the hips and shoulders can soften the I pose by rounding the torso and hips while maintaining the vertical line. The second row shows examples of C-type poses where the body is bent to make a rounded shape. In example D, the back is bent while holding the hips mostly parallel to form the C-shape. The rear leg in example E creates the line and balance to form the C-shape with the left arm accenting the form. In the third row, the S form is created mostly with head tilt. Comparing examples D and G or comparing examples F and I, the head tilt in G and I are toward the extended hip while in D and F, the head is aligned with the spine or slightly tilted away from the extended hip. Finally, when comparing example C with example H we can see both the effect of head tilt and camera angle. In example C, an I-form pose, the model's head is aligned with the spine and the camera angle is perpendicular to the model's pose. In example H, the camera is at a ¾ position to the model and her head is tilted toward the raised hip, creating the S-shape.



Angela Merkel © Bettina Flitner (Courtesy of the artist)

Hands are almost always viewed from the side; this slenderizes the subject and allows for graceful curves with the feminine hand and angular forms with the masculine hand. The exception to this would be when the hands are critical within the image. For group portraits, hands and arms take on significance as a means of expression. The pose determines whether there is a connection between the subjects and what emotion is communicated by the gesture.

The hand interaction with the face can also imply gender. A closed or clenched hand tends to be more masculine while a relaxed or lightly curved hand has a feminine inference.



© Edie Chiarappa (Courtesy of the artist)

## Head Placement and Rotation

In this posing progression we importantly arrive at the head and face. While the lighting on the face, as discussed in [chapter 7](#), determines much of the character of the portrait, the pose of the head presents considerable information about the subject.

There are definite views of the head in relationship to the body that have feminine or masculine implications. Generally, in a feminine pose, the head tilts to the high shoulder. Men normally lean toward the low shoulder.

Another approach is to follow the line of the spine. For men, the alignment of the head maintains the straight line of the spine, while for women it is curved. This creates a more angular structure with the masculine alignment and a softer structure with the feminine alignment.

A discussion of posing often focuses on “head tilt.” This term refers to the rotation of the facial axis in relation to the camera, but it also can include two other factors. The neck facilitates the motion of the head in three ways. First, the head can rotate in relation to the camera axis. This rotation is in a horizontal motion that can involve both the neck and torso. Second is the tilt of the head, a rotation in a vertical path that can be thought of as raising or lowering the chin. Last is “lean,” a rotation of the head so that the eyes are not horizontal.

While the head’s motion does not affect the lighting ratio, it can change the type of lighting pattern on the head. For example, high-angle, open loop lighting can change to closed loop when the head is rotated toward the camera axis or to butterfly lighting when it’s rotated away from the camera axis. Depending on the mood that you wish to establish, changing the head’s position during a portrait session can affect the look of the individual photographs.



In portraits of men, the narrowing of the hands is not as critical, because feminizing the figure is less important. While a more relaxed hand pose is the general rule with female models, more tension (as seen in C) is often used to symbolize masculinity when posing male models. A relaxed fist or “staircase” fingers are also common in male hand posing. Examining the Male Pose Chart will give further examples for hand poses.



Hands are seldom the critical element in a portrait. In most cases, the prominence of the hands can be minimized by rotating them so the palm or back of the hand isn't visible. The back of the hand adds weight to the image and produces a less graceful view. Generally the female hand is bent, either in the shape of a C or arched in the shape of an S. This can be seen in the examples above, which show several ways to hold a hand so it appears narrow and more feminine in the photograph. In these poses, the fingers are usually curved and often staircased. Examining the Female Pose Chart will give further examples for hand poses.

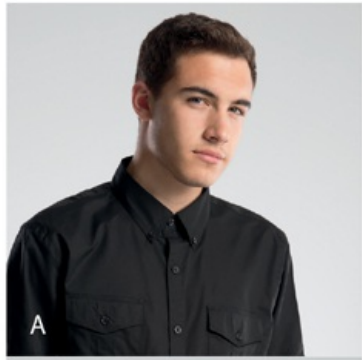
Primarily we think of posing the head in one of three rotational positions. While some describe five positions, two of these are mirror images of the others. The three positions are as follows:

1. On the camera axis, i.e., a frontal or "mug shot"
2. At an angle to the camera axis, i.e., a three-quarter view
3. Perpendicular to the camera axis, i.e., a profile

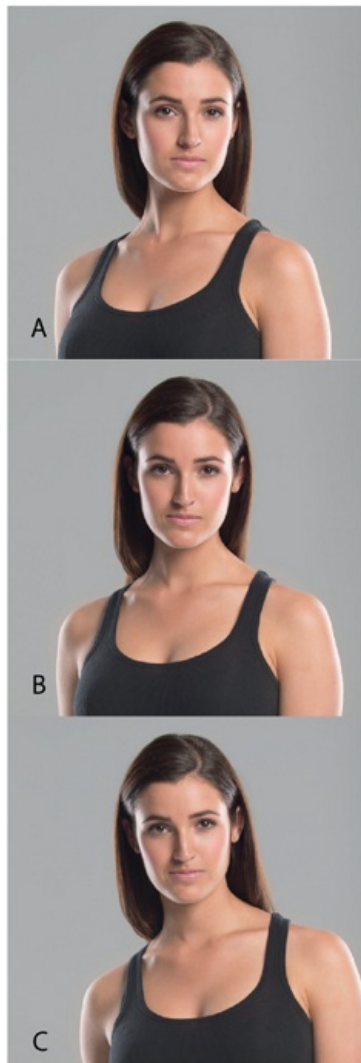
The profile and mug shot views have a long history. They were the earliest views of the face used in portraiture. It was not until the Renaissance that the three-quarter view became predominant, and it still rules today as the most common view.

The symmetrical frontal view of the face has fallen out of favor over the last few centuries because it is a static view; it also has connotations of iconic imagery and identity photographs that require an uncreative and dispassionate point of view. However, several well-known artists, such as Richard Avedon, have brought the frontal approach back into fashion. The full frontal view adds the appearance of fullness as well as presenting a more confrontational attitude. Because the features and axis of the face are aligned with the camera axis, frontal lighting removes depth from the features of the head and face.





