

# The Language of Photography

(Chapter 1 – Light)

by  
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# Chapter One: Light

## The lens records light; it does not record reality

Two-hundred-and-fifty years ago, the English philosopher John Locke asked the question, How do we know anything about the world? He concluded that we do not know the world directly. Rather, we have in our minds ideas about the nature of things, and that these ideas are built out of the information provided to us by our five senses: sight, hearing, taste, touch and smell. The problem, he concluded, was how do we determine whether the ideas we have of the world accurately reflect the true nature of things. The input from our senses could be wrong, or incomplete, or misleading, or manipulated, or without any correspondence whatsoever to the real nature of things, and the ideas about the world we subsequently construct out of them could give us an inaccurate view of reality.

Photographers find themselves asking a related question. If you want to communicate an idea or feeling about some experience or object in the world, we generally describe these things to others using references to our five senses. If we want to describe an apple to someone with no first-hand experience of the fruit, we would say that the apple is sweet, crispy, juicy, fragrant, red, etc. If a photographer wanted to communicate these same qualities through a photographic image, they would not be able to record them directly. The only “sense” that travels through the lens and is preserved on the film is sight. And even this version of sight is severely constrained. The image the camera records is flat, often only black and white, and static. Of all the qualities apples possess, the only one that the camera communicates is the light that is reflected off of its surface. The skill of the photographer is to be able to create an image using just light to communicate, suggest or evoke the other four sensory elements that creates a complete and emotionally compelling experience on the part of the viewer, in this case, the feeling that apples possess qualities of sweetness, aroma, taste, color, crispness, etc.

When we talk, we use words to communicate. We agree that certain sounds and symbols will refer to some characteristic of the myriad aspect of things. And so we have learned to use these words to speak and write in a way that others can understand. We use these skills to communicate to others about experiences

that were not directly shared. For example, we will use words to describe a place we have visited, or a person we have met, or an experience we have had. If we can't do this in person, we write down the words as symbols on paper, and the paper carries those ideas to someone else far away in time, or space, or both.

Photographers, too, have an agreed set of symbols that we have learned to read and understand—a visual vocabulary unique to photography. This vocabulary is part of the overall visual language of photography and starts with the patterns of light and shadow created by the lens, preserved on film and transmitted to others on photographic paper, the printed page, theater screens, electronically over the Internet, or by video transmission. For these images to communicate their information and/or creator's concerns effectively, the photographer first must understand how light creates an image, and the underlying principles and assumptions we make when we look at and interpret those images.

### **The lens creates patterns of light**

When we look at an object with our eyes we see it in color, in three dimensions and in a continuous state of transition. Black and white film, however, records only the presence or absence of light, and this on a flat, two-dimensional surface; the image is static and unchanging. When we print this image, light is represented as patterns of black white and grey. These patterns, created by the lens and preserved on film, are consistent with other images created by other lenses. That is, every time you take a picture the camera makes patterns in the same way and we have learned to recognize the characteristic patterns familiar objects make.

Because of the way the visual centers of the brain have been programmed by experience, one of the most basic and fundamental assumption that we bring to viewing these patterns is that the light that created them almost invariably comes from above. This means that objects that are round will be light on the top and dark on the bottom. Things that are hollow will be dark on the top and light on the bottom.



*The lens creates patterns of light and shadow that have become so much a part of our visual experience that we can create the illusion of 3-dimensions simply by generating these patterns on paper by non-photographic means. The “buttons” above, were created without a camera, have no actual depth, but we perceive them as “innies” and “outies” based on what we have learned is the effect of light on a three-dimensional surface: the creation of highlights and shadows signify depth and dimension. This programming of our brain is so much a part of our visual thinking that it is almost impossible to perceive these shapes for what they really are: flat patterns of black, white and grey.*

The brain learns basic assumptions about the world, and then factors them in automatically. It doesn't reevaluate those assumptions easily. So, for example, the image the lens in our eye creates on the back wall or retina of the eyeball is upside down. Our brains learned long ago that the world is not upside down, and so when it interprets visual input, it automatically flips the image around and presents it to our conscious mind as being right-side up. Were one to put on glasses that flipped the image on its head so that things were projected on the back of the eye correctly, our brain would still flip them around. Since the “program” to invert them is already in place, the world would appear upside down. It would take about 24 hours for the brain to relearn the “new way of seeing” and would, after this period, reprogram itself and, once again, see the world correctly. Remove those lenses and again the world would appear upside down and the brain would have to reprogram itself once again.

