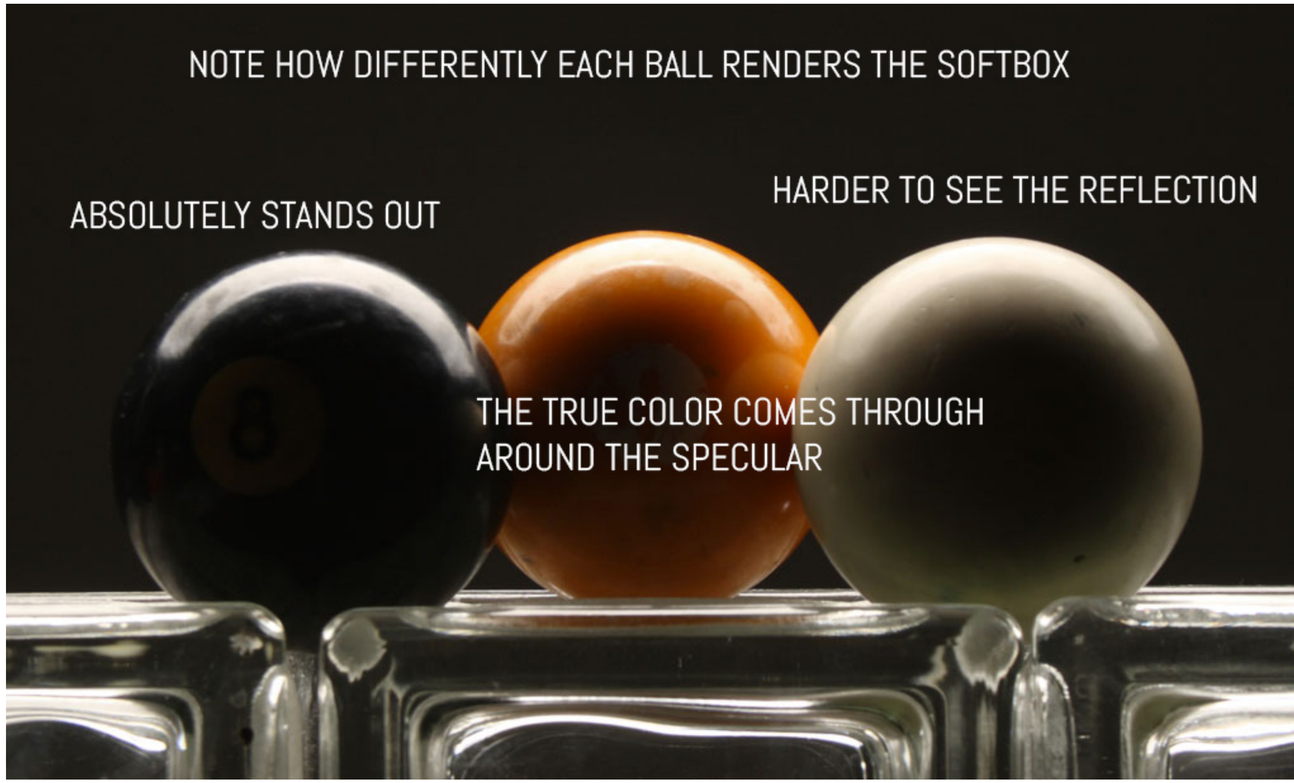
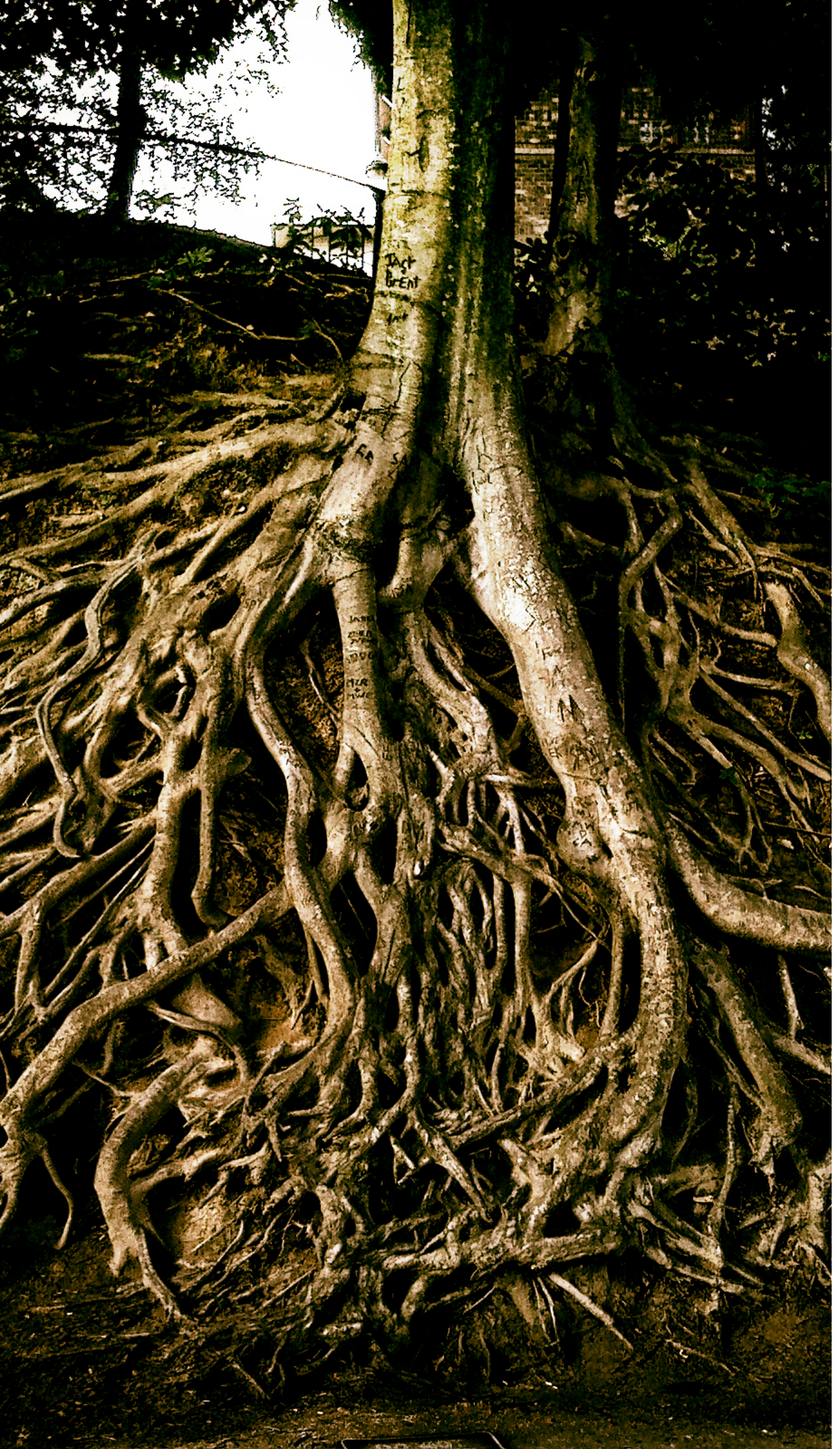
Subject Centric Lighting