In these examples we notice that the head tilt for males follows the spine. Even when rotated, the line of the spine is continued. Both A and C are examples of classic male head poses with the lean of the head toward the lower shoulder. In example B the head is tilted toward the higher shoulder creating a less masculine pose. This is sometimes acceptable in more contemporary images, but goes against the grain of classic portraiture.



The female examples show the subject in a mug shot-style portrait. There is no head rotation and only a slight tilt of the head off the axis of the spine. Since the model is facing the camera with a vertical alignment of the face, the tilt is accomplished with small rotations and angling of the neck. In example A we see a slight tilt to the high shoulder. This is the classic female head position. This is traditionally the only head tilt reserved for woman. In B the head is rotated to be facing the camera with a vertical neck, and in C the head is leaning toward the lower shoulder with a slight tilt back to retain a more vertical head position. Both the vertical head angle and head tilt to the lower shoulder are found in masculine posing, as well. The best guideline for photographing women in a classic look is to create motion within the pose. This normally requires using a head tilt to finish one of the compositional lines of the full body pose.

Like paintings, photographs have a singular point of view. This singular perspective allows a photographer to choose which angle best represents or, more often, best flatters the subject. This is part of the rationale for the use of the three-quarter view (sometimes called the two-thirds view) in portraiture. This view does not necessarily divide the portrait into a three-quarter to one-quarter proportion about the nose, but it is indicative of that relationship. In the three-quarter view, the head is turned away from the camera axis, while a view of both eyes is maintained. The rotation will also show one ear if it is not covered by the subject's hair or clothing.

The three-quarter view shows all five planes of the face with recognizable form and volume, unlike the other two rotations that flatten or obscure those planes. By rotating the facial axis away from the camera, the three-quarter view also slenderizes the subject. This is particularly the case with a high lighting ratio and a short lighting approach.

There are several other reasons why the three-quarter view is the most common head rotation. It has the greatest potential for a relaxed subject because the head tilt and lean can be used to set the portrait's intensity. For a subject with long hair, the three-quarter view allows the use of the hair as an active design element. Also, without being confrontational, the subject can look at the camera because both eyes are visible in the image.

The profile view has long been a favored portrait method. In pre-photographic times, a scissors artist would cut black paper profiles. The profile was selected for two specific reasons. First, a shadow cast from a single light (e.g., a candle) would allow seeing the profile simply. Second, the profile defines the face with a single line, the contour, which gives no depth but provides a very recognizable portrait.

In posing for a profile, the facial axis is perpendicular to the camera axis. With this positioning, only one side of the face is visible. This means that the contour will be clearly seen with no more than the eyelash from the far side of the face. Because the contour is central to seeing and identifying the subject, it is important that the background not compete with the contour line. This requires a background with no added detail that can interact with the contour.

Once the head rotation is chosen, one of two other motions is used to establish the pose. First is the chin tilt, the rotation of the head up or down on the facial axis. This simple motion can set up the attitude for the portrait. Rotating the chin downward tends to indicate a more passive pose. Rotating the chin outward and slightly upward creates a more assertive pose. Masculine poses normally use the outward/upward chin position. Feminine poses favor lower chin positions, though upward chin positions are also used.

Finally, the head can lean to either side. Severe leans are uncommon, though they can be used if they produce the desired composition. A slight

lean relaxes the look of the portrait. If the head is maintained straight on the neck, the portrait can look stiff.

With these three motions—rotation, tilt, and lean—numerous poses become possible. The idea is to use the combination that provides the best composition and feel for the subject. In the latter half of the 20th century, different schools of thought directed specific combinations for men and women. While these combinations are still sometimes used, they have for the most part fallen out of favor.



© Edie Chiarappa (Courtesy of the artist)

# 13 Facial Analysis



“I had 15 minutes with Dame Edna and had to be focused to show the essence of her character without having to feel or know her much, so when she did her lips thing I got closer and photographed it...that’s how I photograph, I get close.”  
© Elinor Carucci (Courtesy of the artist)

What do we want and what do our clients want? This is not a question that originated with recent advances in capture and retouching tools; it has been with us since Greek and Roman times. The concern is whether a portrait should be an exact, idealized, or factually correct portrayal of the subject. In photographic portraits, we have the ability to make this choice in sophisticated ways.

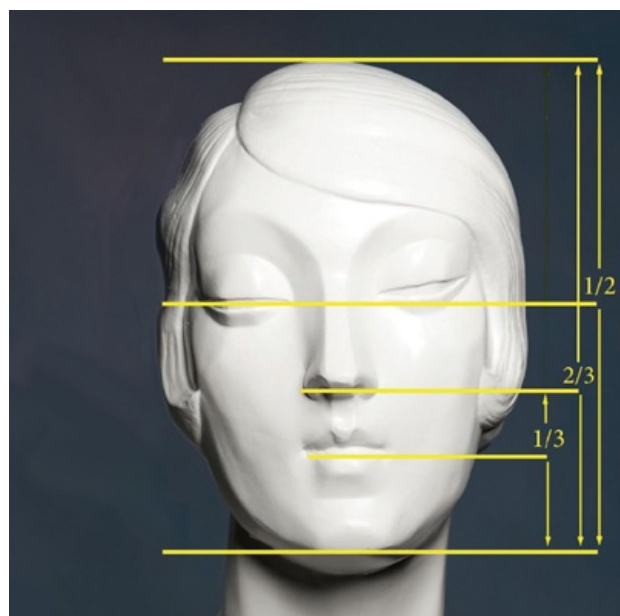
We cannot deny that our subjects want to look their best, but this is not the same as looking perfect. It is not only an issue of retouching, but also of making proper choices in lighting and composing the portrait. Clearly, we need to take control of our tools to optimize our work. The various tools we have discussed thus far have given us the ability to fine-tune a portrait while recognizing the differences that make our subjects individuals.