Similarly, the brain has learned that light comes, almost without exception, from above the horizon line. As a consequence, it has learned to interpret the patterns of light and shadow that we see as indicating the height and depth of an object. The lens, like the eye, creates those patterns, in this case on film. When we look at

a black and white photograph those familiar patterns are presented to our minds and the brain makes its assumption about their height or depth. If the shadow is at the bottom and light is on the top, the object must be round, like a ball. If the patterns are opposite, our minds will be sent the message that the image is of a depression or hollow, and we perceive it as such.

If you were to turn Figure A upside down so the patterns are spatially reversed,



Figure A



Figure B

*We have learned to expect light to come from above. The brain makes this assumption automatically when processing visual input. Our rational mind cannot override this simply by knowing intellectually that it's not true. Therefore, when an image is turned upside down, and the patterns are reversed, the image appears "inside out" because the brain rejects the interpretation that light unexpectedly comes from below. Note that although Figure B is only Figure A rotated 180° and the light should logically appear to come from the lower left-hand corner, the light appears to come from the upper-right-hand corner in both images. As hard as we try, we cannot force the eye to see Figure B correctly, unless, of course, we turn the entire page upside down..*

and in the absence of any other visual clues the mind can process, it will interpret the new view in the way it has always done, assuming that light comes from above the horizon. In that case, what appeared to be a bump when viewed right side up will now appear to be a hollow, even if we understand intellectually that the image has only been turned on its head. Our conscious mind cannot override this automatic process of the brain.

The lens records the patterns of black white and grey created by light, and the mind interprets them according to a pre-established plan. If the patterns are not correct, or they are distorted, or misleading, or non-existent the information that the photographer wants to communicate will not be. It's as simple as that. Being a photographer means recognizing or creating patterns of light and shadow that will communicate the qualities of the experience that they wish to share, and understanding that these patterns are all that photographer has to work with to communicate their ideas.

Consider the photograph, *White Dunes*, by Edward Weston. When we look at actual sand dunes we experience them with all our senses. We feel the wind, we



*Edward Weston, White Dunes, 1936*



see the color of the sand, we see the depth and distance in three dimensions, we watch the sand shift and blow as we stand before it. But the camera does not record all these experiences. The camera lens responds only to light. The image that it creates consists only of patterns of light and dark. What makes an image identifiable as “sand dunes” is that we recognize the particular patterns as those characteristic to sand dunes. Ice cream makes another kind of pattern. So does snow, or water, or salt.



*Timothy O'Sullivan, Sand Dunes Near Sand Springs, Nevada, 1867*

In O'Sullivan's photograph, the fact that the horse and wagon are standing amidst sand dunes is not so obvious, although that, in fact, was the case. In both instances the photographer's experience of the sand dunes before them was complex, involving all of their senses, however, only in Weston's does the resulting image communicate the “sand-ness” of the scene. This readability is a function of presence of clearly identifiable patterns of light and dark and these, in turn, entirely dependent on the character of the light. A photographer may encounter a scene that has qualities that he wishes to communicate, but may be forced to abandon the shot and return when the light is just right. Although the objects are essentially identical in both photographs — piles of wind-blown sand — the

resulting images read very differently.

