Photography for Jewelers and Metalsmiths

I am a professional jeweler, metalsmith and educator. I have studied photography for over 35 years, while working to shoot quality images of my metalwork. In this handout, I offer information from a metalsmith's point of view-----trying to use technical terms only when they are truly necessary.

SET UP

With non-reflective work, you can simply tape a large piece of paper to a wall behind the table where you plan to photograph so that there is a seamless background.

If your work is reflective it's worthwhile to invest in a light tent. These are now available commercially for as little as $35. Some photo tents include a front that has a zipper so that you can close it around the lens Sources are listed at the end of this handout.

You can also make your own light tent setup.

- One way is to make a box using shiny white foam core for the back, bottom and sides. The top can be covered with frosted acetate, acrylic, or white cloth for the light to be diffused through. This way, the work reflects white, which, in effect, looks like no reflection. I used a set up like this for many, may years. With this set up, the remaining reflection problem is at the front of the tent----you and your camera.
  - White cloth draped at the front at the front of the box can be pinned or clipped around the camera lens minimize its reflection and yet make it easy to change the camera's position. These "curtains" can act as diffusers, for the lights to shine through. They can be partially opened so that the light says "punchy" and doesn't get too flat.
  - Cut slits in the middle of a large piece of white paper and so that the paper fits tightly over your camera lens. I like the way that this moves with the camera, and does not need to be adjusted when you change the camera's viewpoint.
- Here is another simple set up for a reflective piece of jewelry. Form a piece of tracing paper or translucent plastic into a tube or cone. Cut a piece of paper to fit so that makes a seamless background, covering one end of the tube and extending under the object. The camera is placed at the other end of the tube. Let the sun or the artificial lights shine through this paper, diffusing and softening the light and minimizing reflections. This can be used to shoot horizontally, or vertically. If the piece is highly reflective, it can be helpful to make a cone that fits tightly around the lens, and flares so that the edges are out of the photograph.
- A similar idea, discussed in an article by Steve Meltzer in *Craft Report* magazine is to make a light tent out of translucent light panels. These are available at lumberyards, etc. for a few dollars, and make a sturdier, more permanent set-up. He suggests that one cut a piece, bend it into an arch, and hot-glue it to a back and bottom. These will diffuse the light, and minimize reflections. White cloth or tracing paper at the front of the box should cover all but the camera's lens. I made one of these----it worked pretty well.

BACKGROUND

The work and the purpose of the slide (advertising? postcard? documentation? entry to shows?…) must be matched carefully with the background. When in doubt, keep it simple—show off the work. Think about how the texture will look if it is magnified in a close-up.

Currently, white backgrounds are coming into vogue. Be aware of what the latest sense of fashion is, while considering what will show your metalwork to its best advantage.

A background that looks great and has reliably good results is a "graduated" background (a gradual fade from black to white, or blue to white, etc.). The easiest way to produce this look is with graduated paper. Unfortunately, graduated paper can be expensive, and easy to scratch. Sources are listed at the end of this handout. One cost-saving measure is to protect it with very thin frosted acetate.

Less expensive ways to achieve this graduated effect:

1. Put black paper on the back wall of the set-up, and white paper on the floor. Pin frosted acetate to the top of the back wall, draping it to the front bottom edge of the box, so that it shows a gradation of gray as it curves away from the back corner.
2. A pale, monochrome background can be darkened by placement of lights. This effect may be heightened by using cardboard across the back of the top of the box to block the light from the back portion of the photo set-up. Charles Lewton-Brain uses this effect, and gives a detailed explanation in his book.
3. Print, airbrush or spray paint your own paper or plastic background.

A black background can be very dramatic, but black can be difficult to work with---it absorbs so much light that you need stronger or more lights, or longer shutter speed, or larger aperture. Black or colors can also be a problem if they reflect onto shiny objects. In this case, it can be helpful to cover it selectively with bits of white paper (outside the view of the camera), where it is reflecting onto the work. The black background can confuse the camera's automatic exposure settings--- Use a gray card to set a custom white balance when shooting on black or white.