Once we choose our approach on the idealism-to-realism continuum, we can establish methods to achieve our goal. This is a two-part activity that begins with analysis and proceeds through corrective techniques and lighting variations.

For the portrait photographer, facial analysis is of primary importance. However, we must acknowledge that facial analysis is individual to the ethnicity and culture of the subject and photographer. The principles of facial analysis described here will be within a Western European/American societal context.

## Analyzing the Face

Earlier, we discussed the five planes that determine lighting patterns on the face. These are part of our consideration as we analyze the face, for it is the patterns of light and dark that give the face the desired form, volume, and qualities.





We look for deviations from a “normal” face, with normal defined as head proportions with the eyes halfway from the top of the skull to the chin, the nose approximately one-third of the way from the eyes to the chin, and the mouth approximately two-thirds of the way from the eyes to the bottom of the chin. These basic proportions are roughly common to all face shapes, though individual and ethnic variations occur. We are not concerned with the way the hair is styled.

The width of an oval face is approximately two-thirds of the height from the chin to the hairline. The oval face has an angularly curving chin with no sharp or flat portions, and the forehead is rounded more than the chin line. The oval formed by this configuration is egglike with the face continuously curving, though the lower half of the face is slightly less curved than the top half. The cheekbones tend to be visible, though not highly pronounced.



Oval face

A round face is just what it sounds like. The face is approximately the same width and height, and it is closer to a circle though seldom a pure circle. Because of these proportions, the chin seems less prominent and the mouth appears lower on the face. Because of the face’s width-to-height proportion, it looks fuller and the cheekbones tend to look flat. With the roundness also comes a full or plump look.

The long face shape is the narrowest of the primary facial shapes. Its key feature is its narrow width-to-height proportion. The cheekbones are elongated, and while pronounced on the sides of the cheeks, they tend to lay flatter on the frontal surface. The longer shape of the face makes the chin look extended and prominent. Because the face is narrow, the eyes are nearer to the temples and therefore emphasized.

Similar to the round face, the square face is broad in comparison to its height. The edges of the face, particularly the jaw and hairline, are flat and at a significant angle to the temples. The cheekbones are flatter and less pronounced than with other facial shapes. However, the cheeks are full and tend to look plump.



Round face

The last common face shape is the heart-shaped or triangular face. In this type, the upper portion of the face is broad and the portion below the cheeks is narrow. This face will often have high cheekbones that are not obvious because of the breadth of the upper part of the face. Most notable is the highly tapered jawline that can create a pointed chin. The forehead and eyes tend to dominate this facial configuration.

These facial forms are skeletal and thus do not depend on the weight of the subject. However, the more weight the subject carries relative to height, the softer the features of the face will be. The contrary is also true, with thinner individuals tending to have accentuated bone structure.



Long face

Another portion of the head structure that enters into our analysis is the neck. For women, the length and condition of the neck become an issue, particularly when open-necked attire is worn. The neck may be long, giving the head a floating quality, or short, thus anchoring the head to the shoulders. Also with age or weight a “double chin” may develop.

An important facial plane for determining portrait lighting is the nose, and therefore it is important to analyze how the nose will be seen and how it will cast shadows. The nose’s length is approximately half the length of distance between the top of the forehead, the hairline (unless receded), and the chin. Its width tends to be proportional to the width of the face, i.e., roughly one-third the width of the face. However, the shape of the nose is most important and often dictates the pose; for example, with a large nose, a profile is less flattering (though some notable portraits have been made of distinctive noses in profile, such as Karsh’s portrait of Jacques Cousteau).



Square face



### Heart-shaped face

The eyes are often seen as the key to the inner portrait. Therefore, their structure is important to the analysis of the face. Their shape and depth in the face, along with the brow shape and weight, define the structure of the eyes. Eye shape is primarily a genetic factor based on heritage and ethnicity. For the most part, the eyes are approximately equal in size; unless there are large flaws in their shapes, the eyes will be active in the portrait but will not demand any substantive correction. Far more important in facial analysis are the depth of the eyes, the angularity of the brow, and the height of the cheekbones.

A special situation exists when the subject wears glasses. The photographer must then consider how the frames and glass in the spectacles modify the light and shadows and how the lenses distort the eyes.

The lower portion of the face, from the nose to the chin, needs to be considered in analyzing the face as well. The lips, particularly for women, are both well defined and adjustable. Using lipstick, the shape of the lips can be strengthened or weakened for the purposes of the portrait. For men, shaping the lips is not common in most portraiture.

Below the lips, the structure of the chin plays a major role in defining facial structure. As mentioned earlier, the shape of the jaw establishes other factors of the face. When the jaw is narrow and angular, the face tends toward either a triangular or long shape that is seen as weak. A square jaw tends to be seen as stronger. The chin and its form add to the jaw's strength when extended out from the face and, conversely, add to the jaw's weakness when subtle, rounded, or flat.

Lastly, hair contributes to the overall analysis of the face. For high-end photographic portraiture, a stylist will be present to arrange and control the hair, but for most portraiture, the photographer will need to attend to it. Primary concerns are how the hair frames the face and whether there are flaws that need to be addressed, such as baldness, thinning hair, or hair that has problematic color or texture.

### After Analysis

Once we have determined the basic structure of the face, we can establish the best lighting and pose. Here we can benefit from the way beauticians apply makeup to their clients. Beauticians use makeup for shadowing and highlighting, subtle to dramatic, to emphasize attractive aspects or diminish unattractive aspects of the face. We can use these ideas of placement of tone by applying light rather than actual makeup to the surface of the face. The use of lighting based on facial analysis is often called corrective action, but it is as much an issue of correct posing as it is of fixing flaws.

Perhaps the easiest choice to make based on facial analysis is the relationship of the facial axis and the camera axis. While short or broad lighting is the primary method of determining the width of the face, rotating the face away from the camera introduces foreshortening and tends to thin the face. This aspect of posing based on facial analysis is effective until the face is rotated to about a 45° angle with the camera axis. Beyond this point the facial shape is less important as the profile takes precedence. Narrowing the view of the face with rotation is beneficial when the breadth of the face needs to be reduced, and the effect can be enhanced further by using short, higher-ratio lighting. The result is shadowing on part of the camera-facing portion of the subject's head, which diminishes its size.