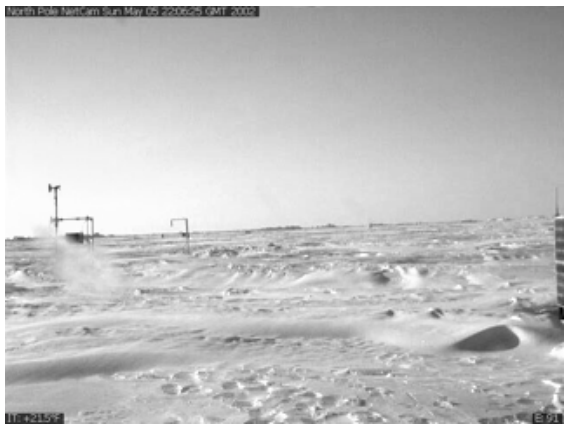
A little detective work will explain the reason. If you look at O'Sullivan's landscape closely you will note that there are shadows under the wagon and horses. The location of the shadows means that the only time of day that this photograph could have been taken was high noon, when the sun was in the sky directly overhead. In Weston's image, the shadows are longer and extend away from the ridges of sand. This photograph would have had to have been made either in the afternoon, say 3 or 4 o'clock, or in the morning, between 9 or 10. At this time the angle of the sun creates shadows, and these shadows are recorded by the lens and film and captured as patterns that we have come to associate with sand dunes. It is these patterns that we recognize. In O'Sullivan's, the sun washed out any shadows, and so no familiar patterns were created.

### **You can't always make the image you want when you want it.**

Two photographers standing in front of these dunes at different times of day would both have experiences of the dunes that would be compelling and complete: the heat of the sun, the feel wind, the color of the sand, the sense of walking on shifting dunes, etc. But the camera records none of these experiences. It only sees light. From a practical point of view, this means that not all photographs can be made at the time the photographer has their original experience. A photographer standing in front of the dunes at noon would say to himself or herself, "This is a magnificent view that I am beholding, but if I want to make an image that captures some sense of this beauty, I must wait and come back in the afternoon when the light is right." They might return at 4 o'clock only to find clouds covering the sun. This would also result in a shadowless scene. The photographer would then say to himself, "This is a scene beautiful to behold, but if I want to make an image that captures some sense of the beauty I experience, I must find a place to spend the night and come back the next morning and see if the light is better."

The need to consider the fact that light creates different patterns depending on the angle and nature of its source is true for every photograph whether the photographer is making a landscape, or portrait, or photojournalistic street photograph.





Six photographs taken by an automated camera set up at the North Pole by the National Oceanographic and Atmospheric Administration. The landscape in each photograph is identical. The differences we observe are created solely by changes in lighting conditions. As the light changes, the resulting images communicate a very different sense of place and space. What does the North Pole really look like? Which photograph conveys a true depiction of what a person would have experienced? Can a photographer even ask such a question?



*Frederick Evans, The Sea of Steps –  
Wells Cathedral, England, 1903*

*Although the cathedral steps have been unchanged for hundreds of years, the lighting conditions that made this image were present for only an extremely limited period. This photograph was made at a time of day when the light was coming in through the archways and just brushing across the tops of the steps. The moment when the sun was at the right angle may only have lasted for a few moments in the day, and considering the shifting angle of the sun through the passing seasons, may have appeared but for a few weeks out of the year. Even then, changing weather conditions could have limited the opportunities for this exact image even further. Finding the right light is a matter of patience or luck or both. Sometimes the photographer has to walk away from an experience to return at a time when the light better.*



*Bob Rogers, Casting Shadows, 2012*

*Until Hurricane Sandy knocked out the electrical power, this bronze casting was, for decades, lit by uniformly flat and harsh industrial lighting. Although, by its very nature, the pouring was always dramatic, only when the electricity failed and it had to be illuminated solely by daylight through barn doors, could an equally dramatic image be made.*