Materials such as handmade paper, slate, Plexiglas, and textured rubber placemats can make wonderful backgrounds, but be sensitive to the associations that different materials have. For advertisements, an eye-catching background can be helpful. For art publications or for entering juried shows, a very simple background should be used to keep the focus on the metalwork.

PROPS

- Should not show in photo unless they are beautiful or part of the background.
- "Paper Tac", Fun-Tack, prop wax, or sticky sculptor's wax are helpful for standing up a ring. Be careful if your lights give off a lot of heat, since wax melts under hot lights. Clean these substances off the metal immediately, so that they don't cause tarnish.
- If possible, get the object off the table for a more dynamic photo. A "floating" quality can be great. The shadow around the object can help visually separate it from the background.
- Clear thread or fishing line can be used to suspend pendants and earrings.
- A trick I learned from Robert Liu of Ornament magazine is to poke a "third hand" (yes, I mean the thing we use for soldering set-ups) through a hole in the background. This can hold a brooch from behind and give that floating in the air look.
- Wire can be bent to make a prop to hold up a brooch
- Use Photoshop (or Elements, or whatever digital means you have) to remove any visible props.

Lighting Arrangement

I generally use is two lights –one on each side of the camera. Some people also use one overhead. The position and number of lights determine the shadows. Sometimes, I use a third, small-but-bright light to place a highlight where I want it.

Shadows, Highlights, and Reflections

- There is no hard and fast rule about whether these are good or bad. Sometimes they are a distraction; in other photos, they add pictorial interest. Shadows and highlights help the viewer "read" the object as 3D and shiny--if the lighting is too overall, it can make the object look flat.
- Textures NEED shadows. To show off texture, light from the side, rather than the front.
- A tip from Charles Lewton-Brain: place a mirror(s) or foil so that it aims a beam of light at the object, giving a spark of interest.

Diffusion is softening a bright light. Light can be diffused by:

- Shining the light through white fabric, frosted acetate, frosted Mylar, tracing paper, frosted plastic, …….
  - These diffusing materials may be over the light, or around the object----as with a light tent, or light box.
- Aiming the light at a white ceiling, a white piece of paper, or another white object, and letting the light bounce onto the object indirectly.

SHOOTING A PHOTO - Camera Settings and Terminology

- **Automatic vs. Manual Controls and Settings**
  Cameras are very good at shooting most things, most of the time. So, start with the automatic setting, and see how things look----with the exception of the white balance. ALWAYS set the white balance manually when photographing your metalwork.

- **White Balance**
  Set it manually. The automatic light balance is not good enough for our purposes.
  Each camera has a different procedure---check your manual, and put a tab or marker on the page so that you can find it easily every time you set up to shoot a photo.
  Explanation: Light from different sources, such as fluorescent, tungsten, incandescent, and daylight all are different colors, and are measured in color "temperature". In order for the colors to be accurate in the photo, which is so important when photographing jewelry and metalwork, we nearly always need to set a "custom" white balance each time we set up to shoot.
  - Set the custom White Balance by pointing the camera at a Gray Card.
  - Try to fill the screen with the gray card, and place it at an angle to the camera similar to the object that will be photographed. The procedure typically requires manually focusing on the card, then shooting a photo, then pressing the White Balance button (or setting the white balance in a camera menu).
  - Gray Cards are a specific color ("18%" gray) that serves as a neutral reference for the camera.
  - Though a gray card is ideal, a piece of white paper will do in a pinch. Gray cards are purchased from camera and photography suppliers.
  - The concept behind setting the white balance: if you point the camera at something that is a known color, the camera can compare what it actually sees to what it knows it is supposed to be seeing, and determine what it needs to do to compensate.

Depth of Field means "depth of focus"
When the camera lens has a very small opening, it gives the photo greater depth of field, which means that a longer distance is in focus. You can see how this works by squinting your eyes to look at something in the distance---it helps you see further away.

FOCUS

- On a point one-third from the front of the object, because depth of field is greater behind the actual point of focus than in front.
- When in doubt, do a set of shots with different focal points.

F-Stop is the number given to the size of the lens opening.

