

## An Introduction to Photographic Lighting with John H. Siskin

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### Lesson #3: Understanding the Tools of Lighting

Welcome to Lesson 3.

Every time I have taught a lighting class, *Bob* has been a part of it. *Bob* is endlessly patient. *Bob* is unchanging. *Bob* shows us the defects of our lighting. *Bob* even has a philosophy: Keep on rolling. When something gets in your way, knock it down.



This is the first magazine cover I shot.

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### Broad Light Modifiers

Two weeks ago, I said there are 2 & 1/2 important things about a light: color, size and direction. This week we will talk about adjusting the size of your light source. We will start with making our light source bigger, and we'll come back to detail work later. Point 1, we can adjust the size of our light source by either bouncing it off something or diffusing it through something. We need to examine how the tools for this: umbrellas, softboxes and light panels work. We have *Bob* to help us with this.



Bob #1  
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Bob Set-up #1  
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The first shot finds Bob on top of a white column (actually all the shots will find Bob in the same place - Bob is unchanging). Bob is illuminated by a single light, a Norman 200B.

The thing you want to pay attention to is the bright white spot on Bob, this is the specular highlight. On a small light source the specular highlight is always very intense. Not only is it bright, it is concentrated.

The brightness difference between the specular highlight and the diffused highlight (the area which is illuminated but not the specular highlight) is greater than it would be if the light source were larger.

Next, examine the way that the diffused highlight transitions into shadow. The transition is very abrupt. Because of these characteristics a small light source is very good at revealing texture in an object. Because of the intense specular highlights a small light creates it also creates sparkle, sparkle would be a lot of very small specular highlights.

Although I almost never use a small light source by itself, I often use it in combination with large light sources to add sparkle and texture that are lost with big light sources. I should note that this looks different from a medium sized light source because 2 sources softens or adds shadow/sparkle while a medium-sized light doesn't have the small specular highlights.

## Umbrellas



Bob #2  
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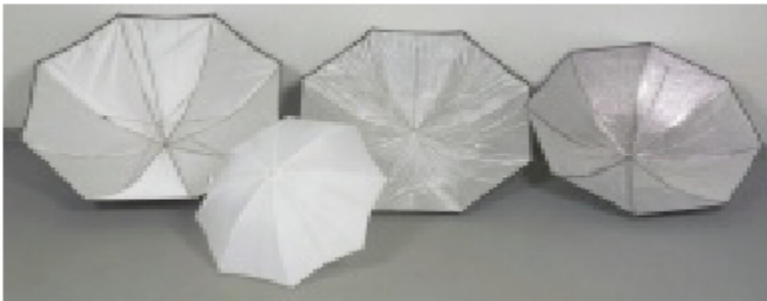


Bob Set-up #2  
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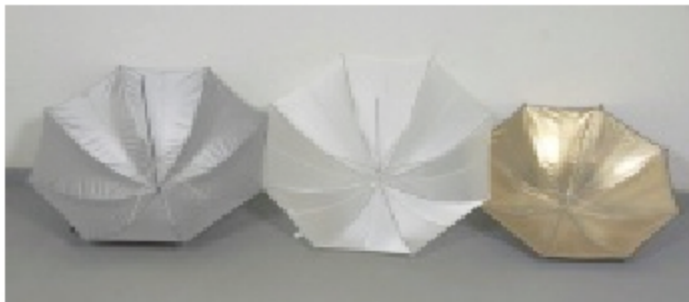
I had the good fortune to work for an advertising photographer when I was 16 years old. This was in the early seventies (do the math if you want). His name is Steve Berman. I learned more about lighting in that summer than in any summer since. He used umbrellas, so, naturally the first lighting tool I got was an umbrella. I still think that umbrellas are the best all around lighting tool you can get. They are inexpensive, bordering on cheap.

They set-up easily, unlike a softbox. If you knock your light over, they even act as a parachute! Kinda... They spread light the way a sawed-off-shotgun spreads pellets, only more so. Heck, if you use a shoot through umbrella (white umbrella with no cover) you can create 360° light!