Subject Centric Lighting

Subjects are dimensional, with textures and surfaces, and shadows and speculars and more. A shiny subject renders the light back to the camera differently than a diffuse subject does. A dark subject renders the perceptible highlights differently than a light subject. Subject change, but the physics of light do not.



Light…

It is a substance that we cannot smell, touch or hear.

Can we see light? No… we can only see what it reflects from. The subject.

I will refer to that as the "presentation of the light" in this workshop. That refers to the way the subject is taking the light onto its surface, then reflecting it back to the camera lens.

No… we can only see what it reflects from. The subject defines the light… we cannot see the light in transit from source to subject, only what the subject reveals after the light has come into contact with it.

To me, that is one of the magical qualities of light, almost mysterious and yet compliant with our wishes. I think of light as a liquid when planning my lighting… it helps.

I think of light as a liquid when planning my lighting… it helps me 'see' something that isn't there but yet has similar properties. Direct light is like water from a hose, while diffused light is mist. Ambient is similar to fog in my mind, while umbrellas are more like garden sprinklers.

You can think of light in many different ways to help you plan your shots, but whatever you do to help, keep in mind that light does the same thing every time.

Every time.

EVERYTHING REFLECTS

Dark, rough fabric does not reflect as much as a shiny, painted surface.
But it does indeed reflect.

It is important to know that as we begin.

LIGHT DOES THE SAME THING EVERYTIME

And we can control that light by the way we understand the principles of light, and understand how those principles affect a given subject depending on their properties.

FOUR PRINCIPLES OF LIGHTING

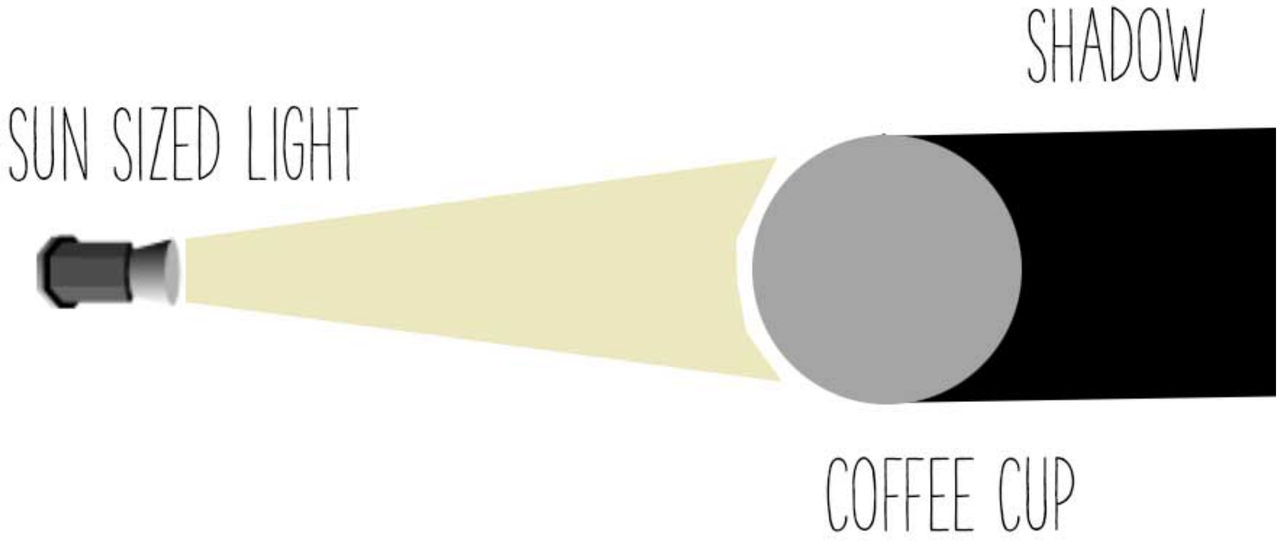
While I am not a fan of rules, I will say that understanding these four principles will definitely enhance your ability to handle any lighting situation you may have.