The larger the F-Stop number, the smaller the opening in the lens, and the greater the depth of field (longer area of focus).

- A trick for remembering this: Like B&S wire gauges, the higher the number, the smaller it is. 32 gauge wire is very small diameter. An F-Stop of 32 is a very small opening.

- Aperture is another name used for the opening of the camera's lens.
- If you need to use a manual setting because the auto settings are not giving you enough depth of field, use the AP (Aperture Priority) setting, so that you can set it at a high f-stop. The shutter speed is likely to be very slow in this case, so tripod and cable release or self-timer are critical.

Shutter Speed is how long the lens is open. The smaller the lens opening, the longer the lens needs to stay open. That means that the larger the F-Stop number, the lower the shutter speed number.

Exposure is the amount of light used for the photo---the size of the lens opening and the length of time it is open--exposure determines the whether the photo looks too light, too dark, or just right. Underexposed means the photo looks too dark---there was not enough light. An overexposed photo is too washed out and light.

- **Bracketing And Compensation**

  If the automatic settings look too bright or dark, most cameras have a setting for you to adjust it lighter or darker. When we are unsure what setting is going to work the best, and shoot a variety of exposures, that is called bracketing the exposure. When we adjust the setting to allow for the fact that the background is very white, or very dark, that is called compensation.

ISO is equivalent to ASA on film. A high ISO allows you to shoot in low light, but it also produces more "noise" which looks like graininess. You obtain the best image quality by using a low ISO on your digital camera. I like to switch the ISO setting from the default "Auto ISO" (this setting is usually found in the Menu) to ISO 100 if there is enough light. Try to keep the ISO 400 or less.

COMPOSITION

- Look through the lens to compose the photo. Try to see only the 2-D image the camera sees.
- Position the subject on an active, diagonal axis.
- Three-quarter views can often describe the object in one view.
- It may make a more dynamic photo if you only shoot part of the chain that a pendant hangs from. It may not be necessary to show the entire piece.
- Ideally, the object should cover about 75% of the rectangle. Make it as big as possible, but not crowded.

REFLECTIONS-methods for minimizing:

- Take the time to **experiment with different angles** and arrangements to eliminate or reduce the reflection, so that the reflection is in a shadow, or in a less critical area. Place the reflection in a spot that is minimally distracting.

- One can soften or **diffuse lighting** by shining it through frosted acetate or Plexiglas or fabric. This helps soften reflections on a shiny object. Be sure these diffusers are white or silver—if not, they may affect the colors in the photo.
- Try aiming the light at the white wall of the photo box rather than directly at the work. (However, with a matte piece, where reflections are not a problem, direct light often makes a more dynamic photo with interesting highlights.)
- **Photograph polished pieces after tripoli, but before rouge.**
- A polarizing lens can adjust glare and re-position highlights so that they are in the most descriptive position. This is particularly effective with gemstones.
- Dulling spray (a product from a photographic supplier) helps reduce reflections. Take care not to overdo, though—there should be enough shine evident to be sure the metal looks like metal.
- Try putting the object in the refrigerator or freezer for a few minutes. The condensation on the surface acts like a dulling spray.
- If the front corners of the box are reflecting as bothersome lines, try curving a large white paper inside the front half of the box (make a hole for the lens). Or try making your own cone or cylinder light tent out of tracing paper or translucent plastic.
- **When possible, choose a white room to photograph in, and wear white clothes.**
- **To minimize reflection of the camera in shiny metal, cover the body of the camera**:
    - Cut a * or a hole in a piece of white paper or Styrofoam and insert the camera lens.
    - Use a white curtain at the front of the photo set up to hide the body of the camera, so that only the lens shows through the curtain's opening. Pin or clip the fabric around the lens.
- Buy a camera, tripod, stands, etc. with a chrome finish, rather than black. The silvery chrome finish is often less expensive.
- **WEAR PALE, NEUTRAL COLORED CLOTHING** to avoid accidentally photographing a colorful reflection on your polished jewelry. White is ideal, but gray, pale blue, or tan are better choices than dark, bright colors, such as green, orange, or red.