*Richard Avedon, Brigitte Bardot, 1959*



*Julia Margaret Cameron, Mrs. Herbert Duckworth Jackson, 1867*



*Eugene Robert Richee, Louise Brooks, 1928*



*Julia Margaret Cameron, Julia Prinsep Duckworth, 1867*

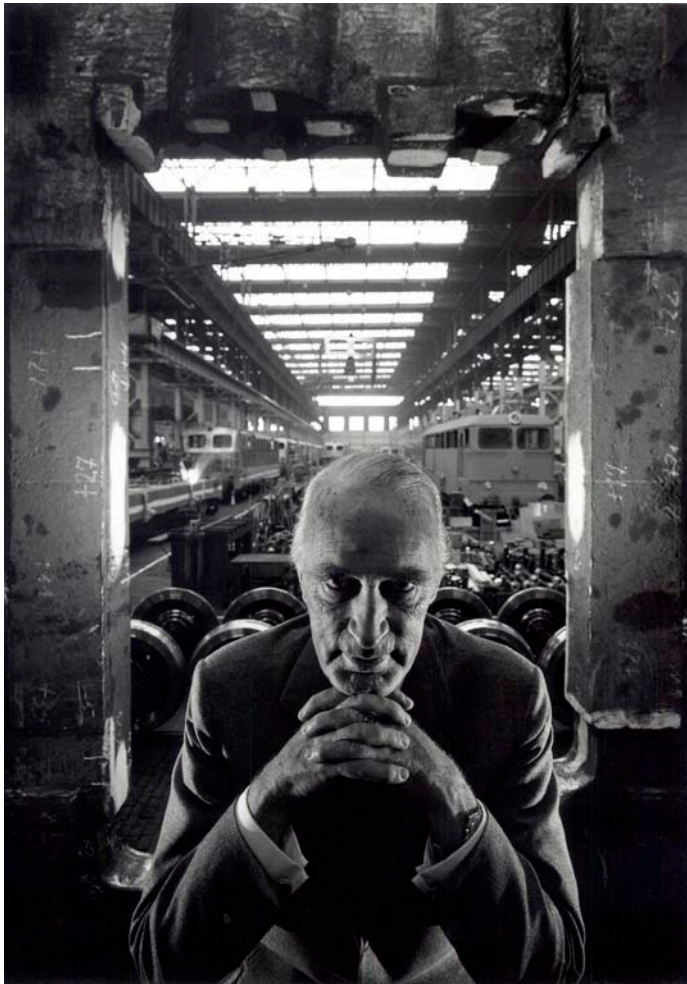
*The photographs on the left were taken using light that was at "high noon" to the face — coming directly from behind the camera. As with O'Sullivan's sand dunes, this washes out many features, although here it is used to creative effect. In the photographs on the right, raking light came from the side and was used to create dramatic highlights and shadows, equivalent to photographing the dunes in the late afternoon. In the nineteenth century, a portrait was seen to reveal something of the soul of the sitter. Photographers used light to evoke a sense of the inner character of the subject. In the twentieth century we are more concerned with surface beauty. To this end tools such as the "soft box" and filtered electronic flash are used by commercial photographers to celebrate the illusion of surface perfection.*



## The lens' patterns of light and shadow define all form.

The human face has its own “landscape” of eyes, nose, mouth, chin, etc. Light falling on a face creates patterns, too. How to use or create patterns that communicate some understanding of the person being photographed is the essence of portrait photography. In the four photographs on the previous page, light comes from either of two directions with regard to the “landscape” of the face. Note that this alone is enough to transform the face and create a completely different mood or effect. We do not know the real nature of the people in these images. We only know what the photographer has chosen to reveal to us through lighting.

Here too, the photographer has to start with the question, “What is it about this person, what qualities do they possess, that I would like to communicate to another



*Arnold Newman, Alfred Krupp, 1963*

person through the image?” In life, we experience the subject of a portrait with a full range of our senses: watching their expressions as they change, listening to the timbre and nuance of their voices; we touch their skin, even a simple handshake communicates volumes about a person we encounter. But in portraiture, as in landscape photography, the only thing the camera records is a moment of light and the patterns that that light creates on film.

Even the idea of utilizing light that comes from beneath the horizon line can be used to great effect if you wish the image to communicate or evoke an unnatural or surreal association. This is not unlike the age-old prank of sticking a flashlight under your chin

on Halloween and sneaking up behind someone. In 1963, Arnold Newman was assigned to do a photo for LIFE Magazine of Alfred Krupp the German industrialist. "I deliberately put a knife in Krupp's back, visually," Newman stated. "He was a friend of Hitler's and Hitler let him use prisoners as slave labor. If the prisoners fell, he just unchained them and they went directly into the crematoriums in Auschwitz. Krupp's people realized I was Jewish, and they were worried that I might not be kind to him. I was trying to figure a way to show who he really was without being obvious. I lit him from both sides and I said, 'Would you lean forward.' And my hair stood up on end. The light from the sides made him look like the devil. It's an unretouched photograph. He actually was a handsome man." By lighting Krupp equally from both sides and from below, Newman created patterns of light that reversed the usual expectations and creating the demonic effect.