SIZE OF THE LIGHTSOURCE RELATIVE TO THE SUBJECT
DISTANCE OF THE LIGHTSOURCE
COLOR OF THE LIGHTSOURCE
ANGLE OF THE LIGHTSOURCE

Now here is the hard part: there is no hierarchy to these principles. What that means is there is no ‘first, second’, etc. Each one of these four principles are as important as the others. We do not approach it from size first, then color – or any of that. All of it is very important and all are important at the same time.

This single idea – that all four of these principles are equal in importance is perhaps the hardest one to think about – but it starts to flow when you get it down. You can do this.

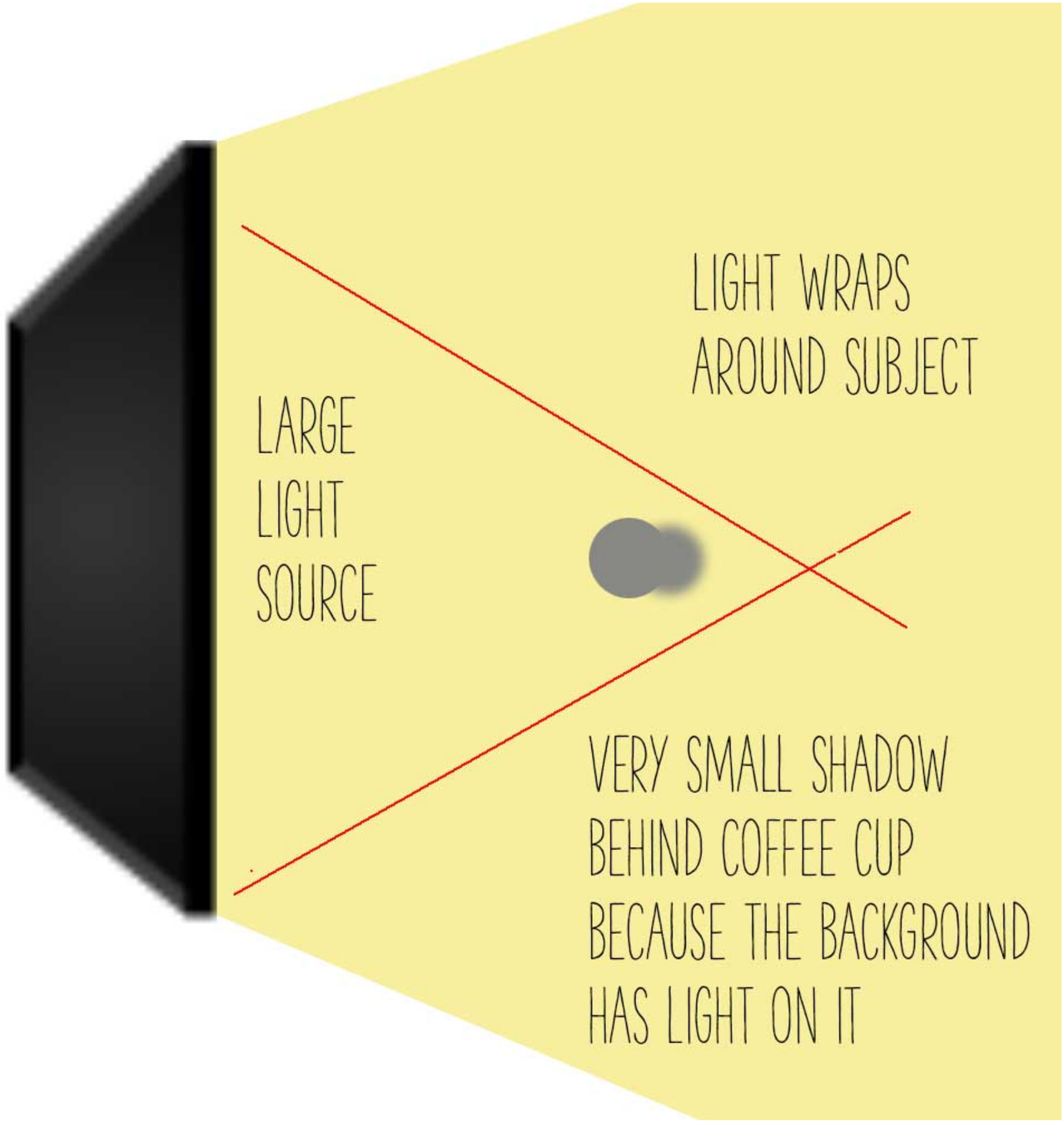
A SMALL LIGHT SOURCE
IN RELATION TO THE SIZE
OF THE SUBJECT



CREATES A HARD SHADOW
BECAUSE THE LIGHT CAN NOT
BE SEEN BEHIND THE SUBJECT

THE SIZE OF THE LIGHT SOURCE IN RELATIONSHIP TO THE SUBJECT

A small light source in relationship to the subject becomes what we call a hard light source. It is physically impossible for the light to wrap behind the subject so anything standing in this light will be contrasty, with a bright highlight and very dark shadow.



THE SIZE OF THE LIGHT IN RELATIONSHIP TO THE SIZE OF THE SUBJECT

A large light source can wrap around the subject and create a much smaller shadow, or in some cases no shadow at all.

NOTE that the size of the light source is not an indication of the power of the light source. Power is independent from the size of the source.

Small Light

The sun was the source. You can see where the window casings throw hard, distinct shadows on the background. Notice the subject does the same thing. That is because the light source is about the size of a quarter.

Large Light

In this portrait the light source was very large, and very close although not very powerful. The large light source was able to surround (or wrap) the face for a very smooth, soft light.