Really, only two draw backs, 1) they light everything there is no stopping them, and 2) they leave telltale reflections all over the shiny stuff in your shot. You can see that I used an umbrella when you look at Bob, because the specular highlight is now shaped like an umbrella. Because the umbrella is bigger the specular highlight is bigger and dimmer. Please note what has happened to the transition to shadow. The transition is much smoother and the shadow is smaller and less intense.



Umbrella 1  
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Umbrella 2  
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Umbrellas come in a whole range of types, this helps to extend their usefulness. The first characteristic I want to talk about is size. Bigger is better and more expensive. A bigger light source will spread light more smoothly over a larger area.

There is a relationship between the size of the light source (this holds for things other than umbrellas) and the distance from the subject and the way the light looks. Basically, if the light source is at a distance of less than twice the size of the light source, the light will be very smooth. It is important to keep in mind that if your big light source is a long way from your subject you have made it into a medium or small light source. I have 3 sizes of

umbrellas: 60 inch for bigger subjects, 45 inches for most purposes and finally 30 inch for a tight fit on architectural subjects.

Umbrellas are provided with different fabric, which changes their character. The most common fabric is a white satin. It has two advantages, even diffusion of light and good efficiency. The first advantage means that the light is evenly distributed and smooth over the area the umbrella is lighting.

The second advantage means that you get a lot of the light you put in an umbrella back. Any time you bounce light, off a ceiling or an umbrella, some of the light doesn't come back, and that means it isn't available for your photograph. White satin is better at bouncing light back and it is almost as smooth as white cotton, which is what photographers used to use.

When you are willing to sacrifice smoothness for efficiency, use a silver umbrella, the metal version of these umbrellas are wonderfully efficient. Umbrellas also come with gold lining and blue lining which do a partial color correction from daylight to tungsten (gold) or tungsten to daylight (blue). You can also use these umbrellas to add color to your shot. I rarely use a silver and I have never used a blue. It is easier to filter the light source.

Finally, there are differences in umbrella construction. First there are umbrellas that have a removable black cover over the translucent satin fabric with black. This has two advantages. First, the light doesn't come out of the umbrella, illuminating areas you'd rather leave dark; and second, you can remove the cover and light through the umbrella, and this is very useful in architectural interiors.

The other difference in umbrella construction is that the white satin covers the ribs in some umbrellas. This cleans up the reflection of the umbrella some what and is supposed to create even smother illumination. The picture of Bob was made with a 45 inch white satin ribless umbrella with a black cover. Man what a mouthful for an umbrella. I have 3 matching umbrellas like the one I used for Bob, I have 2 -60 inch black cover ribbed white satin, and one 45-inch silver that I use a lot. And I do use umbrellas a lot!

## Softboxes



Bob #3  
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Bob Set-up #3  
© John H. Siskin

When I first opened my studio, softboxes were the new thing, so I got one. They are a fabric box that encloses the light providing, hopefully, even illumination across the face of the box. The light is much more controllable than the light from an umbrella because they have a flat face. In addition to providing an even source, the edges of the area illuminated by the softbox are quite interesting, a controllable falloff.

As with the umbrellas, the softbox is better if it is big. This gives you a larger area of the very smooth light produced by a large source. As the light source backs away from the subject, it acts as an increasingly small light source. I notice it in the shadows first. Softboxes also have a characteristic specular highlight, just less objectionable than that of an umbrella.

The relationships between the values in the specular highlight and the diffused highlight are similar to those produced with an umbrella, except that a softbox is generally closer to the subject than an umbrella would be. This is because the umbrella is placed away from the light and the subject, while the softbox is between the light and the subject.

One thing you want to have in a softbox is different covers so you can change the shape of the light, at least between a rectangle and a oval. This will allow you to change the shape of your specular highlights.

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Softboxes have some annoying aspects that have caused me to use them less over the years. They are a pain to set up. They are built on flexible fiberglass poles, which are difficult to place into their appropriate sockets.

Second, perhaps because they have flame retardant chemicals on the fabric, they can color shift over time. I have several softboxes that color shift more than 600° Kelvin, that is the light is now yellowish. Finally, they are expensive, maybe 5 times more than the same size umbrella.