Sometimes the photographer is in a position to control the lighting, as in a studio situation. The use of artificial light sources began almost as soon as photography was invented. Powdered magnesium set off in a frying pan was used by Jacob Riis to photograph the interiors of tenements and flop house at the end of the



*George Hurrell, Charles Boyer, 1938*

nineteenth century. Today lighting equipment is far more sophisticated, and extraordinary effects can be created using artificial lighting. The Hollywood glamour photographers of the 1930's and 1940's were masters of manipulating light, and would sometimes take hours to set up their shots.

Three-quarters lighting, so called because the light comes at an angle across the face, was referred to as "star lighting", and only the biggest names in Hollywood could command it. On screen it creates a dramatic, three-dimensional effect, which

is distinct from the flatter more anonymous lighting the lesser members of the cast were given. Hollywood photographers and directors understood clearly the power of light to create a public image and “star lighting” was a coveted marker of Hollywood status. This concern with lighting has diminished with the advent of color photography that does not rely so heavily on the drama of light and shadow for effect, but rather contrasting colors.

### **Light doesn't always have to be beautiful**

Lighting needs to be consistent with the mood or effect one is trying to create. Most of the time the harsh light of unfiltered flash photography does not produce a beautiful



*Helmut Newton, Sophia Loren, Paris, 1977*



*Weegee, Tenement fire, Harlem, 1942*  
*Mother and daughter looking up at the top floor, where another daughter and her baby are trapped.*

image. Yet there are times when this kind of brutal illumination works perfectly, as in Weegee's photograph of the victims of a Harlem tenement fire in which the harshness of the light mirrors the harshness of the scene. Although the gesture and tonal range in Helmut Newton's portrait of Sophia Loren is similar, the concerns of the two photographers are light years apart. If you recall the question at the beginning of the chapter,



*A shift in the angle of light changes more than the patterns of black and white, it can change the whole feel of an image. In W H Jackson photograph of Old Faithful, the light comes from behind the photographer, illuminating the subject clearly. The purpose of Jackson's image was to create a document that testified to the existence of natural phenomena that had heretofore been written off as "tall tales". His dramatic photographs resulted in the designation of Yellowstone as the first National Park. Jackson's use of light was designed to be straightforward, to clearly illuminate the subject. In order to give the viewer a sense of scale, Jackson has included a person in his image.*