THE DISTANCE OF THE LIGHT SOURCE

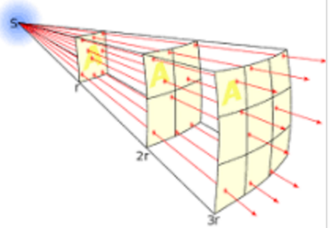
The second principle of light is the distance of the light source from the subject. One thing for sure, if it is artificial light, the distance of the light source from the subject can change the size relationship, but there are other things that happen as well.

With artificial lights, one of the most important rules is The Inverse Square Law. And it can be kinda scary that one. First, it's a law. That seems pretty definite. And of course it has something to do with math – 'squared[. But the word INVERSE? What the heck is that?

Let's not sweat that right at the moment.

Let's just acknowledge it for what it means to us.

In physics, an **inverse-square law** is any physical **law** stating that a specified physical quantity or intensity is inversely proportional to the **square** of the distance from the source of that physical quantity.



Inverse-square law - Wikipedia
https://en.wikipedia.org/wiki/**Inverse-square_law**

DISTANCE OF LIGHT SOURCE

Simply knowing the basics of one set will make it easy for you to re-configure for a new set.

I use ISO as my constant. In this case, I will use the settings of Sunny 16 (f-16 at 1/ISO).

ISO is 100 for these reciprocals.

f-16 @ 1/100
f-11 @ 1/200
f-8 @ 1/400
f-5.6 @ 1/800
f-4 @ 1/1600
f-2.8 @ 1/3200

These are committed to rote memory.

THE COLOR OF THE LIGHT SOURCE

We see light usually as a white source, or at least a neutral source.

It isn't. neutral, it has a color to it and that color can influence all the parts of your image, from shadows to highlights. We don't see the color of light because our brain changes it to a neutral "white" color as we see it.

When we look at the color of the scene in front of us we can change it globally by changing our color balance in the camera, or using a filter. What "globally' means is that everything in the photo is changed to the same setting. All the colors are altered by this global change to the color of the light.

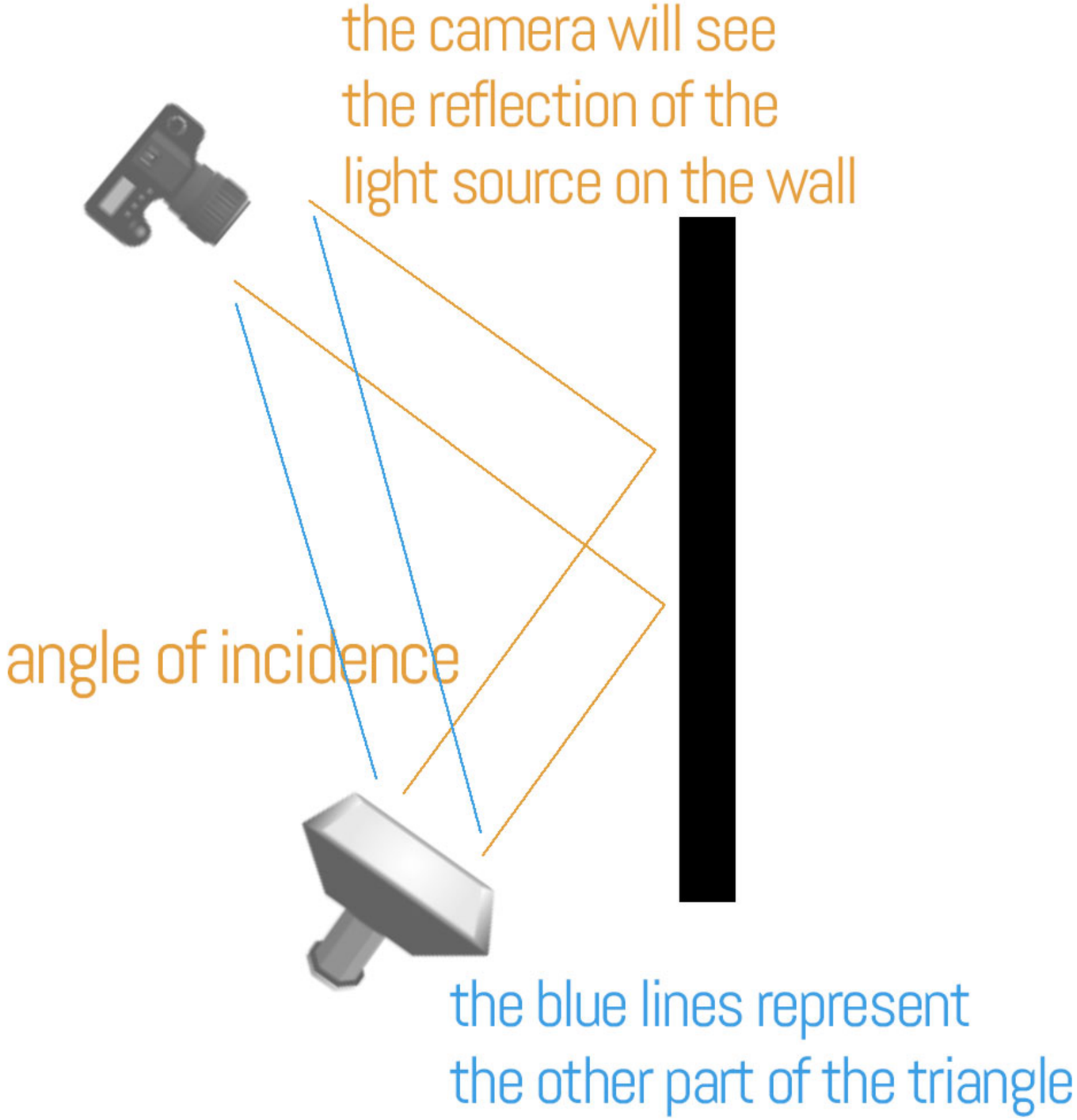
LOCAL LIGHT SOURCE MATCHED TO AMBIENT (GLOBAL)

Working with a secondary light source that may be a different color presents us with a challenge. We cannot change the image globally because adding a correction to the image to correct for the different light source will affect the entire image.