There are two sizes of softbox I do find useful. The first is the very small box, say 12 inches by 18 inches. I know that this is



Softboxes

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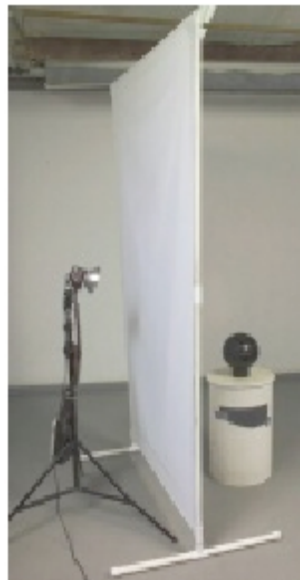
a contradiction to what I said above, but this is a beautiful size for shooting bottles and glasses; it allows you to control the reflection in the bottle. When you see a shot with a long thin reflection in a bottle of wine, this is often the light source. I do like the larger softbox, say 3X4 feet or more when I need to shoot people outside, as I mentioned, it's easier to secure.

## Light Panels



Bob #4

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Bob Set-up #4

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The next big change in my approach to lighting came when I saw Dean Collins. Not only was Dean a brilliant instructor, he was outrageously funny. Unfortunately Dean passed away recently, much too soon. Anyway, what Dean did was to put fabric on plastic frames. Hopefully this feels a little like déjà vu, since you should already have frames. These work as very large light sources and they are inexpensive. I made a bunch of frames; been using them for close to twenty years.

These light panels are very good at being that large light source. They are easy to manipulate in the studio and easy to set-up. You can use one to light

people or large product. You can clip them together to make an even larger light source. Of course, the fabric you use matters to the shot. I generally use cotton broad cloth, it is generally very neutral in color and it hems with glue.

My wife recently bought me a sewing machine. I'm still intimidated by it. Do not look for a class on great equipment you can sew any time soon, at least not from me. Rip-stop nylon is another great fabric for a cover. I also like silver and gold lame, though any silver or gold fabric would work. I want to point out that while I rarely use the gold umbrella, I use the gold fabric on the frame A LOT.

There is a big difference between the two: the umbrella lights things yellow; the reflector fills shadows with warm light. Another important cover for your frame is black. This will enable you to control the light spilled from the sides of the frame, and it can be used as a gobo (from go between I heard) to help build shadow and strengthen contrast.

You can buy this stuff ready-made, both Chimera and Westcott sell fabric the size of the frame plans, heck you can buy the whole frame from them. I have about 5 of these frames and a lot of covers, that's why I recommend making them, the savings on that many is substantial.

There are difficulties with the frames, the biggest is that the light coming through the panel is uneven and the reflection shows the irregularities of the fabric. The photo of Bob shows the first problem pretty well. The light is bright in the center and falls off, sort of like a fireball. Now lots of the time this is fine, even great. It even looks pretty good on Bob. It doesn't work all the time. If you look at the panel you can see why: the light is much brighter in the center than on the sides.

Dean had a fix for this: he would clamp three of the frames into a triangle shape using double clips that are made to do this (you may want double clips on that equipment list). Now inside that triangle is the light, and it is facing away from the set into a sliver reflector wall. Then the light goes through the front cover and you get all the light that is left. Not only is this difficult to set up but it is very difficult to move. We will discuss another plan to deal with this next. Dealing with the irregularities of the fabric is easier. Method one use a product without pesky irregularities, either a translucent plastic or tracing paper. Method 2 use clips, say the double clips I just mentioned, or spring clamps or even gaffers tape to draw the cloth tight. I usually use the second method.

Now back to Bob.

## **Umbrellas & Light Panels**





Bob #5

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Bob Set-up #5

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So this is a very basic change, but it took me a long time to discover it. Instead of building the triangle and bouncing off the back walls of the triangle, bounce off an umbrella. This set-up provides even and smooth light on the surface of the panel. It is easy to reposition and manipulate. In fact I will often bounce light that has come around the light panel into a reflector and back into the shot. Can't do that with a softbox.