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➢ **CHECKLISTS - BEFORE PRESSING THE CABLE RELEASE:**

Take your time to check everything before pressing the cable release. There are many details to consider. An accomplished jeweler/photographer/friend once showed me his latest postcard photograph and told me he spent two days on it.

Camera settings

- Set the image size and quality (jpeg? Raw? High or low resolution?)
- Check the focus
- Did you set the white balance?
- Is the f-stop high enough for good depth of field?
- If the shutter speed is slower than 1/60th of a second, use a tripod and cable release or the timer on the camera.
- Is the ISO number low enough for good image quality?

Image considerations

- Check the edges of the picture for intrusions from fingers, and edge of the background showing, etc.
- Check for dust on the lens and on the object--keep a blower/brush handy.
- Look to see that reflections are at a minimum, yet there is still a gleam or sparkle, or small reflections, so that the object "reads" as metal.
- As your photo set-up ages, monitor it for yellowing. (A few years ago, my silver work began to take on a golden glow, as the cloth I used for diffusion aged and yellowed.)

AFTER THE PHOTO HAS BEEN SHOT

PHOTO CHECKLIST - Evaluating the Images

- The object should fill the frame, but not look crowded.
- The photo should be neither overexposed (too light) nor underexposed (too dark)
- Is it in focus?
- Is the color accurate? E.g. Silver should look like silver, not gold.
- The background: Does it enhance the work without being distracting? Does it contrast with the object enough? Is it too busy?

FEEDBACK – Learning for the future

- Take notes as you photograph. Refer to these when looking at your images, and the next time you shoot. Keep track of what works best.
- It can take a second shooting session, with a different viewpoint, background, focal point, film, or processor to get it right.
- Show your photographs to other people--we need their perspective. Have a session with friends.

FIXING - What to do if the photograph is disappointing?

- Re-shoot?
- Adjust in Photoshop or Elements?
- Get professional help? If you are applying to craft shows or exhibitions, it may well be worthwhile to hire a pro to do your 5 slides for the jury.

EQUIPMENT

Even the most basic digital cameras can take an adequate photo. The most important things are controlling the light, choosing an appropriate background that shows off your work, and SEEING the two-dimensional image that is being made. We know the object three-dimensionally, and that affects our perceptions. People who only know the image, not the object, will see the 2D image only, and may misunderstand reflections or distortions.

CAMERA

- Study the camera's manual to learn how to use it.

If you are buying a camera:

- I have found it helpful to buy all my cameras from the same brand. The controls tend to work similarly that way, making it faster and easier to learn how to comfortably use the new camera.
- If you need help choosing, and/or are likely to need help learning how to use the camera, it can be very helpful to buy from a local camera store---so you can keep going back for help.
- Consider buying a better camera for less money by buying a used camera. I recommend buying from an individual that you can trust, or a local camera store that has a good reputation. If you know what kind of camera you would like, I recommend shopping on-line with a reputable photographic supplier, such as Calumet Photo, B&H Photo, or Adorama. These companies list the equipment with ratings of the condition of the equipment.

- I recommend these camera features:
  - Capacity to be operated both automatically and manually
  - At least 8 megapixel (jpegs) capacity for being able to shoot print quality
  - Custom White Balance---ideal for making the colors look "true" in the photos
  - Aperture Priority setting---This means that you can choose the F-stop, giving you control over the depth of field (depth of focus).

- 35 mm is great, but not an absolute necessity.
- RAW format is helpful in Photoshop----easier to fix colors & lighting problems
- A built-in timer for delayed shutter release, so that there is no camera shake from when you press the shutter release button
- Capacity to set the ISO manually (we want fine grain / small pixels)
- My personal recommendation is a Canon Rebel. However, there are many other good cameras.

LENS - Use a high quality lens—the lens is the most important part of the camera. I'm told that it is worth paying for the name brand that matches your camera, instead of a cheap knock-off.