We must then change the different light source to the ambient (or overwhelming light) in order to 'balance' the subject in the ambient setting.

LOCAL, GLOBAL COLOR

Finding the right blend of ambient and local color is a subjective decision that you will have to make. If you want what is known as “perfect color balance”, then you will expend a lot of energy to achieve it. If you are more perceptual in how you blend the colors, then that is the way you will work. Know that there is no right way or wrong way - there is simply your way.



THE ANGLE OF THE LIGHT SOURCE TO THE SUBJECT AND THE ANGLE OF THE SUBJECT TO THE CAMERA

Law of Physics: Angle of Incidence equals the Angle of Reflection.

This is an axiom that a lot of people hear and repeat without taking careful note of what it means to their photography.

And yet it is one of the most basic and important physical rules of subject centric lighting.

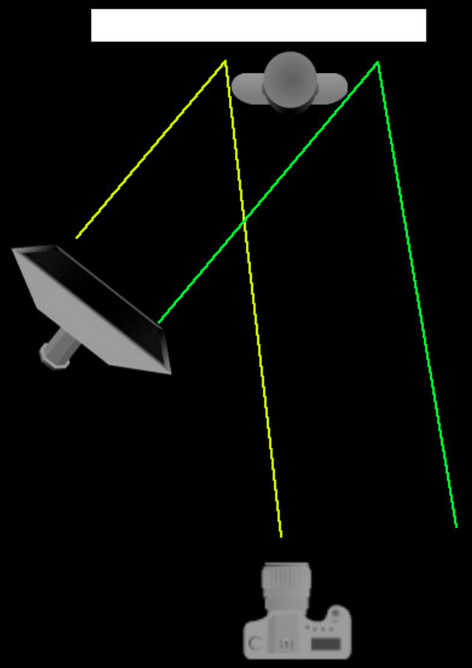
What does it mean and how can we use this to our advantage?

It means that if the light is angled toward a subject, the reflection of that light will be presented back to the camera at the same angle.

Think of the game of billiards or pool. If you hit a ball into the wall at a 30% angle, the ball will come off that wall at a 30% angle. And that completes a triangle. Understanding that triangle is key to making quicker, smarter lighting decisions.

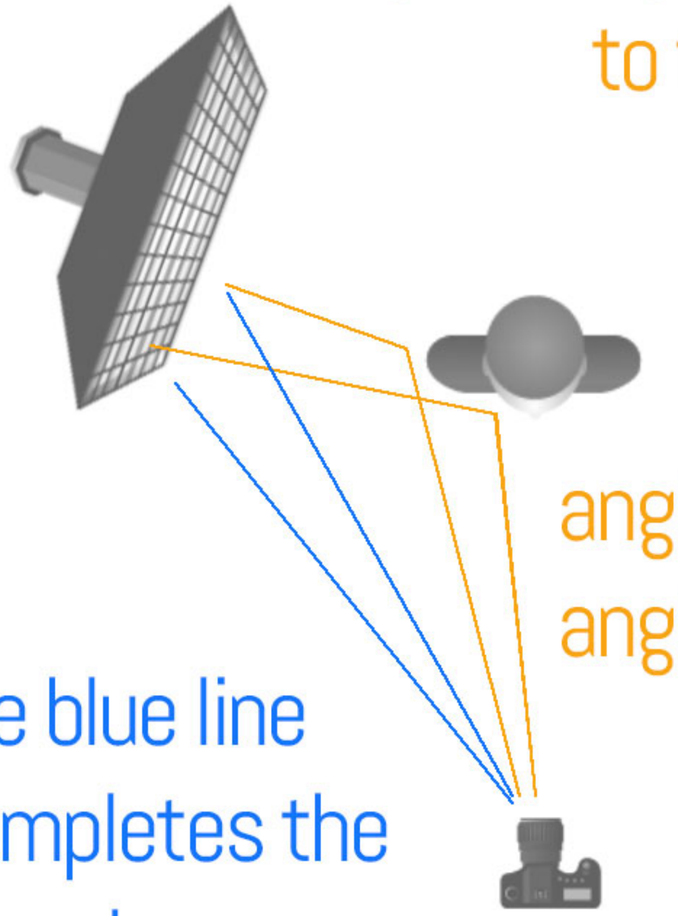
USING THE ANGLE OF REFLECTION RULE

You can see the reflection (specular) of the softbox on camera left. However, to camera right the angle doesn't provide the same presentation.