*William Henry Jackson, Old Faithful, 1872*

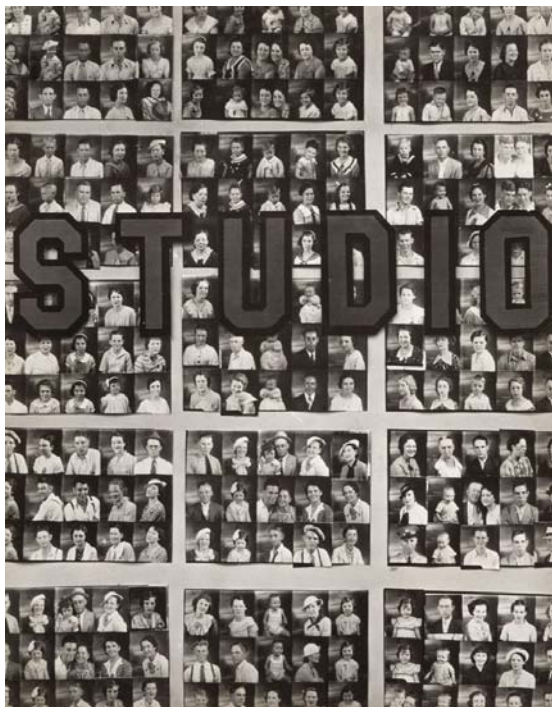


*Ansel Adams, Old Faithful, 1942*

*Ansel Adams's image is of the exact same "object" as Jackson's, the erupting geyser known as "Old Faithful" and was taken at effectively the same moment, but it is experienced completely differently from Jackson's. Adams was a Romantic whose images celebrate the forces of nature not as scientific phenomena, but as symbolic expressions of mysterious and transcendent natural powers. His image is identical to Jackson's in most every way except for the lighting. To create the feeling of brooding power and mystery Adams located his camera 180 degrees from where Jackson placed his. In Adam's image, the light comes from behind the water plume creating a dark cloud of steam more reminiscent of an explosion than of water vapor. Note that as a result in the change of position the tonal scales in the images are reversed. Adam's appears to be almost a "negative" of Jackson's.*

How do you represent a complex experience with just light? Using a harsh light from a naked flash bulb to communicate the shrill reality of human tragedy is one example.

It is important to remember when using light in this way that the tonality of the surface on which the light is falling is generally uniform. The actual color of sand, for example, is the same throughout the scene. The flesh tones of a face are the same on the side that is brightly lit and the side in shadow. The fact that the camera records one side as dark grey or even black and the other as light grey or white is a function of variations in the intensity of light. In a portrait of a dark-skinned person, light can be used to create the same range of tones as a lighter-skinned person in the final print, but the shift of scale doesn't change our perception of the subject's physical reality, only the mood of the portrait. Depending on the exposure, the sand dunes can be represented as a light value or a dark value, regardless of the tonality of the original material. The design and structure of the image is created by the varied intensity of the light and that is more important than the actual, underlying tonal values of the subject.



*Walker Evans Studio Portraits-  
Birmingham Alabama, 1936*

**The role of light is not always to create dramatic patterns.**

In another approach to lighting, light serves to illuminate the objects in a totally even fashion. This allows the variations in tonality of the subject to construct the image. In such a situation light is used to illuminate, not to express.

In Walker Evan's photograph of the window of a photographer's studio, light plays no particular expressive role. No dramatic shadows are created. The role of light is essentially passive. Its job is to evenly illuminate the subject so that the underlying elements of the object, in this case a field of small photographs and letters painted



*Man Ray, Return to Reason, 1923*

on glass can be seen clearly. The structure of the photograph is created by the variations in tones and shading of the elements of the objects in the image. In photographs such as these the lighting is completely even and adds no particular creative or expressive elements to the structure or design of the image.

At the other extreme, in photographs such as Man Ray's *Return to Reason*, light is used to create a strong visual design that is totally unrelated to the underlying physical structure of the subject. Light and shadow are not used to create patterns that reveal some physical characteristic of the object,

but are used to impose an arbitrary graphic design, turning the photograph into an abstraction of shape and form. The irony of the image lies in the fact that enough of the underlying reality is communicated to make us aware of this process.

### **Learn to see light.**

Obviously there is a great deal more that can be said about light and lighting techniques. The purpose of this discussion is not to detail all the possible ways in which light can be used, but to make you aware that light is the fundamental tool of photography. Learn to look at light and recognize what it does to the things it falls on. Become sensitive to the patterns that it creates and develop an understanding of how these patterns are interpreted by a person who sees a photograph of them. There is no correct formula for this, only an infinity of possibilities. The answer is not in books of lighting techniques or catalogs of equipment, but in light itself. Become a student of light. Learn to look at light and the images that result from it.



*Bill Brandt, Nude, London, 1954*



*Moholy-Nagy, Head, c.1926*

### ***The Uses of Light***

*Light can be used to illuminate objects, but at the same time create little or no shadows, so that the tonal values intrinsic to the object define the visual structure of the image.*

*On the other hand, light can also be used to completely overpower or even obliterate the underlying object with a dramatic visual design that can overwhelm the understanding of the inherent structure of the underlying forms.*

*Most usually, however, the use of light in a photograph will create recognizable patterns that are read as volume, and dimensional mass.*



*Bob Rogers, Blue Rosie, 1985*