To correct for a round face, the head is rotated away from the camera axis, combined with short lighting. This foreshortens the breadth of the face while the short lighting reduces the amount of the face with bright lighting.

With a broad face, a higher angled key light also increases shadowing and reduces the face's perceived width. It is common to use a slightly higher camera position in relation to the subject.

Lens choice is also important in facial interpretation. Shorter than normal lenses (e.g., a 50mm on a full frame 35mm DSLR camera) tend to increase roundness but introduce an unpleasant distortion. Most portrait artists favor longer than normal (telephoto) lenses. They flatten perspective and produce what is perceived as a more pleasing appearance.



The opposite is used to correct for a longer face. Broad lighting is used with head rotation.

## Round Face

A round face is not a flaw, but the proper lighting will create a portrait that is more pleasing for the subject. When the three axes—camera, key light, and facial—are aligned, then the true shape of the face is seen. Thus from the outset, the first choice based on facial analysis is the relationship of the axes. The lower the light ratio, i.e., the closer to 1:1, the better the facial shape will be realized. With faint shadows, the contour of the face will be more visible.

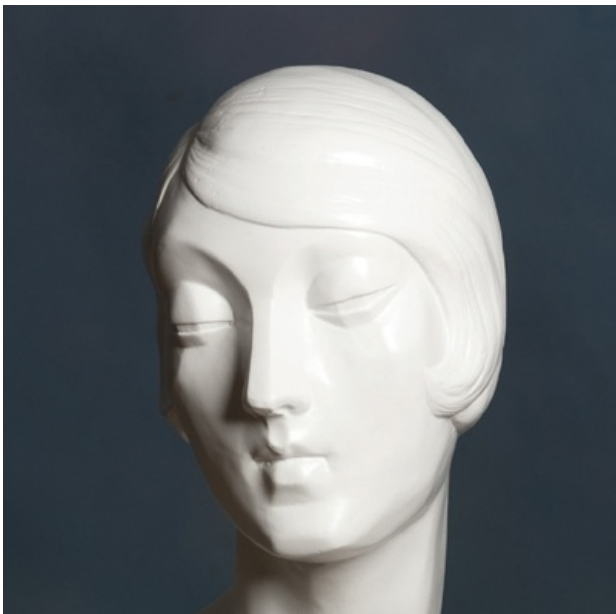




Correction for the narrow chin of the heart-shaped face is to photograph from a lower angle using perspective to change the visual proportion of the chin compared to the rest of the face.

## Long and Triangular-Shaped Faces

The contrary also can be applied for long or triangular (heart-shaped) faces. In this situation, less rotation of the face from the camera axis and broad, lower-angled lighting with a lower light ratio provide more lit area of the face and head and make them look fuller. With a triangular or heart-shaped face, care must be taken to avoid too much lighting on the forehead because of its larger proportion to the lower face. Tilting the chin upward and/or lowering the camera's position often accomplishes this. This has a beneficial effect on both the broad forehead and the narrow chin common to the triangular-shaped face. Corrective actions can be used for any shape face if the subject has a broad forehead or narrow chin.



A higher angle is used with a flat face. This allows subtle contours on the face to be more visible.

## Flat Faces

For a flat face, a higher light position with a higher light ratio provides more facial toning and accents subtle facial contours. If the face is overly contoured, a lower key light position and lower light ratio eliminate some shadowing and allow light to reach into deep-set eye sockets.

Not all contours on the face are skeletal. Skin defects, such as wrinkles and scars, can be softened by using this lighting. The face can be rotated toward the camera to reduce the size or angular features of the nose. This is important for two reasons. First, when the nose has an undesirable profile shape, rotating the nose toward the camera reduces its size in the portrait. Also, if the nose casts a shadow, this rotation closes and merges the shadow of the nose with the shadow on the cheek. A low light ratio further helps to minimize the shape and size of the nose.



Â© Stacy Pearsall  
(Courtesy of the artist)

Wrinkles and contoured-based blemishes can be minimized by the use of additional light, but this is not true of all problem areas on the face. The most common way to address defects is by hiding them in the shadows. With face shapes where high light ratios are not appropriate, an additional light on a blemish or uneven skin tones may reduce contrast with the surrounding area and diminish the problem. In this case, form fill lighting or broad lighting on the problem area can be good choices.

A common concern for older and heavier subjects is the condition of the neck, which may be heavily wrinkled or compromised by a puffy double chin. Raising the key light's height and using a higher light ratio create a shadow from the chin and jaw that diminishes the impact of the neck. A higher camera angle is also effective in this situation.

Because the eyes are so important to a portrait, some specific techniques for dealing with eyes have come into use. When the eyes are different in size, it is common to pose the subject by rotating the larger eye away from the camera and to place the key light close to the smaller eye. When the eyes are small, place the angle of the lighting to ensure a catch light in the eyes. If the eyes bulge, then lower the key light and use a less dramatic light ratio to eliminate shadowing under the eyes.

Hair becomes a factor that allows for both correcting flaws in the facial structure and adding creative impetus to the portrait. The shape of the head and face can be modified by hair styling; e.g., bangs or a wave combed across the forehead can modify its size and shape. This is particularly important for faces with large foreheads.

The way light reflects from the hair and how it creates shadows also enters into making the portrait. When the hair is thin or when the subject is balding, keep light away from the top of the head to reduce any accenting of what many subjects consider a flaw.

## Expression

History as well as the breadth of human experience has influenced expression in contemporary portraiture. Because most portrait photography is client based, the vast majority of commissioned portraits are limited to happy and pleasant expressions. On the other hand, fine art portraiture has drawn from the vastness of human history and experience from the Greeks on.