The smoothness of the transition from diffuse highlight to shadow is just remarkable. Note that the shadow from Bob is just a slight darkening, rather than a pool of inky blackness. Look also at the column and how the light falls off smoothly across the bottom.

Now I should mention the specular highlight. First, it is very close in value to the diffused highlight. This is because the light source is so large. Second, the highlight doesn't have the telltale image of an umbrella in it.

Another point is that the light has now evenly spread to the background, which has not happened in any of the other shots. One more thing I should point out is that by repositioning the light with respect to the panel you can make useful changes in the light. For instance if you raise the umbrella and light up the panel will darken as it goes to the floor, this will be reflected in the specular highlight. So is this the wonder light? Well it does have a couple of drawbacks: it sucks up a lot of light, figure you need at least 800 watt-seconds to get a useable f-stop out of this and it leaks light out the sides like mad. I often use another light panel (maybe I should call this a dark panel?) covered with black fabric to control this.

**Thanks *Bob!***

There are a couple of other things I do for lighting large areas. I use the bare bulb, just the head, no reflector. I do this in two situations: *first*, when



shooting architecture, I use the bare bulb when I have to have light in a specific place and nothing else will fit, a light of desperation. *Second*, I use one behind a portrait subject to create a rim light and light the background. We'll see more of this real soon.



Mike Pratt, #7  
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Mike Pratt, set-up #7  
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Continuing, I use umbrellas in unusual ways. I'll use an umbrella as a strobe reflector. This set-up often works where I would otherwise need to use a bare bulb or a direct reflector. It is softer than the bare bulb and broader than a standard reflector, it lights at least 180°. I usually use a silver reflector for this.

I should also mention again that I often shoot through umbrellas in architectural settings. The lighting is very broad, particularly since the light going out the back of the umbrella, away from the subject, is usually bounce back into the set by a wall or something. This actually increases the naturalness of this light.



Bare Bulb Light with  
Umbrella Reflector  
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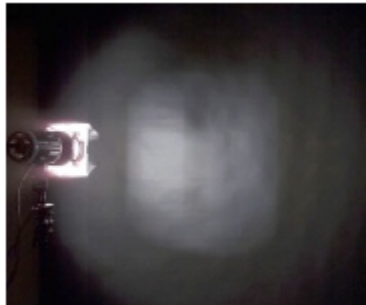
Umbrella set-up for  
shoot through lighting  
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## Detail Light Modifiers

Now we need to talk about adding light to small places in your shot. These are tools which allow you to affect the details in your shot, so I'm referring to them as detail light modifiers. There are several tools to do that. The first is barn doors; these fit on your light and allow you to control what you light. Barn doors have 2 or 4 blades, the 4 bladed ones give you more control. You will need either modeling lights or feedback (Polaroid or digital test) to see what you are doing with barn doors. This will be true with all these *detail light modifiers*.



Norman Barndoors  
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Norman Barndoors light  
pattern  
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This image shows the light thrown through a barn doors by a Norman LH2400 head. Next to it is the pattern of a 6 inch Norman reflector. Both are 5 feet from the black background, and slightly off center. It is a good idea to photograph the spread of your lighting attachments to see what they do.

## Snoots

The next item on the list of detail lighting tools is the *snoot*. This is a long tube that attaches to your light and significantly reduces its spread. They often come in more than one size. I am showing a picture of a Norman Stove Pipe snoot and the pattern it throws.



Norman Stove Pipe  
Snoot  
© John H. Siskin



Norman Stove Pipe Snoot  
Light Pattern  
© John H. Siskin

## Honeycomb or Grid Spots

The final item I want to mention this week is the *honeycomb spot*. As you can see in the images below the honeycomb spot throws a tighter and more controlled spot than either of the two previous tools. This is also called a grid spot. It is a very popular tool for light control because of how tight the spot is. These grids come in tighter and wider patterns which increase the size of the pattern as the pattern widens.