I recommend looking for these lens features:

- The ability to shoot at F-16 or higher ---For the greatest depth of field (object in focus all the way into the background) choose a lens with as high an f-stop as possible--at least a 16 or 22. (The bigger the number, the smaller the aperture, and the greater the depth of field (focus) is possible.)
- A macro lens, or a lens with macro ability, is helpful for taking photos of small objects, such as jewelry. It may be worthwhile to buy a camera body and a macro lens, rather than get the standard lens that is usually included with a camera.
- My personal favorite lens is an 18-75mm zoom Canon lens.

TRIPOD- Holds the camera still, to reduce "jiggle"---this is important, since we tend to have slow shutter speeds, for greater depth of field.

(*Translation*: in order for things to stay in focus from the front of the photo to the back, we use a high number on the f-stop/aperture for a small lens opening. This means that the lens is open for as long as a second or more. Since it is difficult to hold still when hand-holding a camera, we need to use a tripod, and cable release, or timer release.)

- Should have adjustable legs.
- Make sure you like the method for adjusting the angle of the camera's tilt. I like "Ball Heads". Avoid long handles----they get in the way.

CABLE RELEASE, REMOTE RELEASE, OR SELF-TIMER – reduces jiggling the camera when the button is pressed to shoot a photo. The choice is a personal preference. The advantage of a cable release or remote release is that you don't have to wait while the camera "counts down". Advantage of self-timer is that it is built into the camera---one less gadget to keep track of.

A **GRAY CARD** is helpful for setting the White Balance so that the colors are true in photos. Gray cards can also be used to set the exposure.

LIGHTS AND LIGHT STANDS

These can be an inexpensive clip-on light with a daylight bulb, or small table top lights that come in a kit, but I like the lights on stands. It is nice to be able to adjust the height so that it is overhead, and to be able to place the lights wherever you want.

Lights keep evolving, just as cameras do. Currently, I think that fluorescents are the best way to go. They are not as hot as the old tungsten lights and incandescent bulbs. Fluorescents are also more diffuse than either of these older types, as well as more diffuse than LEDs. At this point, LEDs cost more, and don't produce as much light. (That may change in the coming years…..) It is ideal to use lights that are daylight balanced, but it is possible to "make do" with what is on-hand, if you are careful with the camera's white balance settings.

There are many types of lights sold for photography, so if you are looking at a catalog, and wondering about the products here is some more info:

- Light comes in different colors, which are described in color temperatures. E.g. daylight is 5500 degrees. Most tungsten light bulbs and quartz lights are 3200 degrees.

- Daylight: Many people feel that natural light is best for color accuracy. Daylight bulbs are available, and making it easier to get good color qualities. You can use these bulbs if the light from your window is not adequate, or at night.
- A soft box is an enclosure around a light bulb with reflective side and back walls and a diffusing material at the front of the light.
- Fluorescents –my current recommendation-see above
- LEDs-see above
- Flash attachment on camera: This is generally not advised for a good photo of metalwork. However, I worked in a custom jewelry store/gallery where the owner had built a box out of white foam core and figured out the optimal settings for the flash and camera in this situation. This set up was always in place, ready to go. Every new design made in the shop was popped into the box and photographed before delivery to the client. These photos weren't art, but they fit the requirement: quickly and easily made records and sales tools.
- Tungsten light bulbs screw into "regular" light sockets, and were the standard at one time, but are rarely used now----too hot, and the color changes after a few hours of use
- Quartz lights are longer lasting than tungsten bulbs and the color doesn't shift as the bulb ages, but they more expensive, and require more expensive and specialized sockets. Like tungsten lights, they get hot, and need to be worked with carefully.
- Strobe is a professional type of very powerful flash. Since it is expensive, it is not commonly used by do-it-yourselfers.

COTTON GLOVES are helpful when handling a polished metal piece. It is distressing to get everything carefully set up and shot, and then see a fingerprint on your computer screen.

LIGHT TENT You can make your own out of pipes and fabric, or foam core, or translucent plastic, But fabric tents are available for $20 these days. The white box makes it so that shiny objects reflect the white around them----which looks as if there are no reflections. That way, you only have to worry about the reflection of the camera lens.

SOURCES (C Eid's favorites, and recommended "deals" are highlighted in yellow with check marks. The arrows are her most highly recommended good buys on good stuff.)