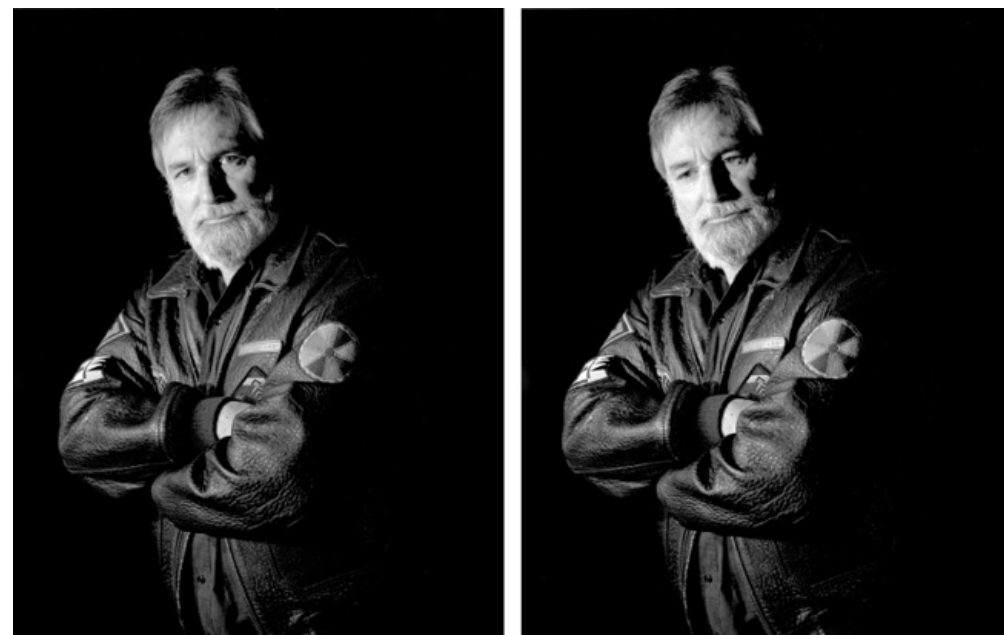
In early photographic portraiture, very long exposures required poses and facial expressions that could be held for long periods of time. This often resulted in stiff-looking portraits with little expression. The advent of faster photographic materials and lighting equipment shortened posing times and allowed expression to be added into photographic portraits.

While the skeletal structure of the face determines many aspects of the portrait, the eyes, mouth, and muscular structures determine the expression and emotion. The most prominent feature for creating expression is the mouth. We can think of the mouth in its neutral position as a

flat line across the face. When the mouth is in this position, the face is also neutral with no definite expression. This is not the most relaxed facial position; a slight smile is the most relaxed facial pose. This is the smile of da Vinci's *Mona Lisa*. When the mouth is slightly smiling, the muscles are relaxed and do not change the basic facial anatomy. For this reason, a relaxed subject presents a neutral or happy look. The sculptor Bernini believed the best moment for expression was just before or just after speaking. This moment has a spontaneous nature, and the expression allows a "true" interpretation of the subject.



In this self-portrait, Amanda Quintenz-Fiedler used a fabricated catchlight to add a humorous note that matches her styling and expression  
© Amanda Quintenz-Fiedler (Courtesy of the artist)



In these two portraits, the pose is the same, with one important difference. In the first image, the subject is looking at the camera, and in the second he is looking down. The effect of the portraits changes the way we relate to the images.  
© Christine Trice (Courtesy of the artist)

The key to subtle expression often lies in the corners of the eyes and the mouth. When the corners of both the eyes and mouth curve up, a pleasant expression appears; when they curve down, a sad expression is displayed. A neutral curve implies ambiguity.

During a smile, the cheeks tense up and become puffy, changing the mouth structure as well. Therefore, when the cheeks are perceived as full, the expression seems happier regardless of the line of the mouth. As the cheeks tighten more, the corners of the mouth raise and the smile broadens. This is true whether the teeth show or not.

When tension is placed in any of the facial muscles, the mouth structures show the stress. This may involve a stiffening of the upper lip or a narrowing of the lips that flattens the mouth structure and lessens depth in that part of the face.

As the facial muscles trigger, the tension also moves up the head and creates lines or wrinkles. The looser the skin (normally coming with age), the deeper the lines or wrinkles appear. When lighting accentuates the wrinkles, it increases any expression. A smile lightens the effect of wrinkles in the brow; if the mouth structure is tense or sad, furrows on the forehead and wrinkles around the eyes deepen the look of pensiveness or sorrow.

Regardless of other aspects of the portrait, the eyes have the greatest effect on the perceived expression. As mentioned earlier, the eyes are exceptionally important in the success of a portrait. Therefore, how the subject's eyes are posed imparts emotion and expression.

When posing the eyes, we need to consider their three parts: the lids, the irises/pupils, and the sclera (whites of the eyes). We also need to consider the catchlight created by light reflecting on the surface of the eyes. A catchlight does not have great effect if it reflects over the sclera, but it is clear and visible when reflecting over the iris or pupil. When the catchlight is crisp, the eyes are interpreted as clear and sharp, in terms of both focus and emotion. If the catchlights are soft, the portrait takes on a softer look. Since the surface of the eye is rounded and covered with moisture, the reflection is very specular, and the shape and position of the light reflecting into it can be seen. For this reason, many softboxes are made with octagonal or circular illuminated shapes to eliminate a square catchlight.

The direction of the eyes is a major tool for creating expression. The sight line created by the subject's eyes in the frame affects the viewer's reading of emotion. Some sight line options include a camera-directed glance with the eyes relaxed, a camera-directed glare, an upward-directed view, a downward look, and an off-frame directed view. Each imparts a basic emotion to the portrait.

The relaxed, camera-directed eye position is nonthreatening, open, and friendly. This neutral expression is commonly used for portraits either with or without a smile. This eye view allows other parts of the face to have a greater impact. Mona Lisa's eyes have this attitude and allow the famous smile to be as important as the eyes.

When the eyes are stressed and looking at the camera, a glaring expression results. In this situation, the eyes squint slightly and the tension is clearly visible. Confrontation with the camera is developed through this eye pattern. The facial attitude combined with the sight line also adds to the feeling of confrontation. The more frontal the view, the more challenging the portrait will be.