Norman Grid Spot  
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Norman Grid Spot  
Pattern  
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## Compatibility Issues

One of the reasons we looked at lighting tools before we looked at lights is that not all lights have all these tools available. Particularly the smaller battery stuff, like the Norman 200B system I showed last week does not fit into all softboxes and do not have the detail light modifiers I have just gone over.

When we start going over individual systems next week you will want to find out if the light modifiers you want are available and what they cost.

There are several articles on the magazine page of my website - [www.siskinphoto.com](http://www.siskinphoto.com) - about lighting tools.

## Suppliers

Here are the names and web addresses of some, not all, of the suppliers for the equipment we've talked about in this lesson. You will probably want to visit some of these sites in order to get a broader idea of the equipment offered. I have used Chimera, Westcott and Plume equipment, but I haven't used any of their current line of softboxes. Please ask questions if you get confused. Because of concerns about color consistency you will probably want to get all of your softboxes, if any, from one source. I have found that

this helps with umbrellas too, but not as much. I will talk about color consistency more in a few weeks.

Chimera - [www.chimeralighting.com](http://www.chimeralighting.com)

Photoflex - [www.photoflex.com](http://www.photoflex.com)

Plume - [www.plumeltd.com](http://www.plumeltd.com)

Westcott - [www.fjwestcott.com](http://www.fjwestcott.com)

## Not a Project

Nothing to build this week, but I wanted to point out a nifty tool that you *May Already Have*. A slide projector, preferably Kodak. This makes a terrific focusing spotlight. Although it was particularly useful with tungsten film and hot lights there are ways it can be used with digital systems. If you use filters on your lights (please use appropriate filter for lights, don't want any fires) you can make them match the tungsten light of your projector.

You can then use your shutter speed to control how much light your projector brings to the shot, since more exposure time doesn't affect your strobes. *Remember to turn the lights out in the studio!*



Waterford vase, Projector  
Demonstration  
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Waterford Vase Set-up  
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## Studio Strobes

Really, I shouldn't call them studio strobes, but I don't have another name handy. You see they work just fine on location, if you have ac power. Now there are some very good reasons for buying these sorts of lights. First, there are many used lights of this sort, so they are inexpensive. You could put together a 2000 watt-second system with two heads for around \$500.00.

Second, they have higher power levels, heads that take more than 2000 watt-seconds and packs with more than 4000 watt-seconds of power.

Third, they take a full range of accessories, snoots, grid spots and soft boxes.

Lastly, there are a few special purpose lights that are only made as studio strobes; Norman makes a Fresnel spot and an optical spot called a Tri-light that will project images. So consider this equipment if you expect to have large equipment needs and a not so large budget. I use this sort of equipment for lighting interiors, when I need a lot of lights and a lot of power.

Studio strobes take a little understanding to use effectively. They usually have the power set in banks that can be accessed separately or grouped together. This allows you to have different lights set at different power and to use the available power to best effect.



Norman P2000D Power Pack

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This Norman pack has a total of 2000 watt-seconds available. If you plugged a light into the group of heads marked "one", the pack is currently set to give you 400 watt-seconds. If you had 2 heads plugged in, each would have 200 watt-seconds. Whatever power the pack is set to is split between the heads plugged into that bank. Bank one could also be set to 800 watt-seconds and bank two can be set for either 800 or 1200 watt-seconds. If you plug a head into the outlet on the front of the pack both power banks are linked together, so all heads receive the same power. This seems confusing, but it is easy to get used to. Other studio strobes are set up with different powers but the idea is similar.

The concerns I have in looking at a pack are first total power available. Second, how small a change can I make in the power out put, on the pack above that is 400 watt-seconds. Third, does the pack have any trim circuits the will vary the output by vary small (1/3 or 1/10 stop) amounts. The pack above does not have any trim circuits, more recent Norman packs do. The pack above does have model light output controls, which is somewhat less important to me, but is nice to have. They allow you to make your model lights match their output power. I am also interested in whether the pack has a reputation for blowing up, that is bad.