USING THE ANGLE OF REFLECTION RULE

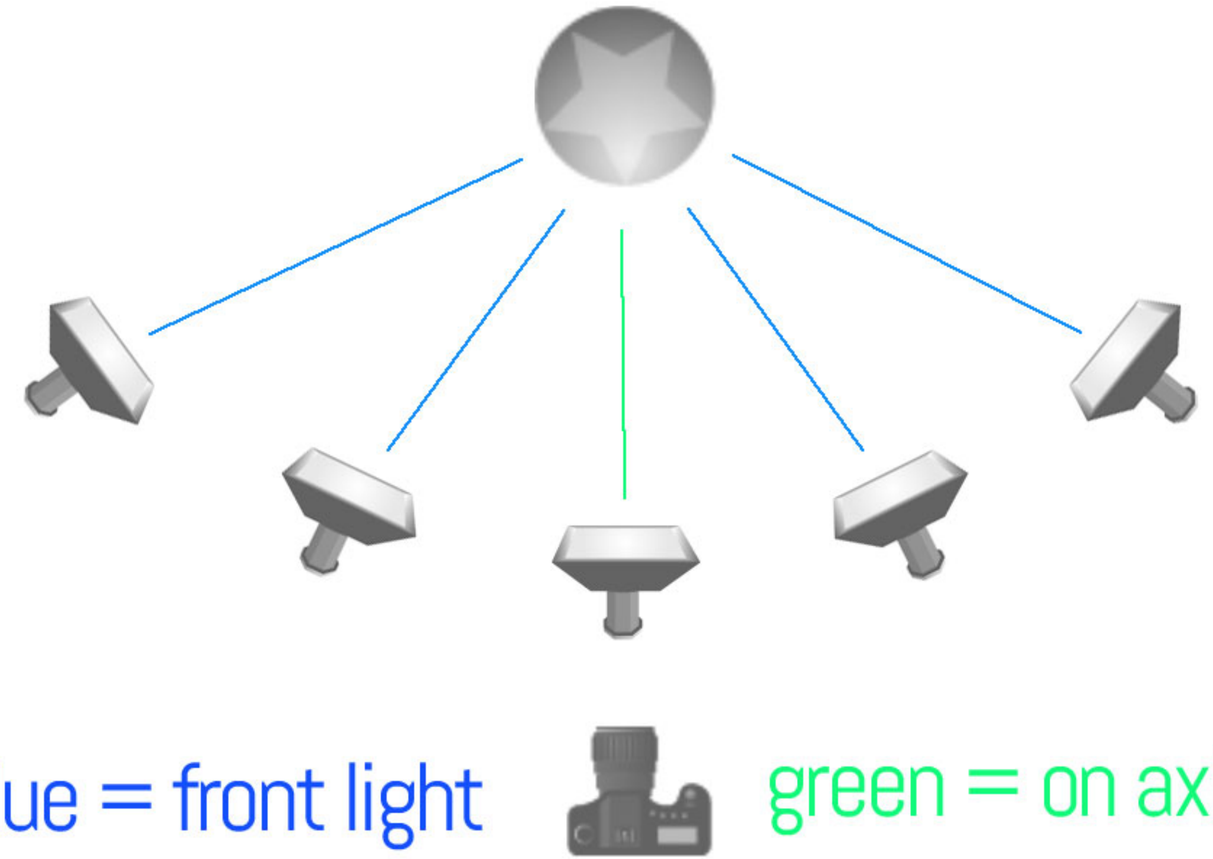
angle of light to the subject doesn't mean much without knowing the angle of the camera to the subject, and the light source



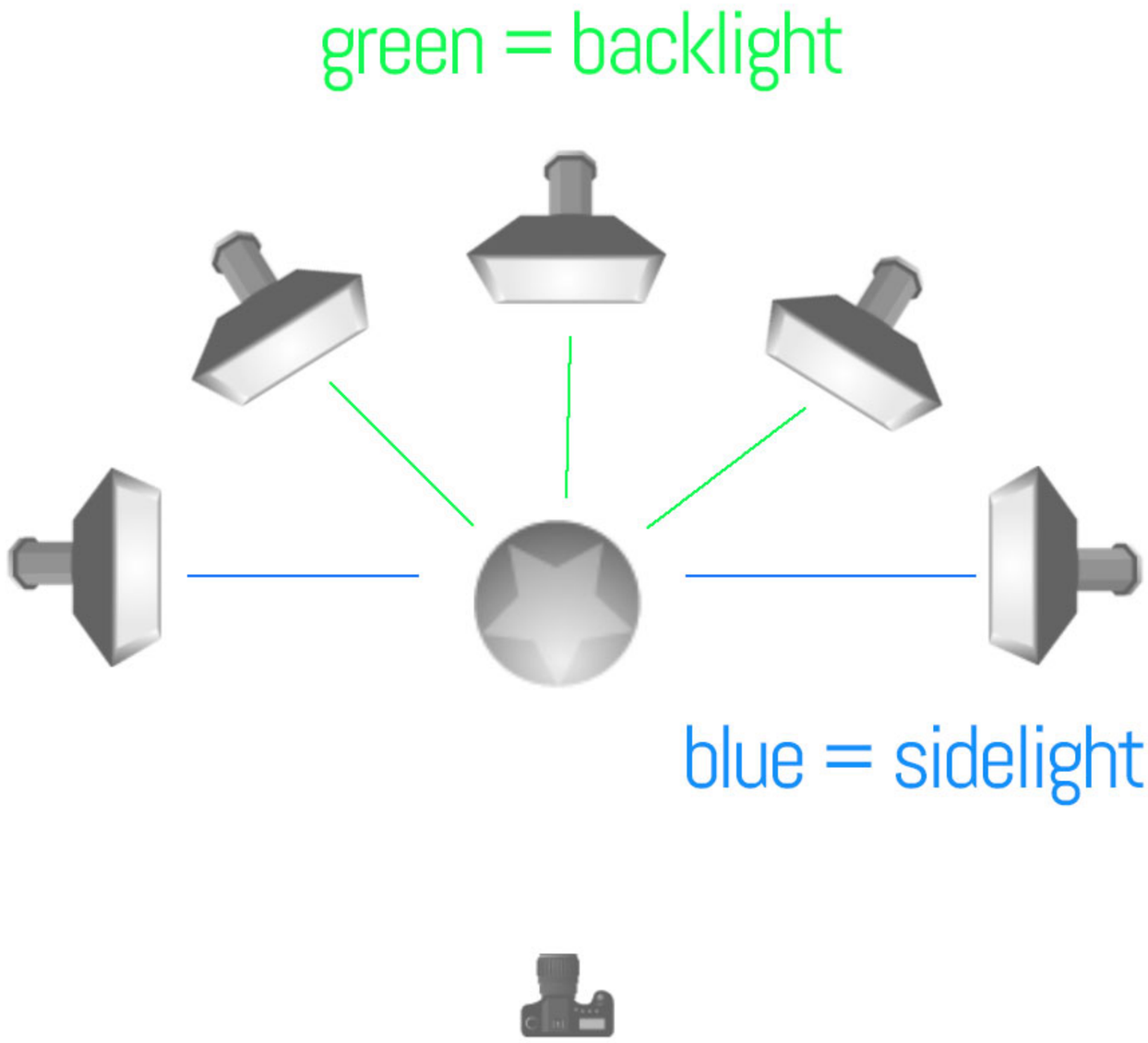
angle of incidence = angle of reflection