If the eyes are raised and not directed at the camera, the portrait takes on a lighter mood. This can be enhanced by a smile. Though eye contact with the camera is lost, a dreamy and satisfied expression is read into the portrait. On the contrary, when the eyes are looking down, the subject takes on a pensive or dour expression. In this situation, the difference between a thoughtful or sad impression can be augmented by other facial expressions. A slight smile expresses thoughtfulness while a frown completes sadness.

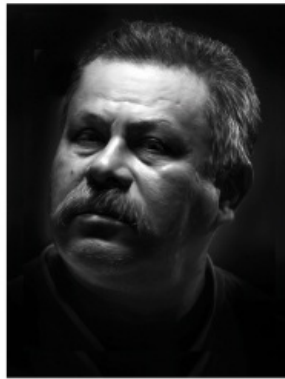
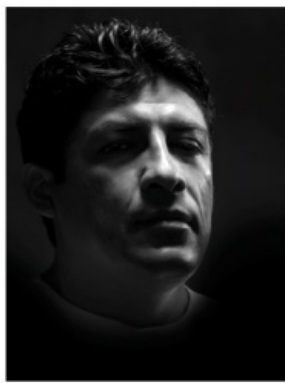
Lastly, the eyes can have a sight line that is off the frame. With the exception of the profile where this eye positioning is neutral, an off-frame eye positioning that is not downward or elevated is perceived as detached. With the eyes looking off the frame, the sclera become prominent.

The eyelids can also affect expression. We can think of a neutral eyelid position as visible and intersecting with the top of the iris. Squinting shows tension and brings both the upper and lower lids into view. Wide open eyes show no lids and indicate surprise or excitement. When the upper lid is lowered, the expression takes on a tired or sad tone.

Earlier we discussed head tilt, rotation, and camera angle in terms of their physical realities for posing and corrective actions. These elements can also have expressive content. We can think of the camera as the viewer relating to the subject, and that can have both positive and negative connotations. All other factors aside, when the camera is above the subject's eye level, the subject has an inferior or diminished relationship to the viewer. The opposite is also a common arrangement, creating a feeling of superiority by having the subject above the viewer. The chin tilt is also a creator of expression. As the head tilts forward and down, the chin becomes less prominent and the facial attitude becomes more submissive. For this reason, a forward head tilt is seldom used with men.

To finish this section on expression, we need to discuss lighting as an emotional tool. High-ratio and low-key lighting tend to promote a somber, sad, or foreboding look in a portrait, while high-key and low-ratio lighting are more neutral and allow the facial expression to create the emotion.





These historical portraits by Phillip Charis combine facial expression and gaze to create five emotional looks. The angle of view, head positioning, and lighting are fairly consistent, hence the facial factors set the emotion.

© Phillip Stewart Charis (Courtesy of the artist)

## 14 Relating to the Subject



Of this Berenika Zakrzewski portrait Douglas Kirkland says, “I arrived with two assistants at the New York Studio on an extremely hot, humid day after working outside on a different project. The transition wasn’t simple, bringing the lights and equipment in and setting up quickly, but after adjusting I found myself in a new mindset with the concert pianist Berenika. Everything we did earlier in the day went behind me after speaking with her and listening to her radiant music on the piano. Once more I learned the lesson on how important it is to pick yourself up and find the positive side of any project, falling in love with your subject and working towards the most positive end. For me this is truly the joy I find in all the work I do as a photographer. It is important to always do your best at all times and always care about what you do.”  
© Douglas Kirkland (Courtesy of the artist)

If you don’t like people, portrait photography is not a wise choice for your photographic career. Unlike several other areas of photography, portraiture is personal. It is based on the interaction between the subject and the photographer. Portrait photography is a conscious act that involves cooperation on the part of both the subject and the photographer. Since this chapter is about relating to others, we also do so by including references and quotes from other authors and photographers.

We can think of making a likeness mechanically, e.g., a driver’s license photograph where the relationship is between the subject and the camera. In this case the operator, usually the clerk who took your application and money, has you look at a spot on the camera. The camera is activated regardless of the expression on your face, and the light is straight on so that there are no shadows. The background is a color used for identification only.

With portraiture, the idea is to use the likeness to communicate something about the people in the portraits, their personality, their essence. For this reason, it is necessary to have a relationship between a photographer and a subject rather than a subject and a machine. Even if the photographer has a recognizable style and intends to use it, the portrait is still about the subject—and the photographer needs to communicate this to the subject.

In most cases, the photographic process involves a collaboration between strangers. The success of the portrait lies in the ability of the photographer to evoke the best pose and emotion. The subject needs to relate to the portraitist to allow the best views to be captured.

Further, the relationship between photographer and subject often becomes part of the style of the artist. For example, Irving Penn, Richard Avedon, and Arnold Newman had much in common, including similar backgrounds and living locations. Their skills were all at the apex of portrait photography, yet their portraits are very different. Penn’s portraits show a relaxed feel whereas Avedon’s are edgy. Newman said his style of portraiture was “90% moving furniture,” i.e., creating the environment. These styles reflected their personalities as well as the relationships they had with their subjects, the sum total of which translated into their portraits.

Gender and age also can play a role in the success of a portrait. There are frequently affinities and/or abilities to relate to a subject based on gender. For this reason some photographers make stronger portraits of women while other photographers make stronger portraits of men. Likewise, some photographers are wonderful with children while others have a harder time working with them.

Though photographic portraiture is based on a relationship that is, in fact, a collaboration, the accountability for the session falls to the photographer. It is the interaction between photographer and subject that makes a substantial difference in the success of the portrait. To be continuously successful, the individual choosing photographic portraiture as a primary working style must have a desire to work with other people.