Cameras, Tripods, Light stands, bulbs:

- **Stores in Boston, MA area-I**f you buy local, you can see how it feels before you buy, and you have better access to help if there is a problem. Sometimes, you can get them to match the on-line prices.
  - Calumet Photo in Cambridge and Boston
  - Hunt Photo
  - Newtonville Camera
- **On-line**
  - B & H Photo 1-800-947-9970 http://www.bhphotovideo.com/
    - **Canon EOS Rebel T5 DSLR Camera with 18-55mm Lens ~$400**

- Tripods- there are some okay-looking tripods for $20. Better ones for more money.

- www.canonusa.com
  Canon EOS Rebel T5 DSLR Camera with 18-55mm Lens ~$400
- Adorama Camera www.adorama.com
- Calumet 1-800-225-8638 www.calumetphoto.com

Light Tents / light box / photo cubes / bases.... & Light Stands & Bulbs - Kits

- smile.Amazon.com (use the smile program to donate to Metalwerx, a non-profit, with your order)
  - ✓ Square Perfect 3077 S Professional Quality *85-Watt Compact Fluorescent Full Spectrum* Photo Bulb $16 (equivalent to 350 watts incandescent----good to use in a single bulb light)
  - ✓ 24" Light Tent $20-"*Neewer® 24x24 inch/60x60 cm Photo Studio Shooting Tent Light Cube"*
  - ✓ *"Impact Air-cushioned Light Stand (Black, 8') 2 Pack" ~$70* (Air cushioning is a new feature that helps reduce bulb breakage when you adjust height of stand—if you are willing to spend more.)
  - ✓ Pair of inexpensive light stands $32 "*LimoStudio 2Pcs 7 ft Photo Studio Light Stands for Photography and Video Lighting with 2Pcs Convenient Carry Case, AGG888"*
  - ➢ Light stand, 105watt CFL, light fixture, & softbox- $32 (get a pair!) "LimoStudio Digital Photography Video Continuous Softbox Lighting Light Kit with photo 105w bulb_AGG702"
  - ✓ $43 for a light tent, tripod, and light stands with bulbs! Get started for a very small investment. (You'll probably want to upgrade eventually, though.) *http://smile.amazon.com/dp/B00THWCRVM?psc=1*

- www.tabletopstudio.com
  - ✓ EZcube light box with built-in EZrigging & EZstaging accessories for hanging jewelry
- www.cowboystudio.com or amazon.com
  - ➢ Cowboy studio "Open Top Photo Softbox" (I like this style because it has a zipper opening, a slit opening, and a removable side(s?). Others may cost less, but lack these options which make it easier to shoot without the whole camera reflecting, and easier to move things inside the box without moving the camera.)
  - ✓ Tripod Ball Head with Quick Release Plate
    http://www.cowboystudio.com/product_p/bk03-ball-head.htm
  - ✓ 105 Watt, 5500 K Photo Fluorescent Daylight Light Bulb $22 (equivalent to 400watt incandescent-great if you already have the light stands and light fixtures)
  - ✓ Plexiglass 24" x 24", Black $19 (can be a nice, reflective background)
- www.litestage.com

Graduated Background Paper – "Varitone Graduated Backdrops"

- www.phototechnic.com has a great price, but minimum of 5 sheets per color
- find other dealers at www.superiorspecialties.com

On-line Resources about Jewelry Photography

- The Orchid discussion group on www.ganoksin.com has an archive of e-mail discussions about photographing jewelry.
- http://www.tabletopstudio.com/
- http://www.squidoo.com/photographicjewelry
- http://www.ganoksin.com/borisat/nenam/jewelry-photography-lighting.htm
- http://www.mkdigitaldirect.com

- http://gemphotography.com/
- http://www.cambridgeincolour.com
- http://www.sigma-2.com/camerajim/ Camera Jim's guide to ebay photography

Professional Photographers -a few of the many good pros

- Robert Diamonte
- Ralph Gabriner
- Bob Barrett
- Allen Bryan

Cynthia Eid, P.O. Box 566, Lexington, MA 02420 USA
ceid@cynthiaeid.com www.cynthiaeid.com