the blue line completes the triangle

FRONT LIGHT



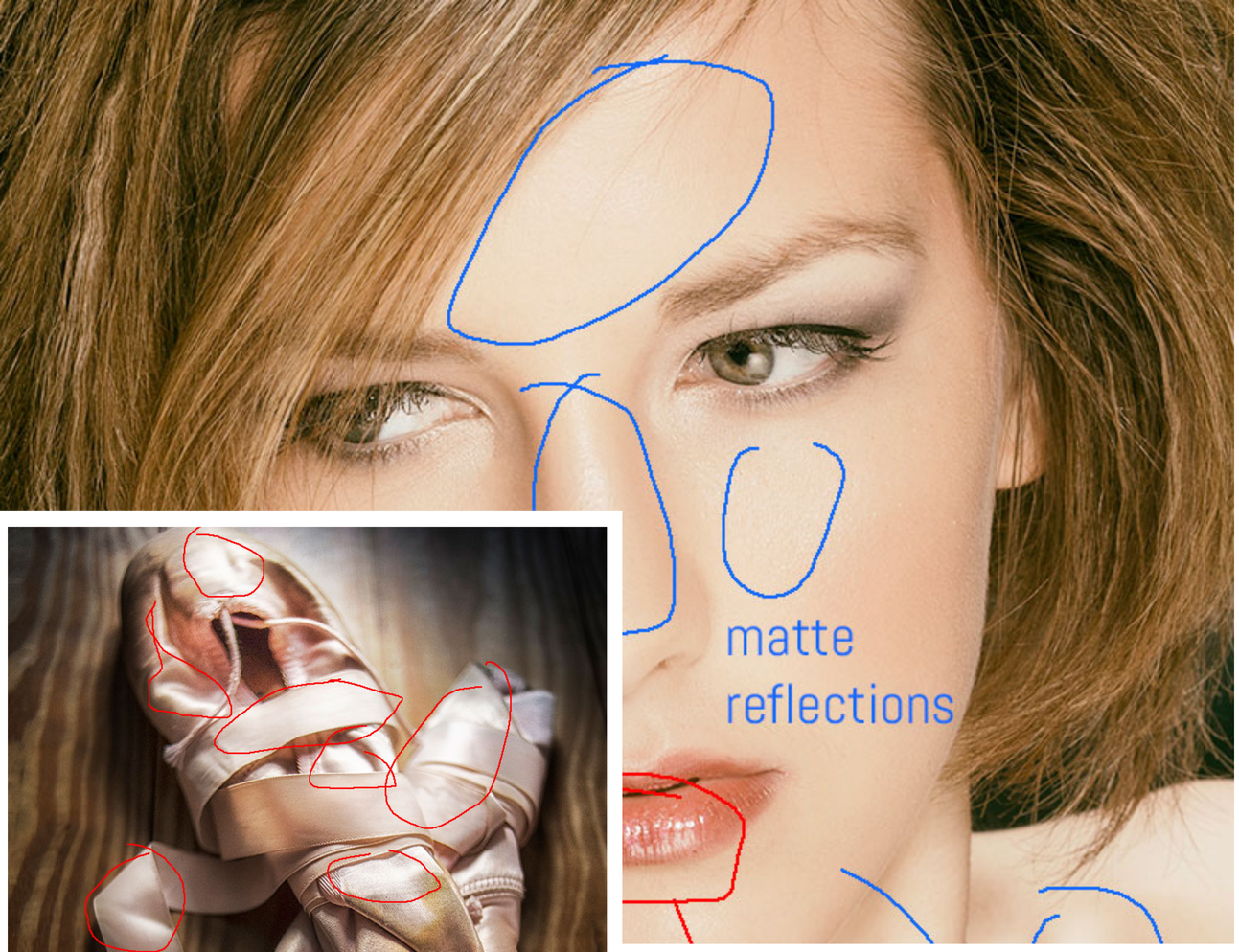
BACK LIGHT

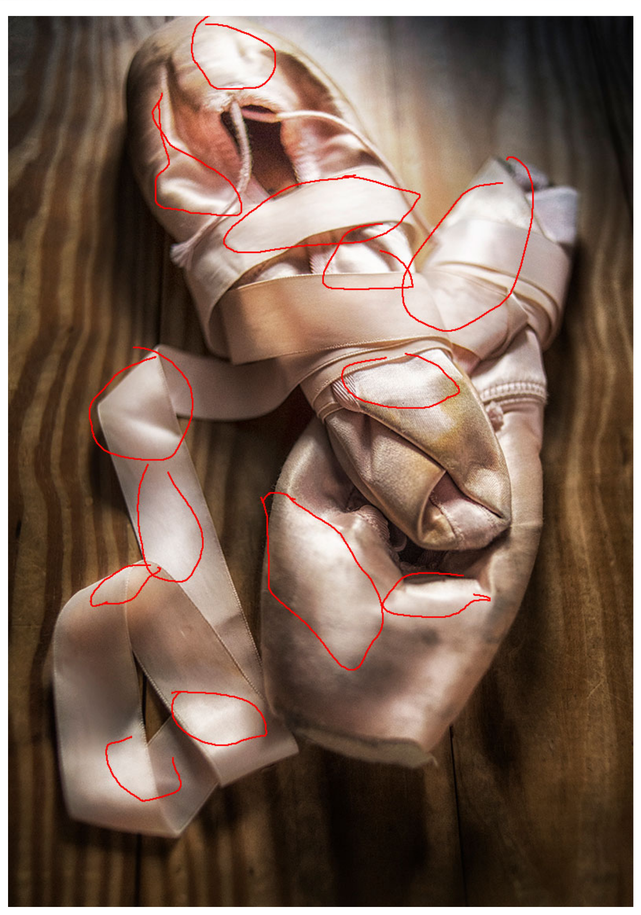


SUBJECT PROPERTIES ONE TEXTURED

Texture shows the viewer how rough an area is, or what kind of surface they would find if they were there. It delineates the shape of details and it gives us information beyond what we would see on the surface. Old things have lots of texture from the weather or the sun. Areas that are full of texture have lots of visual energy. The eye knows that the light is playing on something that shows itself with character and charm. Cookies have to have texture, as does old barn wood. We want to see the texture in an old book as we want to see it in a pasta dish or leather jacket.

Texture gives us context, and it is nearly unconsciously understood. We have seen what light does to texture our whole lives, so when we go to photograph it, we are naturally drawn to those times of day and places where the texture is well rendered.





SUBJECT PROPERTIES TWO MATTE SURFACES

MATTE SURFACES STILL REFLECT THE LIGHT SOURCE, BUT THEY DO IT WAY DIFFERENT THAN EFFICIENT SURFACES - SOFTER TRANSITIONS.

Skin is one area of great interest. Portrait, beauty and fashion photographers have to be able to control the way skin looks for their imagery. And skin can present some widely diverse efficiency. Dry skin has a very matte look, wet skin becomes more efficient due to the water, and then the reflection is nearly absolute, and skin color can become an issue with the wrong kind of light presentation.

SUBJECT PROPERTIES THREE GLOSSY

The third of our major surface efficiencies is glossy or very shiny surfaces.

The complete opposite of the textured surface, the glossy surface will record the reflection of the light source absolutely. That means we have to be very careful with our light sources... they will be shown in the object.

Umbrellas may be seen in their totality, the studio can be reflected into the camera, busy, confusing surroundings will find their way to our lens via the absolute reflectance of the subjects extremely efficient surface.

Of all the surfaces, shiny will be the most challenging. There is no room for even a bit of sloppiness in lighting angle or source choice. We will actually see the light in the reflection so it is part of our subject.

Where light was used to render subjects with texture and matte, it is itself part of the image when the surface is shiny, or very efficient.

(I am often asked how to light a car. The first thing I say is that you shouldn't light the car, light what the car is going to reflect... because that IS the lighting on the car. The absolute efficiency of the paint is going to reflect whatever the photographer has put at the angle of incidence in order to present it to the lens.)

CONTROLLING THE PRESENTATION OF LIGHT

True Subject Value:
What the subject looks like when not in specular or shadow, this is the area that shows us the color of the subject as well.