The complete photographic portrait process has three parts that all interact with each other. First, the subject and the photographer interact from an original contact; then the portrait is made; and finally, there is closure/delivery. The overall success of the photographic enterprise depends on all of the relationships within each part of the process. If the interaction at the beginning, i.e., the original contact, goes poorly, then the rest of the process may not happen. A subject to whom the photographer is a stranger will most likely reject having a portrait made if the first meeting is not successful. Remember, you have only one chance to make a good first impression.



© Christine Trice (Courtesy of the artist)

After the first contact, if the subject chooses to have a portrait made, the photographic session needs to continue the good relationship in order to reach completion. Throughout making the portrait, the critical issue is comfort. This comfort goes beyond the physical comfort of poses to include the effects of the totality of the session. While there may be times when the photographer wishes to evoke a less than comfortable expression, if the session is too uncomfortable, the subject may not continue.

Lastly, the closure of the process requires respect for the subject. For many photographers, closure happens shortly after the photographic session. The reason is that when subjects are totally involved in the making of the portrait, they are more likely to purchase.

Though commercial and celebrity portraiture may seem different, similar concepts apply. In these types of portraiture, the contact may not be with the subject but rather with a representative of the subject for final use media. The first contact with the subject may not occur until the actual photographic session, and fulfillment may well be with the original contact and not with the subject. With portraits for advertisements, there may even be a third collaborator: the art director, who has a specific use for the portrait and thus specific expectations as to how the portrait will work. The subject will just arrive at the session, and that contact will be the only time the photographer interacts with the subject. It is not unusual for a celebrity's agent or assistant to keep looking at their watch to ensure that the portrait session does not exceed the allotted time.

## Confidence

Regardless of the approach, purpose, or style of the portrait, the issues of comfort and respect for the subject remain paramount. The subject's comfort is largely determined by their level of confidence in the photographer and the process. Confidence and trust are the linchpins of the relationship needed for portraiture.

There are several ways that confidence can be generated in the various parts of the portrait process. The easiest is if the subject relates well to work that the photographer has already produced. When the subject can recognize himself or herself in previous work, then he or she develops confidence that the photographer can produce the type of portrait desired. Therefore, it is necessary to interact with subjects and determine how they see themselves. Whether through images on a web page or on the walls of the studio or through word of mouth, how the photographer is perceived prior to the initial contact can start the process with confidence.

Introductory meetings and interactions allow confidence to grow through conversation, actions, dress, body language, humor, and consideration for the wishes of the subject. The actions that do the most to build or retain confidence are knowledge appropriately demonstrated, the photographer's self-confidence, preparation for each part of the portrait process, and a calm demeanor.



© Judy Host (Courtesy of the artist)

The portraitist needs to exhibit the confidence that comes with being proficient with photographic technology. Photographic/technical equipment needs to be a seamless extension of the artist's mind. Separate but equally important are the aesthetic aspects of the portrait process. Through the examples on the walls, the care and attention to styling, and the way design concepts are discussed, the artist can demonstrate his or her command of the aesthetic portions of the portrait experience.

Part of the success of the process lies in how the photographer is perceived by the subject. Appropriate dress and actions set the parameters for success, whereas inappropriate dress and actions can distract from the portrait process.

## Comfort

Douglas Kirkland said, "Your job is to make people as comfortable and calm as possible." In the totality of the portrait-making process, the subject's comfort leads to a high level of confidence in the photographer. A major influence in the creation of comfort for the subject is calmness. The idea of being calm is not to show a lack of enthusiasm, but rather to ensure that your demeanor does not create an uncomfortable situation.

While we can easily see comfort as a product of the photographic location, temperature, light levels, posing equipment, etc., the most important factor is the rapport between the photographer and the subject. According to Tony Corbell, "You try to put them [the subjects] at ease. You can do an awful lot for yourself and for them by getting to know them before the shoot. Spend time talking to them before the shoot; do not just walk straight into the studio and start shooting."

In a recent lecture, photographer Joyce Tenneson spoke about her approach to putting the subject at ease. "Even if I am in a dumpsy place, I have one beautiful flower... something of beauty. Or a beautiful candle with a fragrance, or something that's welcoming to the person, with a glass of Pellegrino or a glass of wine. I greet my clients when they come in with something of beauty, and I am theirs, 100 percent. So I've done all the work before they come. The lights are set up, everything is tested, I have done some kind of a phone interview or research so I know what they're looking for. I've gotten it. If it is an author who is overweight and is really frightened of what he or she is going to look like in front of the camera, I know how am I going to put that person at ease."





© David Williams (Courtesy of the artist)



© Paul Tumasov (Courtesy of the artist)

This can be done even with celebrities who have little time scheduled for the portrait sitting. With the studio ready, time can be taken to relax, communicate, and build comfort. Many photographers build rapport with their subjects simply by taking the time to talk with themâ€”not about the portrait, but just relaxing conversation to build trust, create comfort, and develop a communicative link. Tenneson finds that researching the subject first, speaking about family issues, and opening herself up personally builds trust and comfort for the subject.

Part of developing rapport is sharing enthusiasm with the subject. When the photographer is enthusiastic about the portrait session, then the subject can relax about the process. Sharing enthusiasm and giving 100 percent attention builds the trust that is needed to direct the subject during the photographic session.

Analysis of the subject for facial lighting and posing choices is best done before the photographic session starts. When working with celebrities, the analysis can be based on previous images. With a â€œstranger,â€ the time for analysis may need to be at a meeting before the photographic session. The analysis needs to be done, but it should be subtle. The ability to work smoothly and effortlessly once the photographic session begins, without experimentation to solve lighting needs, establishes confidence.