#### **Buying Used Studio Strobes**

I own a lot of used stuff. I have saved thousands of dollars getting used

lighting stuff. Many of the kinds of photography I do are very equipment intensive, particularly interior photography. I find that my clients don't have any idea of what the stuff should look like; heck, I've had people ask if a Toyo 4X5 is a Hasselblad. What concerns me is quantity and power. I am also interested in having back-up equipment. But that just means more quantity and power.

Most strobe equipment shows up some time on eBay, but if you want to get strobes now that is not good enough. What you want is gear that is more or less always on eBay and has the price of a common item rather than an uncommon item. There are two brands of studio strobes which meet these criteria: Norman and Speedotron. You will see more of their gear for sale on eBay than any other manufacturer's gear.

Speedotron has the better reputation simply because they have made fewer crappy products. In other words they have earned their reputation. They have 2 major product lines, Black Line and Brown Line. It is easy to see the difference at a distance, the equipment lines are different colors. Black Line is the more powerful and better made product.

If I was starting over with studio strobes, this is probably what I would want to buy. Speedotron does have some difficulties, primarily associated with size and weight, it is a little larger and heavier than Norman gear. I would look at their 2400 series pack and the heads with the focusing reflectors.

I have some experience using Speedotron, but I have never owned it. The equipment I used has trim circuits which allow you to vary the output of the unit in smaller amounts, I am not sure how long Speedotron has had this control. I would certainly check out their website - [www.speedotron.com](http://www.speedotron.com) - for more information.

I have used Norman equipment for more than 20 years, so I can speak about it with some authority. Norman has made some very bad equipment. Under no circumstances should you get their 4000 watt-second powerpack. If someone gives you a 4000 watt-second pack get rid of it as soon as possible. The Norman P2000D, however, is a great pack, go figure. Norman has made several different strobe lines that are not interchangeable (Black Line and Brown Line are not interchangeable either). I would stick with the 900 series stuff for studio lights. A quick preview of next week I will be discussing the Norman 200B stuff when we talk about battery-powered strobes. The 900 series is the high power equipment from Norman, just as Black line is from Speedotron.

Norman has better accessories for this equipment line. The power packs in this line are all pretty good except for the aforementioned 4000 watt-second pack. My favorite is the 1250 watt-second pack because it has a lower setting than some packs and it steps up in 250 watt-second intervals. The 2000 watt-second pack has a very good reputation for durability. The little 800 watt-

second pack has always looked good for portability, but I'd like more power. Older Norman gear does not have trim circuits, but after about 1990 this was a regular feature. The Norman website is at <http://normanlights.com/> Check it out.

One important difference between the two systems, Norman is generally cheaper. For strobe equipment, go to eBay:  
<http://photography.listings.ebay.com/>.

### **Buying New Studio Strobes**

Last week, I went through almost 20 different strobes in order to give you a sense of the market for monoblock strobes. I really don't see a reason to review a lot of similar studio strobe products in this manner. The best reason for this is that there are only two manufacturers whom have a big presence on the used market. So if I were going to buy new studio strobes, I would buy them from either Speedotron, if I had the money, or Norman, if I didn't.

I do want to mention Dyna-lite, which is another good choice. After I checked everything else out, the list came down to just this one other manufacturer - Dyna-lite. Here's what makes them special: price and weight. I think that their equipment weighs less than everyone else's. After a long day on location that is really important. [www.dynalite.com/index.html](http://www.dynalite.com/index.html). Another nice feature is that they have a battery system available, these seem less common for studio strobes than for monoblock lights, but then the studio strobes take more power.

### **Your Assignment: Kitchen Photo**

#### **Shoot a picture of a person in a kitchen.**

I want to see the whole room, not just a small part of it. This is the challenge. Do a set-up shot as well.

Extra credit: have a window in the background of the shot that is not blown out. Shooting with the window will be very difficult without using strobes. This will require portrait skills and lighting skills.



Breaking Eggs at Who's  
Brownies

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If you'd like me to critique your assignment you can arrange that by paying \$25 on my website. Please visit [www.siskinphoto.com/workshop.php](http://www.siskinphoto.com/workshop.php). I suppose you could also make a donation at the site. Have a good time.



Thanks!

John

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