Specular:
The exact or absolute reflection of the light source.

Specular Transition:
The point where the specular reflection transitions to the true subject value

Shadow Transition:
The transition between True Subject Value and Shadow

Shadow:
The places on the image that are not lit, the opposite side of the light source.

These areas of light are found in nearly every subject. By understanding what they do, and how they are controlled, we can understand much more about the light that is used to present these areas in the ways we want to show them.

Notice the large highlights on the pool balls. Also notice how they show up more on the purple and black balls than on the lighter colored ones. The sharp edge of the soft box reflection (specular) tells us about the smooth texture of the balls, while the soft edges of the highlight on the wood tell us about its texture as well.

A very large soft light falls on the tops of the bell peppers. The smooth transition from highlight to true tone tells us it is a very large light. There are some areas that have a sharper edge to them and they let us know that the bell peppers are smooth and shiny.

Large light falling off softly lets us know that the texture of these tools is a matte, not shiny, surface. The true value of the wood tones are shown in various spots around the image, and there is little doubt as to what these look - and feel - like.

A very matte surface like this rope still has a bit of highlight at that very spot where the small pieces of line make the curve and fall into the ‘angle of incidence, angle of reflection’ area. This creates a brighter, but still soft highlight. Note the incredibly soft fall off. A very large light was used on this rope still life.

There are reflecting white boards all around this clarinet. You can see them in the keys, and on the silver areas that wrap the clarinet. Above it is a scrim with the sun behind it. Effectively this turns the very small light source (sun) into a very big light source, the scrim. Using a scrim to modify sunlight makes shooting still life outside very interesting and popular.

Soft ambient light (the sun was behind those ominous clouds at this point). A strobe with a large reflector on it for maximum throw was opposite the young lady and aimed at her face. You can see a hard shadow from her skirt on her thigh caused by the small light source. In the final image, I softened that edge line to make it seem like the light was soft.

I absolutely had to have the tires lit on this motorcycle shot. Without that little detail, the image was bland. A large soft box was placed just in front of the tire at an angle to provide a highlight. Additional soft boxes were used for the model and the motorcycle to keep highlights interesting and to provide a good skin lighting.

Subject Centric Lighting

For more information and to access a free lighting course based on Subject Centric Lighting, visit;

www.lighting-essentials.com

Thanks for watching.

Don Giannatti