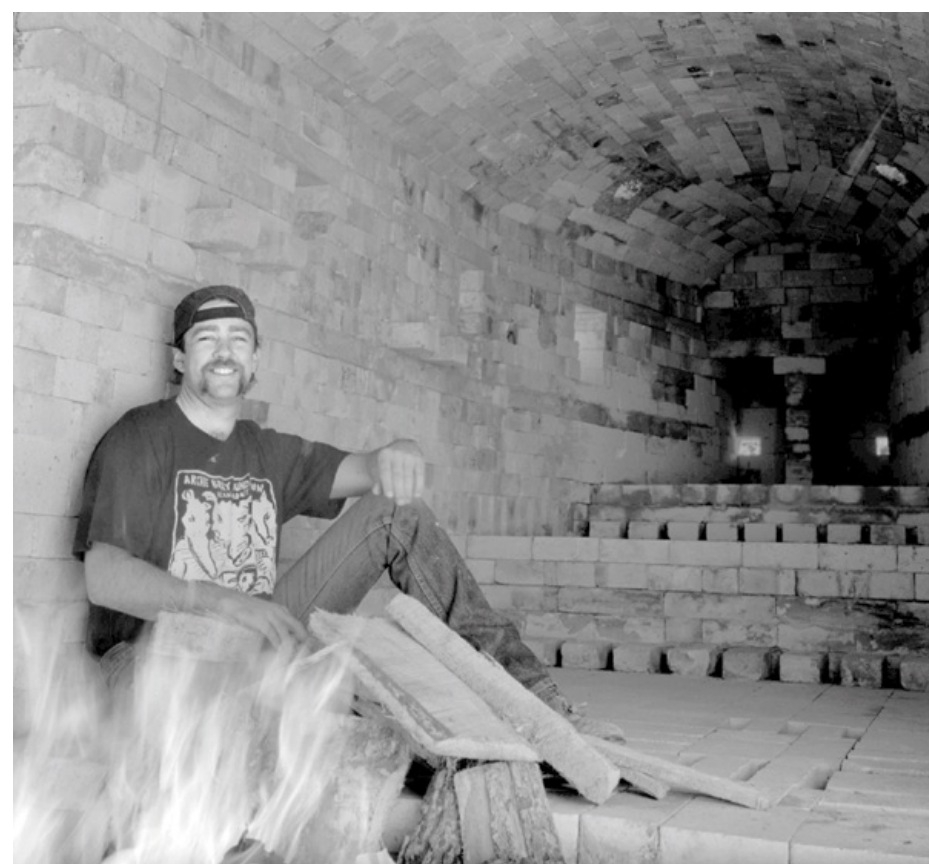
There may be times when stress or angst is desired as an emotion. The comfort level of the subject may allow an interaction that is needed to capture the desired portrait. Richard Avedon would escort the subject toward the studio and then stop and talk. He would sit in a comfortable chair while the subject would sit on a hard bench. While talking, Avedon would analyze the subjectâ€™s face until he recognized the person was at the level of comfort desired. He would then move the subject to the studio and start the photographic session.

As the portrait process moves to the photographic session, the subjectâ€™s comfort and confidence will build if the process is controlled. If an assistant is available, you can have a relaxing conversation with the subject while the assistant does a basic setup for the lighting and any backdrop or set arrangement. Ideally, the conversation should not be held in the photographic space. If you are working alone or unable to segregate the photographic space from the meeting space, preset the space as much as possible.

A particularly good time to build confidence and instill a sense of ease in the subject is when something goes wrong. Cameras jam, lights do not flash, props fallâ€”these things happen, and the calmness with which problems are handled adds to the comfort of the subject. The requirements include the ability to think on your feet and prepare for the unexpected. Stay calm and collected, regardless of what happens in the photographic session.

In addition to mechanical problems, other problems can undermine credibility. For example, while the photographer may do everything correctly, an assistantâ€™s inappropriate actions may have a detrimental effect on the photographic session. If an assistant is slovenly or inconsiderate, it can damage the confidence that was previously developed.

Whether analysis of the face is done at the meeting before the photographic session or through research, this information will allow you to set lighting and exposure as well as give direction to make a successful portrait.



Â© Glenn Rand

To take the best advantage of the lighting and setup, the photographer will need to give direction and set the pose for the subject. Usually this involves verbal direction for moving or placing the subjectâ€™s body or face in a particular orientation. There are times when touching is required, but posing the subject via physical contact is a separate issue. Some subjects and photographers are comfortable with touching for posing, and others are not. Beyond a calm, confident demeanor, there is a need to direct people without being offensive or insulting.

Regardless of the style of direction used, most portrait photographic sessions are fluid. Small movements give the opportunity to finely tune the base portrait. As these small changes happen, the calmness and confidence of the photographer and subject make the session move smoothly. While there may need to be firm direction, it must remain calm and not domineering.

During the photographic session, the attention of the subject may wane and adversely affect the outcome. There are clues to this situation. The subject's eyes provide good evidence of the engagement of the subject in the session. Lack of eye contact may indicate either shyness or disengagement; however, there is a point where the photographer may need to call on the rapport previously created with the subject to complete the session.

While not universally recommended, there are times when aggressive actions produce desired results. When Yousuf Karsh made his iconic 1941 portrait of Sir Winston Churchill, he set up his camera to photograph Churchill at his desk with his back to the camera. Just as Karsh was ready to make the image, he grabbed Churchill's cigar. As Churchill turned and glared at Karsh, he pressed the shutter release and captured the image of a resolute Churchill. A similar technique has been used in recent times by Jill Greenburg to capture pictures of children crying. However, she took their candy rather than a cigar.

Author and photographer Bill Hurter suggests that the inability to hold a pose can be a dead giveaway that the subject is disinterested or distracted. Both the subject and the photographer need to remain focused during the portrait session to make the portrait a success.

In some situations, mostly in high-end or celebrity portraiture, a stylist is responsible for the makeup and attire. However, it ordinarily falls to the subject to prepare for the portrait session. Ensuring that the subject is ready to change their look, if necessary, also adds to the comfort of the photographic session.

## **Fulfillment**

When the portrait is complete, the relationship with the subject needs to continue—even if there is nothing more to do than deliver the finished prints. It is vital to understand the long-term implications of the effort put into the relationship. For a portrait studio, it may be future print sales; for an editorial portraitist, it may be future assignments; and for the fine artist, it may be future projects. Experience shows that a successful portrait session leads to continuation portraits. Therefore, an experience with a subject that is successfully fulfilled may lead to revisiting the relationship through further portraits.

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